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AND SUPS

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NEWSPAPER

Conference attendance and exhibitor participation were up.

CW Photos by E. Drake Lundell Jr

Cleanup was part of Agnes' legacy.

Inside, Outside DP Center Users Had an Active Year

By Edward J. Bride

Of the CW Staff

Courtrooms. Natural disaster. Privacy. Performance . . .

Inside and outside the DP center the computer community had a busy year especially when the computers were not in operation.

And when they were, issues ranging from patents to privacy to performance evaluation concerned users.

With more and more experts proclaiming an end to the recession, new products became the order of the day.

Most of the new hardware embodied enhancements to current systems or new units in existing families of mainframes. Data entry and communications equipment was particularly prominent.

In software, the main growth was in performance evaluation and optimization packages. Interest in this area was evident throughout the year, as computer societies examined the various methods used to measure performance.

This interest was most prominent at the Fall Joint Computer Conference, one of seven divisions in the FJCC technical program was devoted to measurement, and the sessions in that division were particularly well-attended.

Privacy became more of an international issue in 1972, with at least four high-level committees studying the issue. Three of those groups — one each in the U.S., England and Canada — concluded that computer usage has not wrought the invasion of privacy feared by many civil libertarians.

The committees called for measures, including legislation, to protect privacy, and the U.S. advisory committee to the Secretary of Health, Education and Welfare is expected to reach parallel findings — perhaps somewhat more specific in its recommendations — early in 1973.

And Then Came Agnes

There was a real calamity for users in 1972 — the June floods caused by hurricane-turned-tropical storm Agnes. Hundreds of installations were temporarily wiped out by record rainfalls, and users learned, some too late, that DP centers in low-lying areas should be moved to higher floors.

Whatever action is to be taken, the floods demonstrated the futility of standing to fight the elements, even after physical security and data security measures pass inspection.

Late in the year, the Supreme Court overturned a software patent, and users and lawyers are still unsure of the ramifications of that decision [see story on page 20].

Some sources suggested that, without adequate protection, the software industry might not pursue product improvements so energetically, while legal sources said the decision only proved the failings of patents as protection for software

Year-end review begins on page 17.

Notice to Subscribers

This is Computerworld's special combined year-end review issue dated Dec. 27/Jan. 3. The next issue will be dated Jan. 10 and should reach subscribers by that date.

Court Documents Uncovered

IBM Memos Said to Give Glimpse of Price Strategy

By E. Drake Lundell Jr.

Of the CW Staff

NEW YORK—An internal IBM memo states that an "intensive investigation" of IBM's pricing policies "would reveal the extent of our price control and its supporting practices" in the computer market.

"Such a revelation would not be helpful to our monopoly defense," the memo added.

The document is one of three that have been recently uncovered among the almost 27 million documents filed in the various antitrust cases against the company.

The first memo, dated 1969 and initialed HAF, and found in the files of R. A. Pfeiffer, stated that "the liability of IBM's risk lease is dependent on price leadership and price control."

The memorandum, recently unveiled by the Computer Industry Association which has been poring over the court documents, was probably written by Hillary Faw, who was IBM director of business practices at the time, according to the U.S. Justice Department in introducing the document in its particular case.

"By means of price leadership," the memo continued, "IBM has established the value of data processing usage.

"IBM then maintains or controls that value by various means: timing of new technology insertion; functional pricing; coordinated management of delivery, support services and inventory; refusal to market surplus used equipment; refusal to discount for age or for quantity; strategic location of function in boxes, solution selling rather than hardware selling; refusal to support subsequent use hardware, etc."

The memo, which IBM unsuccessfully sought to keep barred from the record in the case, added that "functional pricing [is] already under pressure from OEM activity. Unbundling will increase that pressure."

The memo also noted that "legal problems are emerging as a result of certain practices which are key underpinnings to price control." The practices are then identified as: "refusal to market used machines and parts," "refusal to sell bills of material" and "maintenance parts prices."

The document stated that "our price control has been sufficiently absolute to render unnecessary direct management involvement in the means . . . ," with the next five lines deleted.

The memo also said that the Department of Justice complaint "specifically covers varying profit margins and an intensive investigation of this issue would reveal the extent of our price control and its supporting practices. Such a revelation would not be helpful to our monopoly defense."

"If IBM's price control is seriously threatened," the memo continued, "either from the market (because of unbundling) or from legal exposure (because of the supporting practices) or from the D.J. [Department of Justice] (because of demands for remedy), it is necessary that IBM management fully understand its import" in order to determine the firm's future strategy vis-à-vis the government's antitrust suit.

The memorandum recommended that IBM "assemble a small, knowledgeable, secure group to think through these issues, particularly in their interrelationships, define the emerging environment and the various new forces which indicate significant new change and map the rudimentary elements of strategy or alternative strategies for consideration by management."

The second document deals with how

(Continued on Page 2)

Comments Wanted

Handprint Guide Proposed

By Don Leavitt

Of the CW Staff

WASHINGTON, D.C. — The American National Standards Institute (Ansi) has just released a proposed character set for handprinting and the public has the next three-and-a-half months to comment on the proposal before it is voted on.

The standard provides the shapes and sizes of handprinted characters to be used in optical character recognition systems, and the same shapes (without delimiting sizes) of characters to be used in man-to-man communications.

Avoid Ambiguity

The purpose in providing such a standard for man-to-man usage, the draft noted, is to enable unambiguous communication between people "when the accuracy of the communication is more important than the speed and flexibility usually associated with the written mode of communication." Its use, then, is seen as somewhat awkward, but accurate in the meaning of each character printed.

Two factors were considered especially important in order to avoid a standard that would be subject to frequent modification — the desirability of including characters for a broad range of applications, and consideration of international standards, an X3A1 committee spokesman said. Beyond that, special consideration was given to "human factors" and the current state of OCR technology, he added.

To ensure long-term stability, parts of the standard are ahead of their time. Some characters are included which, at the time of development of the standard, are not handled by OCR machines available to the public.

The standard actually proposes four

(Continued on Page 2)

Citizens' Committee Formed to Oversee Crime Net Privacy

BOSTON — "One of the first if not the first" citizens' review-type panels to oversee privacy considerations in police information systems was sworn in here last week by Gov. Frances W. Sargent.

The Massachusetts Privacy and Security Council, made up of lawyers and "interested citizens," as opposed to users of computer-based criminal justice systems, will first consider whether the state's police agencies should tie into the FBI's Computerized Criminal History System.

In swearing in the new body, Sargent noted "We have got to be concerned about privacy of individuals. On the one hand we want to be able to compile data, but on the other hand we must protect the individual's rights."

On the Inside This Week

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Ansi Proposes Handprint Standard

(Continued from Page 1)

interrelated character sets. The numeric subset includes each of the digits 0 through 9, the character "X" and techniques for "erasing" single characters or groups of them. Erasing in fact entails crossing out the character or characters so the shape(s) cannot be recognized.

The alphanumeric subset includes the digits, all the alphabetic characters and various punctuation marks, as well as the erasing techniques. The alpha characters are in upper-case form only in the draft standard.

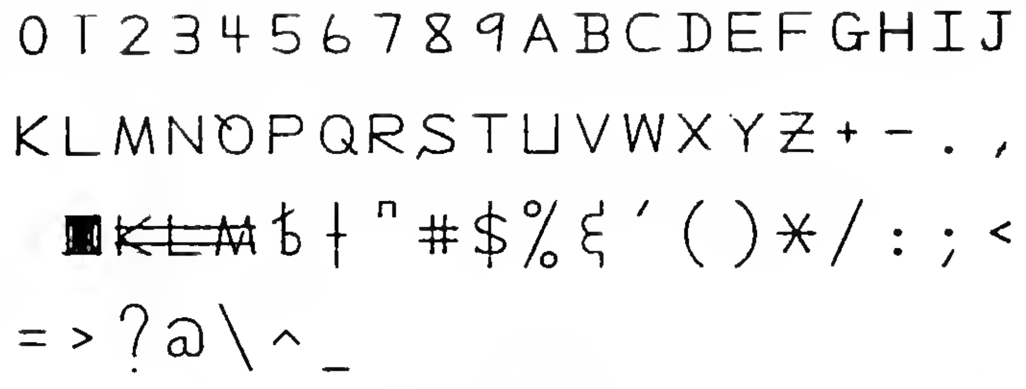
A programming subset adds more special characters to the ones that make up the alphanumeric set. The additional symbols are those required for commonly used programming languages "other than those normally programmed in a 'conversational' mode," the draft said, noting these shapes were added to facilitate use of OCR equipment for program development.

International Needs Considered

Finally, a universal subset adds a range of accented characters and symbols appropriate to the international user needs, including the British pound and Japanese yen symbols. The standard permits intermixed use of the plain and flagged "1," and the plain and barred "7."

The specifications are deliberately written in a somewhat loose and incomplete, precise manner, the draft noted, since the main idea is to achieve a reasonable degree of control "without imposing unduly on the skill or patience" of the person doing the printing. The characters should be reasonably neat "but not necessarily of a quality one would expect of a draftsman," the booklet continued.

Copies of the draft may be requested from, and comments on the proposal addressed to the X3 secretariat, at the Computer and Business Equipment Manufacturers Association (Cbema), 1828 L St., N.W., 20036.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Programming Subset

Canadians Act, Too

REXDALE, Ontario – A wurking group within the Canadian Standards Associatiun was urganized recently to study and recommend a standard for handprint for OCR applicatiun. Chairman of the group Dean F. Nuble of Recognitiun Equipment Canada Ltd. said he is aware of the propused Ansi standard, and feels in general it would serve Canadians adequately, though some changes might be needed to reflect the strong French influence in this country.

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Memo Said to Reveal IBM Strategy

(Continued from Page 1)

IBM prices new systems in order to maximize profit, and was dated April 20, 1970, and sent from T. V. Learson to P. J. Rizzo.

In it Learson noted that the planned prices on the NS2, which later became the 370 line, looked for "a profit at 48 months of some 35%-38% on memory with a profit of 25% on the CPU.

"I am told," Learson said, "that the memory represents one-third of the revenue of this combination and the CPU two-thirds. At the above profit level for memories, they estimate they will be 30% above competition in price.

"Originally, I advised them to price memories and CPUs both at 30%. They readily agree that CPUs cannot be easily duplicated whereas memories can be easily duplicated on a plug-in basis.

"I would, therefore, conclude that we should have a 25% profit on memories, higher price on CPUs and end up with an overall profit in the 32% range."

The Computer Industry Association noted upon releasing the document that a scheme at least similar to the one proposed by Learson was adopted when the firm announced the 370 line, resulting in increased prices to users and harder competition for the independent memory producers.

'Cunfidential' Document

The third document to come to light as a result of recent filings in the various suits against IBM concerns the strategy of lease versus purchase in the computer equipment marketplace, the Computer Industry Association said.

The memo, which is marked "Strictly Confidential" and "Please Destroy When Finished," was sent from T. C. Papes to F. T. Cary, J. R. Opel and D. M. Piecone.

It stated that "a predominant lease market places the greatest financial strain on the competing equipment manufacturers."

An argument against allowing increased purchases of IBM equipment, according to Papes, is that "it is probably that increases in the purchase level have the effect of decreasing the average rental life of the system being purchased," adding that "it is probable that purchase customers grow more slowly than lease customers."

In addition, the memo stated: "It is probable that the vast majority of points purchased by leasing companies will remain on rental for a period sufficient to represent a significant loss of profits by IBM from a total-program point of view."

DP Sweetens Sugar Production

SYDNEY, Australia – Research scientists in the sugar industry are using a mobile computer to apply modern control theory to the production of raw sugar.

Computer control of the crystallization stage has been shown to be practical and the researchers will spend the rest of the current crushing season finding the most suitable values for the variables on which good quality sugar depends.

In the production of raw sugar, the sugar cane is crushed to separate the bagasse (cane fiber) from the juice which is then clarified with lime to remove most of the impurities. The clarified juice passes through a series of evaporators where it is boiled under vacuum to form a syrup containing about 65% sugar. The syrup is next boiled in a vacuum pan until sugar crystals are produced.

Control studies were carried out in the Division of Chemical Engineering by Dr. R. Batterham and Dr. J. Frew. Frew developed a set of operating policies which would allow the greatest possible throughput from the vacuum pan by minimizing the time taken for a 'strike.' (A strike is the crystallization process in the vacuum pan from the time the syrup is admitted until sufficient sugar crystals have been formed.)

Small Grains

The essential objective of the researchers was to operate the pan to produce crystals of a given size in a reasonable time with as few as possible very small grains.

The crystal content of the pan cannot be allowed to become too high since it will interfere with the circulation of the syrup mixture. The most important factor affecting efficient operation is the degree of supersaturation of the pan.

Information on material inflow and outflow is fed into the computer along with various basic measurements such as temperature, pressure, conductivity and change in boiling point. This provides information on the amounts of crystal, water impurities and dissolved sucrose, all of which affect supersaturation.

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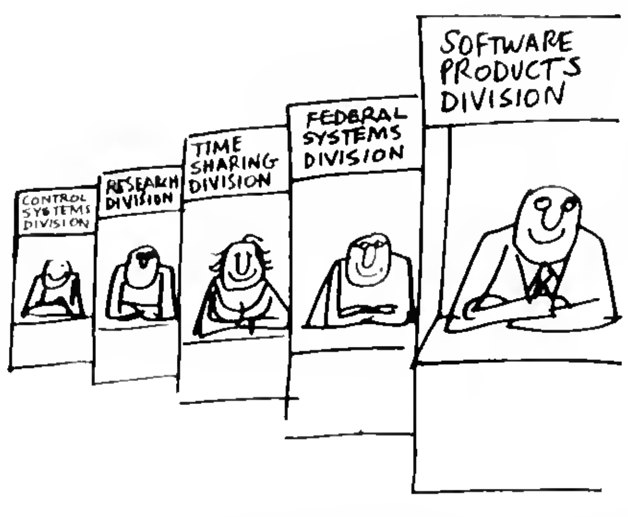

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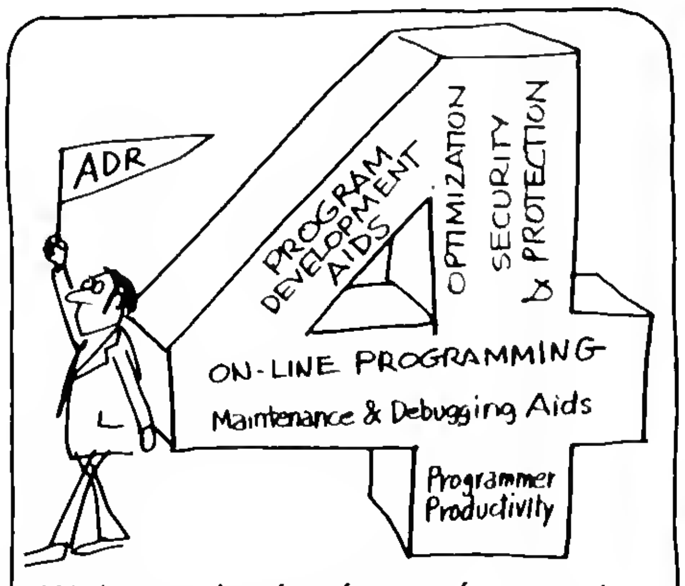

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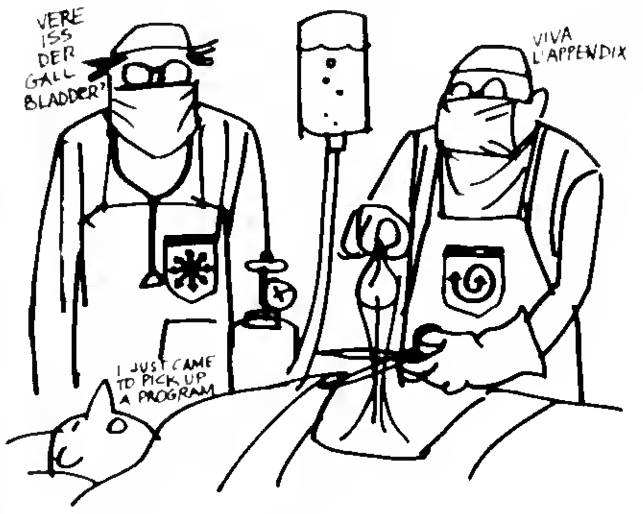
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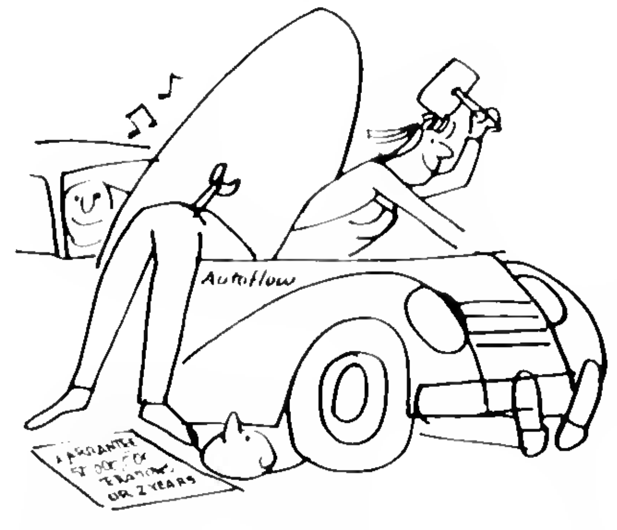

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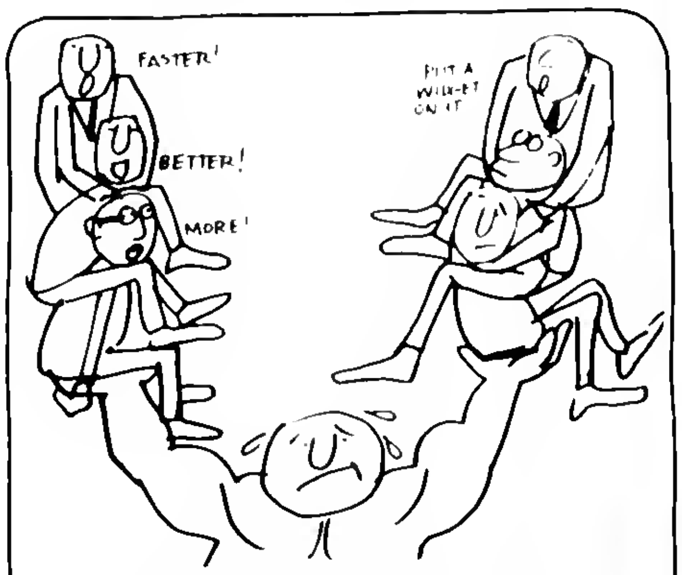
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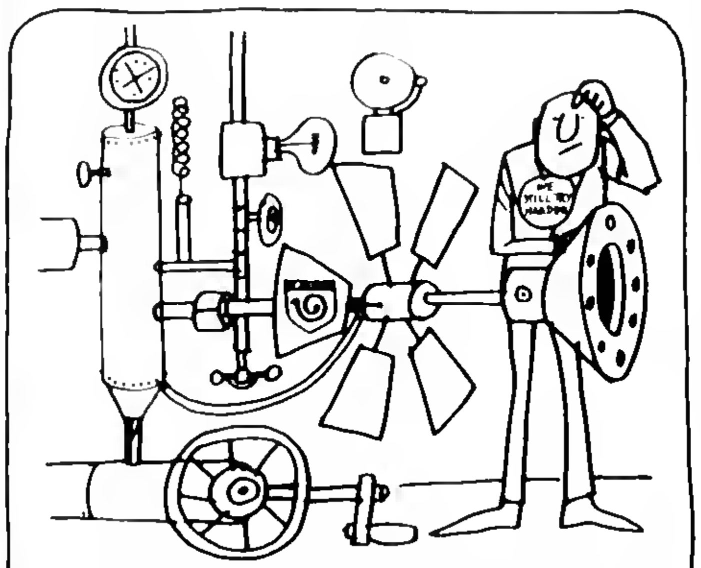

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Child Abuse Data Bank Proposed

HAUPPAUGE, N.Y. – A resolution to establish a computerized system to detect child abuse cases has been proposed to the County Legislature here.

If passed, the resolution would require doctors and other medical personnel to report all children's wounds that require medical assistance, in addition to clearly established cases of abuse or neglect, according to Martin Feldman, author of the resolution. Reports would be made to a central computer, probably operated by police.

Feldman said if more than one case involving the same child appeared in one year, a social service inspector would be sent to investigate. If investigation indicated the child had been abused, court action would begin.

Feldman claimed parents often avoid detection by taking their children to different doctors and hospitals, but his system would solve that problem.

At present doctors are required to report suspected cases of child abuse but few cases are ever reported.

Dr. Milton Rosenberg, president of the Suffolk County Medical Society, said doctors face a breach of confidentiality if they report a case that turns out not to be child abuse.

The resolution was expected to come before the legislature for a vote on Dec. 26.

News Wrapup

East-West 'Think Tank' To Begin in January

VIENNA, Austria The International Institute of Applied Systems Analysis, an East-West computer "think tank," is slated to open near here in January.

The institute, formed by the U.S. National Academy of Sciences, the Soviet Academy of Sciences and similar scientific bodies in 10 other countries, is seen as a way of using systems analysis to solve the global problems of the industrial age, according to George Bundy, father of the project.

The center, located in a renovated 18th century palace, will be a pioneer linking of Eastern and Western computer technologies, according to an Austrian Foreign Ministry official.

The project is expected to employ about 100 scientists and the first research project will probably center on the world's energy resources.

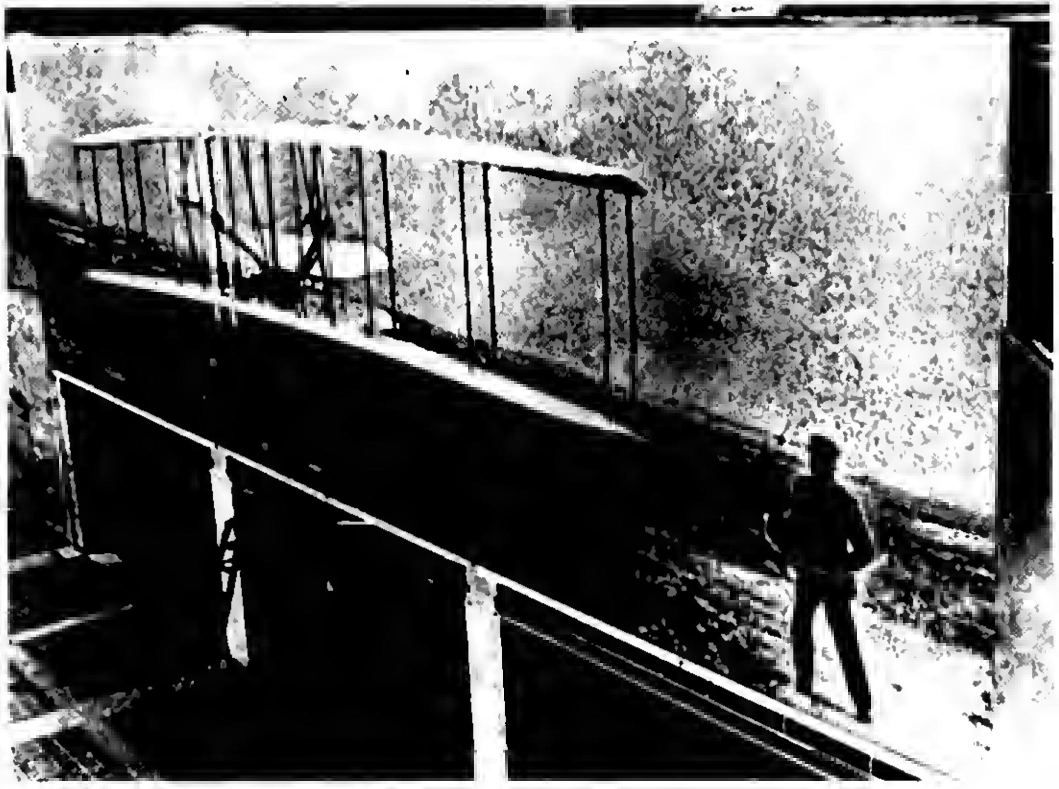
Other areas to be studied include water resources, pollution, agricultural production and earthquake and flood prediction.

Board Recommends Study Of Non-Moving Accidents

WASHINGTON, D.C. – The National Transportation Board has recommended that the Department of Transportation consider interagency negotiations with the Department of Health, Education and Welfare for use of HEW's National Electronic Injury Surveillance System to provide computer-collected information on non-operating motor vehicle accidents and injuries.

Non-operating accidents are those which occur when the vehicles are not moving. For example, sharp trunk lids can be safety hazards, or closing a car door on a person's hand. One measure that can prevent the latter is to put foam between the door and the frame of the car, a board official explained.

The board noted that a "large number" of disabling injuries result from non-moving motor vehicle accidents. It also urged the National Highway Traffic Safety Administration to initiate a study to identify nonoperating hazards and publish consumer information to eliminate or reduce such hazards.



Mosaic Flying Machine

Computer techniques played an important role in the creation of this 60 ft by 20 ft mosaic commemorating the first flight by the Wright Brothers on Dec. 17, 1903. Scientists with Mead Technology Laboratories used advanced photographic analysis techniques and computer-based graphics to determine the placement of the 163,000 one-inch-square tiles that make up the mosaic. Using an ink jet printing process, the firm produced a 25% scale printout of the full work. The print was sent to Italy where the tiles were produced and assembled in 12 in. by 12 in. sheets. In order to assure exact placement of each tile, they were given an identification number by the cumputer system.

State Still Debates Software Tax

Special to Computerworld

SAN DIEGO The issue of whether software in California should be taxed as tangible, personal property was reopened here at a special hearing held by the State Assembly Committee on Revenue and Taxation.

The committee, headed by Assemblyman Joseph A. Gonsalves (D-Alhambra), heard testimony from representatives of the software industry, the Western Electronics Manufacturers Association, (Wema), the California Manufacturers Assosociaion, Burroughs Corp., the Computer and Business Equipment Manufacturers Association and the Association of Data Processing Services Organization.

Also testifying were the state Board of Equalization and local government officials.

A spokesman for Gonsalves said the information gathered will be studied and action may be taken by the committee early next year.

Under the provisions of a law passed earlier this year, software in California is exempted from taxation as tangible, personal property except for basic operating software.

Long-Range Goal

The exemption, however, is only for a two-year period and the committee is attempting to establish a long-range solution.

Spokesmen for Wema asked for legislation exempting all software from taxation, as tangible, personal property.

Or, as an alternative, they asked that the present section of the revenue and tax code that implements the existing law exclude mention of basic operating programs and be made permanent.

The state Board of Equalization favored extending the existing law for another year until more study is forthcoming.

Wind Tunnel Data Blows Smoothly Here

Special to Computerworld

CANBERRA, Australia A new system is being designed and installed for the acquisition of data from the Federal Department of Supply's Weapons Research Establishment wind tunnels at Salisbury, South Australia.

Supply Department officials said a PDP-15/20 computer is the basis of the system and the signal conditioning, interfacing and control equipment have been designed locally.

The first phase of the installation, for the largest tunnel, was installed and commissioned earlier this year and the system will later be expanded to handle data from the blow-down tunnel and the low-speed tunnel.

The system was designed for the acquisition of data, on-line and off-line data reduction and display, and for the recording of data.

An important aspect of the design is that the attitude of wind tunnel models and the position of probes in the working section can be controlled by the computer.

Later, as software is developed, the system will be able to use calibration information to process the raw data on-line

Extra Shift Charge Drops for IBM Users

WHITE PLAINS, N.Y. – Users of IBM key entry and unit record equipment no longer have to pay additional charges for extra shift operation, effective Dec. 1.

Previously, machines of this type were classified under IBM's extra shift plan, i.e., they were subject to additional charges when used by more than one shift of operating personnel.

With nearly 70 models, such as the 029, moved to Rental Plan B, the user will pay only the monthly availability charge regardless of how moch actual clock time eqoipment is used.

This change is seen as an attempt tu present a clarified position on equipment rental. The machines moved to the new rental plan do not have internal metering capabilities and previously payment was on an honor system with the oser informing IBM of any overtime.

As an example of user savings under the new plan, an IBM spokesman noted, a model of the 029 card-tu-punch unit previously rented fnr a base price of $85/mo plus an additional charge of $85/mo if used on additional shifts.

Under the new arrangement such a user will only pay the base price uf $85, he concluded.

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Inmate DPers State's Gain

Special to Computerworld

CARSON CITY, Nev. – Inmate computer programmers at Nevada State Prison who are largely self-taught have done more than $200,000 worth of work for the state since 1968.

The programmers have been working for state agencies such as the Department of Motor Vehicles and the state data processing department, relieving staff programmers of some tasks or filling in during shortages of personnel.

Boyd Marsing, prison education supervisor, said 30 men have completed the academic portion of the program, which was initiated by the Motor Vehicles Department with an assist from IBM instructors.

After the program was underway, advanced inmates taught beginners.

Of the 30 men in the program, 10 found professional programmer jobs on the outside. Seven remain in prison and the rest have found other types of work, Marsing said.

"This is a successful vocational training and rehabilitation program," Marsing said. "But it has also been a real service to the state agencies these men worked for while in prison."

Selection Plan Advances School Busing

By Robert L. Glass

Special to Computerworld

SEATTLE, Wash. – Mandatory school busing for integration is working successfully in the Seattle public schools this year – and computers played an important role in making this success possible.

The busing plan is a product of over two years of preparation . . . and before that, ten years of research.

From the beginning, a computer was given the task of selecting the students who were to be bused. Out of a 58,000 student population in Seattle's north (white) and central (black) schools, about 1,200 were bused – 600 whites bused to central area schools, 600 blacks to north end schools.

The computerized selection process was an application of a technique called Geocoding, by means of which geographic data is encoded and made referencable. Geocoding was developed by the Urban Data Center at the University of Washington.

The Selection Process

The selection process began by building a data base containing all of the street segments in the city in X-Y coordinate form. Then another data base of student addresses was built from school files. Next, the student address file was matched with the street segment file in order to obtain X-Y coordinates for the addresses themselves.

Around each of the schools involved in the busing plan, a polygon was manually drawn, defining its proposed attendance area. The polygons were digitized and matched with the address file, and a resulting report listed students by polygon (school) to which assigned, school presently attending, and grade level. Name and race were included for each student.

The final step in the process was manual. Using such criteria as traffic patterns, population density, and safety, a set of bus stops was selected. Smaller polygons were drawn around each stop. Finally, a selection of students from within the small polygons was made, based on ethnic background and walking distance to the bus stop. These were the students who were bused.

Computer runs involved in this many step process were split between the Urban Data Center's IBM 1130 and the Seattle Public Schools' IBM 360/40.

Future plans call for busing of more students, and automating the remaining manual steps in the selection technique using network analysis theory.

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Editorials

Learning a Lesson

It is refreshing to see a government act on the issue of computers and privacy as the Canadian Government has done, reacting to the release of the "Privacy and Computers Task Force Report."

Admittedly, the issues of computer data banks and individual privacy are complicated.

But there have been several studies on the issues in the U.S. during the past several years and still there is no concrete government action — not even a study commission to recommend guidelines for the government's own data banks.

The U.S. Government, so often the teacher, could do well to learn from Canada.

. . . From Little Acorns

Many of the marvels of today's mainframe systems are glamorously portrayed by vendors as emanating from their in-house development capabilities. This may be partially true.

But much of today's computer technology can be traced directly to the development of the transistor and the associated birth of solid state electronics at Bell Labs.

The first point-contact transistor developed 25 years ago this December is a far cry from the MOS semiconductor circuitry now in widespread use. And 25 years from now, computers will probably reflect the future development of laser, holographic or other technologies not yet born.

'Son, You Gotta Convince 'Em 1984 Is a Few Years Away Yet'

Letters to the Editor

Fear of Failure No Longer Viable

I was considerably disturbed by your recent article "Users Reticent to Move Away from IBM" [CW, Nov. 29], especially the fear of failure expressed by a large number of data processing managers. Frankly, the fear of failure from using non-IBM equipment would have been much more appropriate several years ago.

Today, there are a number of very fine reputable manufacturers who have built up several years' experience of reliability and service.

Any data processing manager who is serious about considering alternate suppliers, can readily check other data processing organizations for their experiences, either with a particular vendor or with independent suppliers in general.

Over the last several years, our data processing organization has experienced severe budget restrictions. This has forced us into investigating and adopting a number of cost reduction measures, including the much dreaded personnel reduction.

More positive measures included third party leasing, purchase of selected equipment, and use of plug compatible peripherals. These hardware actions have netted the company hundreds of thousands of dollars over the last several years in hard cash savings.

Such hardware savings have enabled us to operate within tight budgets and to minimize personnel cutbacks.

The issue is clear for data processing management: we must make basic business decisions that favor our stockholders. If we, as part of the company's management team, are afraid to make such recommendations or decisions, then we lose the right and privilege of being part of the team and should be replaced.

Robert J. Supp
Director
Management Information Services
Varian Associates
Palo Alto, Calif.

Fletcher Jones' Legacy

The two inch, front page story [CW, Nov. 15] hardly does justice to the passing of Fletcher Jones.

Fletcher Jones was a pioneer in the industry which evolved into a giant industry that spawned such periodicals as *Computerworld, Datamation* and *EDP Weekly*.

Jones and company amassed an unprecedented staff of computer professionals, which has made and continues to make historical contributions to the software industry.

Dale H. McCallon
Alphanumeric Publication
Systems Inc.
Los Angeles, Calif.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Long-Range Planning a Joint Venture

Management

By Frank Greenwood, PhD

The manager's hreadth is stronger than the long-term planning at most installations. Day-to-day matters demand our attention and we concentrate on them rather than on tomorrow.

The future is in a much less comfortable realm, since dealing with it requires conceptual skills we seldom practice. Nevertheless, long-range planning is necessary. It provides lead time to meet future events; it is needed for control; and it supplies the basis for current decisions.

The manager of computer services can produce a good, logical five-year plan all by himself. But it will never be implemented. The controller, for example, is entitled to plan where the accounting area is headed and the computer people do not have that authority.

Executives responsible for results must have commensurate authority over their areas, including the planning. Long-term planning must, therefore, be a joint venture. (A user's committee is a good device to achieve this.)

A good planning format begins by defining enduring, general objectives. Next, specific goals are identified which serve as milestones on the way to the objectives. Then, strategies are developed for realizing these definite goals. Last, operating plans are made for guiding the daily work so as to move via the strategies toward the explicit goals, thereby attaining the long-range objectives.

Long-term objectives are enduring and timeless, stating what computer services is to achieve in the long-run. For example:

- To employ people, machines and methods effectively to help solve the increasingly complex problems of computer users.
- To provide for continuing, effective management and operation of computer services.

Goals are operating targets. More limited and immediate than objectives, they are the stepping-stones by which daily operations move toward your long-term objectives. Areas where you will want to specify goals include: hardware, software, personnel, budget, space and applications.

To illustrate:

Software — Specialized packages are paid for by the using departments. Accordingly, the numerical control package — which we expect will "go live" by June 1973 — will be paid for by manufacturing.

Applications — At the planned budget levels, we have some xx man-weeks per year available for systems work on new applications and about yy man-weeks per year of programming help for these new systems. It will, therefore, require approximately five years to implement a particular group of applications divided into the areas of general design, detail design, programming and implementation.

You will probably have mixed emotions about users, as the fellow had who watched his mother-in-law drive his new car off the cliff. Some users who have spent their entire careers in marketing, manufacturing, etc. acquire astonishing (instant) knowledge of computerized systems.

These fellows will repeatedly set you straight on your business, volunteering, for example, how you can design, program and implement a large data base and its reports over a long weekend.

The strategies to use in achieving your goals concern the fundamental factors controlling your success. You will want to consider at least your user, budget and management strategies.

Your user strategy requires defining the needs of your "markets" (internal and outside customers) and then determining how to service them. Your budget strategy involves keeping costs as low as possible consistent with a satisfactory service of effective management in computer services.

Operating plans guide your daily work, ensuring that you follow your strategies to reach your goals, thereby moving toward your long-run objectives.

You probably want to work with annual operating plans. Obviously, the clearer idea you have of what you want to achieve, the higher your probability of doing the job.

Accordingly, each individual in computer services defines his goals for the next year. They need to be spelled out as precisely as possible in terms that are operationally meaningful. Each person also carefully plans how he will reach his goals. The method is up to the individual; what his supervisor looks at is the result.

The individual must have a big say in choosing his goals (or be uncommitted to them) and he must be free to use his own methods (or be crippled by foreign procedures). Clearly, the individual's goals need to mesh with overall operating plans and with your long-range plan.

Producing a five-year plan is demanding. Consider this format: defining enduring, general objectives; identifying specific goals; developing strategies; and making operating plans.

Using the format implies you have real knowledge of your industry; that you can involve your users and pursuade busy, senior executives to help you choose future applications; and that you understand managing by objectives and can produce a meaningful operating plan.

Again, long-range planning is mandatory. It "buys" you lead time to meet future events. You need it for control. It provides you a sound basis for your current decisions.

(Frank Greenwood is director of the computer center at the University of Montana.)

Spooling to the Rescue

Single Form for All Output No Longer Justifiable

The Taylor Report

By

Alan Taylor, CDP

Back In 1957 I witnessed some marvelous new computer output being produced at about 5,000 line/min. It was the Rank Copy Flow Xerographic Printer and what interested me was not so much the speed of the output, as the ability of the printer to selectively change the printed form to match the contents of the particular output item.

For instance, a short form could be used for one- or two-line items, and a longer one could be used for 20- line items. You could also use separate continuation forms, as opposed to repeating copies of the first page.

In a business environment, you could use one form when a payment was overdue, and another one for prompt payments.

There are many advantages to this approach from the point of view of good forms, but 16 years later, we find most computer installations assuming a single printed form must be used for all varieties of output produced by a single computer run.

The same form is used for the person whose accounts are overdue, as for the person whose payments are on time – and even for the person who does not owe anything at all.

The same form is used for people who are familiar with the company's operations as for the person who has never received such a form before. This just does not make for effective communications.

This singularity of forms hurts clean form design. It greatly inconveniences the users of these forms, particularly if the users are the general public.

The general-purpose form design originated because a file has to go to a printer, and it is not practical to stop the printer to change the forms each time a new situation arises. This concept survived the Copy-Flow developments because problems arose with multiple copies, cutting the paper, etc.

These objections were perhaps reasonable, but since then, there have been new developments which can overcome these problems.

Spooling to the Rescue

The answer is "spooling." We no longer run our printers directly off the application program. This is a waste of computer time, as it lock-steps computer productivity to printer operations. Instead, most large installations use spooling of one type or another – files that are to be printed are sent out to a disk, and held until the printing is initiated.

As an example, suppose a program produces output for three groups of people – people who have not paid up, people whose payments are on time, and people who have never received a bill and may not be familiar with the system. This is a common enough situation, and one which can easily be detected in the program.

The people who have not received a bill previously will have a zero carryforward balance, and will probably have a particular code attached saying "add them to the master file." People whose payments are not up-to-date may have finance charges, aging characteristics and a different balance.

The bill design, of course, differs in each case. In the case of the new customer, no reference is needed to previous balance. On the other hand, some explanation of the form itself should be included.

In the case of the person whose bills are not paid on time, some space on the form is needed to handle any charges that are challenged, or if the person seeks additional credit.

With regard to the person who is simply routine, a space can be provided for some appropriate "thank you" for being one of the nice regular customers.

Appropriate Emphasis

Using this type of forms design allows each area to get the detail it needs, with the appropriate emphasis. This could not be done on the computer itself because computer printout with its all-capital-single-size-detail is still one of the biggest drawbacks to the understanding of computer output. So far this cannot be avoided with the equipment most installations have.

But the provision of separate printed forms for each category is perfectly reasonable. The additional amount of systems design work is probably much less than you think, and the printing costs will be very low.

Patch printing that changes the instructions is part of the regular operation, and when the output goes to the disk for normal spooling it can just as well go into separate files. Then, all the output with one form can be printed; the paper can be changed for the output with the second set of forms, etc.

This system would greatly enhance the usefulness of computer equipment. Perhaps 16 years ago the decision to ignore the user and his problems, and so not to use real-time printing of forms was justifiable.

But I cannot see any justification in 1973 when all the equipment needed is already on-site including all the necessary software. All that is needed is a little more systems design, a little more warehouse space and a few more instructions for the computer operators.

Businesses will get improved relationships with their customers, which will more than offset the extra work.

Certainly the concept of spooling should be taught in the data processing schools, and should be discussed in professional conferences. It is not, however, because it generally involves some reprogramming.

Well, I will be surprised if the data processing profession is frightened of additional programming needed to send the output to separate files.

The data processing professionals I know care about their customers and the users. Unless employers prevent it, I am sure the current general-purpose form will shortly be a relic of the past.

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ACM Offers Goodwill (Little Else) to Consumers

Taylor Thoughts

Early in December an interesting news wire story appeared on the front page of the *Boston Globe* – and doubtless in many papers across the country. The article told of an over-30,000-member association that is helping the consumer get fair play from the computer. The editor's decision to put it on the front page indicated how important he judged such a program would be for the public.

The article gave three examples of the program's success. These examples dealt with an insurance company billing system that continued to send out bills after the consumer cancelled the policy; a magazine billing system which charged for magazines the consumer had not received; and a dating system which advertised the use of a computer which was not used (apparently some people are still impressed by the glamour of the computer).

These cases were solved and "in all three cases, the computer was wrongly criticized," said Gordon Smith, executive director of the organization.

So far – so good. But, unfortunately he then went on to generalize from this small sample.

"There is," he explained, "a tendency to unfairly blame the computer for a whole series of social and technical ills which face society today. If there's a mistake on one of your monthly bills, for example, the company may tell you, 'There's nothing we can do. The computer made the mistake.'

"Of course, that's not true. It's the person running the computer who erred. We [the association] want to use our expertise with computers to help clear up problems and counter the 'blame the computer' syndrome," Smith said.

ACM Ombudsman Program

The association concerned is the Association for Computing Machinery (ACM). The program is the Ombudsman Program, started by Walter Carlson, the former ACM president. Carlson thought that computer people could best handle computer-related problems as a public, volunteer service.

The service still operates as an unfunded, volunteer service – the local ACM Ombudsman calls the DP manager concerned, and carefully writes down what the DP manager says.

The program has had some limited successes – like those indicated by Smith – but these successes do not even begin to prove the computer is blameless for the 'whole series of social and technical ills' Smith referenced.

Indeed, the current function appears to be much more an exercise in public relations, which directs blame for these ills away from members of the association, and onto the poor defenseless 'person who is running the computer.'

Smith does not describe exactly who is in error, but it appears to be a shift supervisor who forgot to put some input into the system or perhaps an operator who ran a program with bugs in it.

Shift supervisors and operators are rarely members of ACM, and are technically outclassed by ACM chapter officials. They can be convenient scapegoats, hiding the problems created by the actions and inactions of ACM members.

The problems involved in computer systems are not so much at the operational end of the system – but in the lack of testing, the poor languages and the lack of understanding of how to test.

These problems are not the province of the shift supervisor, but they are the "expertise" of ACM members – particularly of the institutional members – a group of members which includes dozens of universities who are so expert in computer matters that they give (or more accurately "sell") four-year courses in computer sciences.

They should have researched the problems involved in the use of tested and untestable programs, and methods of economic, yet effective, documentation. The absence of such research and teaching may well be the real reason why a test left out of a program is undetected before it goes into production.

Why should the programmer and the operator get all the blame from ACM, while its university members are left blameless?

Nor does Smith mention another class of ACM membership – its corporate members. These are the great computer marketeers – IBM, Honeywell, etc. They are also left blameless. Yet they may have a major role in the "social and technical ills" Smith is so concerned about. After all, they urge computer systems on customers, design new systems and try to find uses for them.

The rush to use – and therefore need – more and more powerful hardware – and to accept flawed software – certainly has some connection with these 'ills'. Yet the ACM Ombudsman program shields this member group also.

There are two points that will probably be raised in favor of the program. One is that the overwhelming majority of ACM members are neither institutional members, nor corporate members. True – but the influence of these members seems to be very great.

Three of the four presidents since 1966 have been professors employed by universities, and the other was the originator of the Ombudsman Program, Walter Carlson. He is employed by the greatest marketeer of them all – IBM.

The other point is that perhaps the ACM Ombudsman Program has not been contacted about any of the "technical and social ills" Smith was talking about.

One would think an association with nearly a million dollars in annual dues would not be stopped by a lack of funds, but currently the Ombudsman Program, like the Social Implication of Computers program, is practically unfunded. Goodwill – yes, but any portion of the funds – no, seems to be the ACM attitude.

Well, perhaps you can help the ACM Ombudsman Program. If you write to me telling about a problem that could be one of those 'series of social and technical ills' being blamed upon computers, I will send it on to Smith, and see whether he still believes the computer is being unfairly blamed.

And we'll see whether the Ombudsman program will continue to offer "goodwill" but little else when it comes to the consumer.

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Random Notes

Storage Option Saves 10% On Deferred Call/370 Use

NEW YORK – Users of the Service Bureau Corp.'s Call/370 time-sharing network may save 10% to 40% of their current storage costs by utilizing the Reference Storage option, which limits them to read-only access to files during prime time, but allows updating in the evening, based on requests entered during the day.

Both Reference Storage and support for 250 char./sec transmission speeds will be available in early February, the company said. The higher speed will allow users to accommodate larger I/O volumes than they can now, a spokesman noted.

'Mark IV' Being Adapted to Run On Univac 9400 and 9700 CPUs

CANOGA PARK, Calif. – By the end of next year, the Mark IV file management system will be available for Univac 9400 and 9700 users and for a broader range of Siemens 4004 users as well, according to the developer, Informatics Inc. Mark IV currently is available for IBM 360/370 and for Univac Series 70 users.

The new versions will be compatible with the current implementations and will operate under Univac's DOS on the 9400, and under Operating System 4 and 7 on the 9700. The new Siemens implementation will function under that equipment's DOS, whereas it is currently limited to the Siemens Tape Disk Operating System (TDOS).

'Scert' Simulates IBM's VS

ROCKVILLE, Md. – Scert, the computer system simulator from Comress Inc., has recently been enhanced to include the capability of simulating IBM's virtual memory system. This support is said to include all of the operating systems: OS/VS1, OS/VS2 and DOS/VS.

The Factor Library, key to Scert's simulation ability, has also been extended to include CPU and other data related to the 370s, the company said.

Comress Inc. is at Two Research Court, 20850.

Beloit Adds Taxt Editing

BELOIT, Wis. – A text-editing service called Supercomp, covering all operations from original data entry at a user terminal through preparation of a final photocomposition at a data center here, is now available to subscribers of the Beloit computer time-sharing network.

Air courier service from Chicago's O'Hare field is used by Beloit to get the finished work to the user between 24 and 36 hours after the request is entered, at a cost of $5 to $7/page.

The company has branch offices supporting local dial-up service in Illinois, New York and Washington, D.C., and is headquartered here at One St. Lawrence, 53511.

Army Validator Says:

Use 'No Data' Tests to Check Linkage

By Don Leavitt
Of the CW Staff

ST. LOUIS – System testing on large applications should never be handled by the programmers who wrote the modules involved, and the first stages of system checkout shouldn't use any data, even in test files, Donald A. Saari argues.

As chief of the readiness validation division within the U.S. Army's Management Systems Agency, Saari feels that isolating the programmers from the testing, at the systems stage, provides an objectivity that wouldn't otherwise be possible.

And the "no data" testing is the best way to locate discrepancies in individual Job Control Language (JCL) statements, in catalogued procedure libraries and in file references without getting bogged down in the details of the instruction-by-instruction program logic, he said, noting that it should have been checked out previously in any case.

Thorough Testing

Each module in any major system must be thoroughly tested before being turned over to the system tester, just as it would be before being released to an end user for production. The main objective of systems testing is to see whether someone familiar with each of the parts can put them together and make the system run, using the documentation provided, Saari explained.

The potential for successfully assembling and executing these components the first time is limited at best, he added, but initial tests using nothing but dummy files should find the weak spots in the system more quickly and at less cost than even very limited test data. Test data inevitably gets the tester into the application logic and that should not be the focus at this level of testing.

Preliminary Validation

Instead the tester should be trying to perform a preliminary validation of the individual module job streams, according to user documentation, and to set up and validate JCL for the systems test/production environment. He has to check out the system libraries in terms of executable programs, and to determine the "reaction" of each module to the system situation.

Master and transaction files for these purposes should be labeled and positioned just as they would be in production so the JCL need not be specially modified for testing.

Depending on the peculiarities of the system, Saari noted, it may be necessary to create some files with one header record to get through initial housekeeping and through the test run.

System test personnel should be on site for the first run-through, Saari said, to make any necessary JCL changes and to guide the operators through the documentation. This initial run will normally require "considerable" hand feeding to carry it through, he warned.

A "no data" test can be run in a fraction of the time any other test, even with limited test data, can be performed, but it is enough to check referencing of program libraries, opening and closing of files, and referencing of transitory data as it is passed from module to module. Missing components of the system are identified, and program-to-program transitions are confirmed or corrected.

More than that, however, the accuracy of the JCL is validated beyond any point that it could be by the individual module programmer, and – in a limited way – the logical processing and interfacing between the user modules, the system software and the required utilities can all be checked out through "no data" testing, Saari said.

'Panvalet' Grows From Librarian Into Broader Management System

OAK BROOK, Ill. – With the current release of version 7 of Panvalet, Pansophic Systems has added significantly to the features and flexibility of the package that started out as a program librarian system.

User exits have been provided to link the capabilities of this package with those of others or of user own-code routines, to build more complete program production systems or to strengthen management control. One user has, for example, linked Panvalet with a Cobol preprocessor.

The new version is said to give the Panvalet user more flexibility than he had previously in his library organization. Variable-length blocks and variable numbers of blocks for each member of a library allow more effective use of the disk space available to the user.

The user may define both the blocking factor and the number of blocks in each directory. Blocks themselves may be from 500 characters to full tracks in length. An individual member of a directory may use as many as 65,000 blocks.

As a security measure, managers can suppress the use of specific Panvalet commands by members of their staffs, although they can override the suppression if the need arises.

The system now supports the concept of supersets and subsets of data on the library. Thus users may define payroll as the overall focus, and subsets of daily data pertinent to that application; and details at that level can be extracted from the superset, or summarized for weekly or monthly processing.

Full backup for deleted programs is another enhanced element of the system.

The DP manager triggers the deletion run, but even when they are taken off the active library, programs are stored on tape. All versions of deleted programs are carried over so the full history of a project could be reconstructed if needed.

The Panvalet utilities have been improved, the company said. The disk dump now is "400% faster" than before and a full disk can be dumped in 15 minutes.

Pansophic is at 1211 W. 22nd St., 60521.

Data Form Change Cuts Census File

WASHINGTON, D.C. – Changing the form of some data while eliminating none, Applied Urbanetics has been able to reduce the full set of 1970 "Fourth Count" Census Bureau statistics from 141 reels of magnetic tape to 17, and the cost of the data base from $9,870 to $3,200.

The modification cuts the cost of working with the data even more dramatically than the cost of originally acquiring it, the company said. Under Fortran, the cost reduction in reading the tapes and getting the data ready for processing may be "in excess of 1,000 to 1" compared to conventional tapes, a spokesman claimed.

The compactness of the data and the ability to use it quickly are made possible through work done by Applied Urbanetics to convert every numeric character string on the standard census file to IBM internal representation numbers, in binary format.

The result is that the numeric data fields are generally smaller than before, and they are immediately processable by 360/370 programs without processing time-costly data conversions. Program cards for reading the tapes and detailed documentation are supplied by the company, the spokesman noted.

The files, recording at 1,600 bit/in., may be purchased on a state-by-state basis with prices ranging from $120 to $240 depending on the number of reels involved. Volume discounts for multiple states or multiple copies of individual states may reduce the per-state cost by as much as 33%, he said, noting again that the entire file cost is $3,200.

The company is at Suite 1103, 1101 17th St., N.W., 20036.

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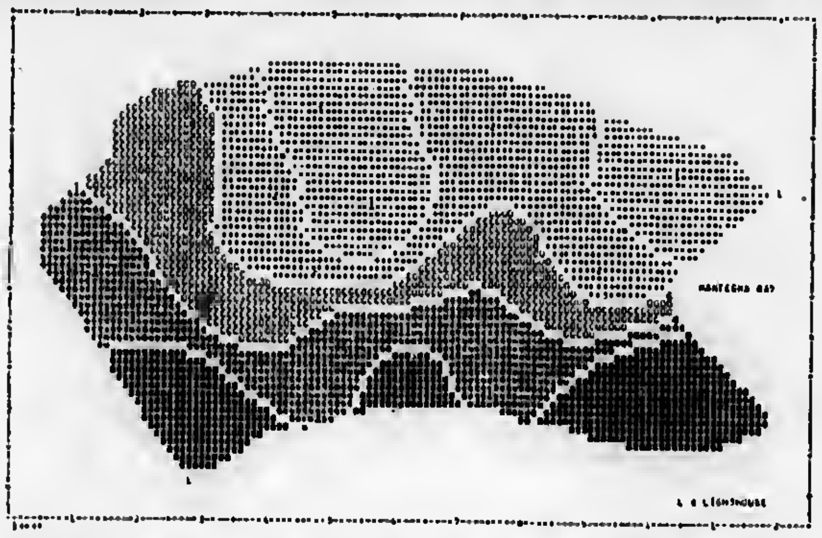
'Symap' Uses Standard Line Printer To Produce Contour, Other Map Types

CAMBRIDGE, Mass. – Users with large-scale 360/370 installations can perform a variety of graphic mapping operations with several different Fortran IV programs recently released by the Laboratory for Computer Graphics and Spatial Analysis at Harvard University. Some use a line printer, some a line plotter as their output medium.

Symap uses a line printer; combinations of standard symbols are used to create a scale of tones from white to black, corresponding to value categories for spatially arrayed information.



Symap-generated contour maps may include area identifiers, symbols for man-made structures and labels for natural features, as well as scaled borders for cross-references.

Contour Option

Three map types can be generated. The Contour option creates lines that connect all points having the same numeric value or height. The area between each pair of lines is shaded with the user's choice of shading.

Conformant maps show the value assigned, or height, of every data point, line or area as defined by the user. Proximal maps tend to be "blocky" like conformant versions, but in this case the areas are constructed by the program with boundaries equidistant from neighboring pairs of reference points. Each area is shaded to reflect the value of its particular center point, a Laboratory spokesman noted.

Input may consist of data, such as census information, identifying the characteristics of predefined areas, or portions of an array, or data showing the characteristics of specified sample points only.

Mathematical computations can be performed on the input data, if necessary, before mapping. Options are provided for the rescaling of raw data and for variations in symbolism used.

Symap has electives permitting flexibility in map size, scale and number of value ranges, as well as the insertion of borders, histograms and what the Laboratory calls "map cosmetics."

Symap uses 150K bytes on a 360/370, along with three temporary data sets. It is currently available, with supporting documentation, and costs $776 for commercial users, $485 for educational or non-profit installations.

Three Dimensions

Symvu generates a three-dimensional perspective view of a statistical "surface" on a line plotter, deleting lines that are hidden from view. Once a surface is defined, a user may produce a wide variety of different views based on rotation, tilt, vertical scaling, symbolism or other characteristics.

The program accepts matrices of values as large as 130 data elements, including, if desired, data generated by Symap.

Effectively, Symvu produces the same types of maps – contour, conformant and proximal – as Symap, but with the added visual impact of the three-dimensional presentation.

Symvu requires a 220K partition or region on a 370, and three temporary data sets plus a data set for the plot tape.

This package is also available now, priced at $575 for business or commercial sites and $360 for schools, colleges and similar institutions.

The Laboratory is at 520 Gund Hall, 48 Quincy St., 02138.

Users Pay Surcharge

Users of Brandaid market planning service [CW, Nov. 1] are charged $6,000/quarter year, in addition to the cost of initial customization and normal operating costs on the time-sharing net on which the package is installed.

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Two Users Learn the Hard Way

Small Distributor Turns Inward for Software Support

By Edward J. Bride
Of the CW Staff

CINCINNATI, Ohio – Many people believe only the largest users have computer time to sell or can modify software across manufacturer lines.

But CM Sales Associates here has done both.

The distributor of Hartz Mountain pet supplies has advanced from an IBM 1130 to an NCR Century 100 and back to a Century 50 over the past three years, changing its own software for the basic application – keeping track of stock and printing invoices.

DP manager and executive vice-president Joseph Cordrey said the company did not want to get into data processing, but there was no other way his small company could operate efficiently.

Even so, the efficiency has not been as great as what was promised, and so CM Sales is serving two other distributors in order to make the computer operation pay for itself, Cordrey reported.

Cordrey was unhappy with the applications support he was receiving, and so he started writing his own programs in a language mix between Cobol and NCR's small computer language, Neat/3.

The Small Systems User

Invoices Before Orders

CM Sales actually prints invoices before orders are filled, since the data base includes inventory updates; if discrepancies do occur, the order filler circles the item and an adjustment is made later.

This method of operation has improved the flow of goods and cash, officials said. Instead of taking a week or 10 days to update accounts receivable, the next day's business is billed as soon as salesmen turn in their day's orders, according to Ernest C. Cordrey, company president and father of the DP manager.

Time Saver

Daily updates of billing files take less than an hour, while the old method was "very laborious and would take between four and five hours," he noted.

Orders are filled much more easily with the "picking list" printed in location sequence, he added.

CM Sales now processes an inventory and billing system for two other distributors, through service contracts.

The customers have punched paper tapes delivered to CM Sales by an overnight courier, and within 24 hours the invoices and reports are processed.

Cordrey said there are no immediate plans to sell the software as a package, but he does plan to process work for additional distributors.

Flood Forces New Self-Reliance

ARCHBALD, Pa. – The floods from tropical storm Agnes may have been a blessing in disguise to some small users, especially those who escaped the brunt of the wind and rain.

American Cabinet Corp. (ACC) here is a case in point.

When IBM had to rearrange priorities to support some larger users, the cabinet manufacturing company was forced to change its posture from 100% reliance on IBM for program support.

Instead, according to controller Richard Watkins, ACC hired its own programmer, and now expects to double machine utilization, obtain more useful data, and make a few dollars selling software on the side.

ACC had relied on IBM's Scranton office for turnkey software, and obtained its first three applications in this manner. Payroll, inventory control, and accounts receivable were developed for ACC by IBM for the user's System/3 Model 6.

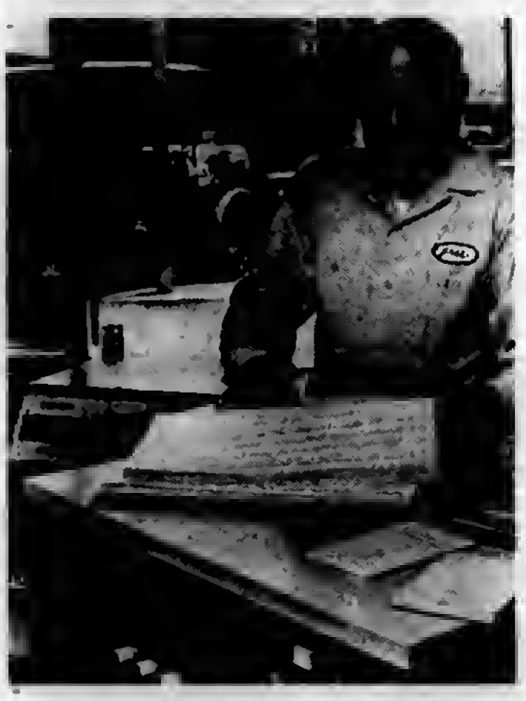
Watkins figured the company had invested some $2,300 in developing the payroll package, which ACC has in turn sold to another user. The company will "turn a profit" on the package if it sells two more, since it is charging $1,000 for it.

But the real value of an in-house programmer comes from program maintenance, not development, Watkins commented. When he was relying completely on IBM for software, he said, the 3/6 was used only about 30%-40% of the time, and now Watkins anticipates a 75%-80% usage.

Additionally, "there is value to information," he commented, and the new applications will help management make better decisions.

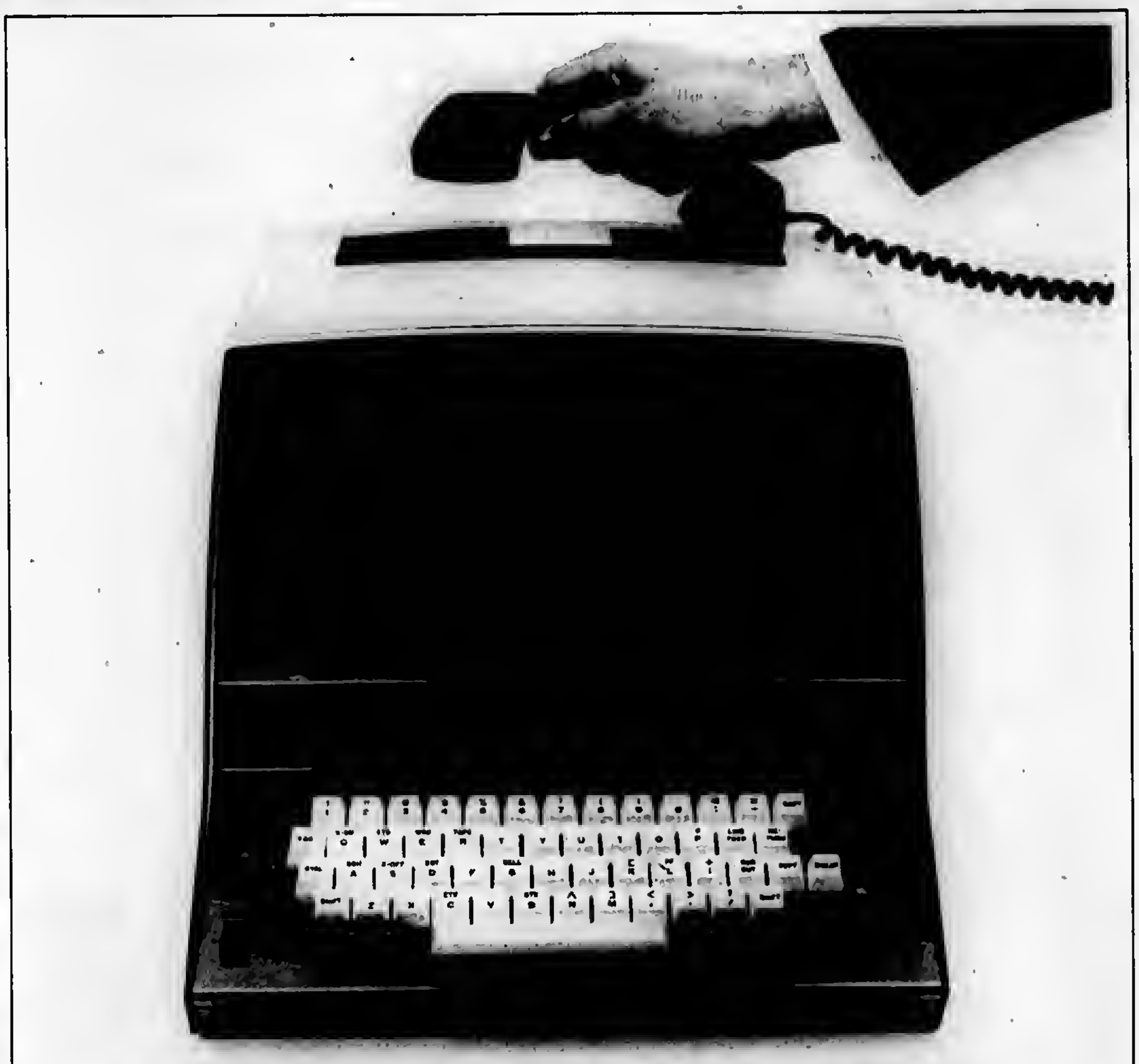
Besides increasing operating time, ACC has taken other hardware options to increase price/performance.

These include an extra 8K of memory, a two-way (right-to-left, as well as left-to-right) printer, and an off-line recorder.



'Garbage Out'

City of Seattle, Wash., employee Jesse B. Brown reviews computer reports that have helped speed up refuse disposal operations. IBM System/7s are used at two solid waste transfer stations to control traffic lights that guide collection vehicles onto truck scales, calculate the net weight of each load and identify and bill the private contractor through his credit card. On peak days, both stations handle up to 3,700 vehicles and 1,500 tons of waste.



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COMMUNICATIONS

Data Briefs

Line Adapters Replace IBM Units, Can Save $500

SUNNYVALE, Calif. – Anderson Jacobson Inc. has a series of modems designed to replace IBM line adapters for use by private line data users.

Designated the Series L 150/12, the units can save users more than $500 on purchase price or $10/mo depending on model, an Anderson Jacobson spokesman said.

The units utilize frequency shift keying and can operate on both 2-wire and 4-wire point-to-point and multipoint data nets. Four models are provided in the series which is a direct replacement for IBM's limited distance, leased line and shared line adapters. Prices range from $165 to $240 and monthly rentals range from $8 to $10, a spokesman said.

First deliveries are scheduled for the first quarter of 1973. The company is at 1065 Morse Ave., 94086.

Burroughs Adds CRTs

DETROIT – Burroughs has introduced the TD 800 CRT display system which can communicate with Burroughs and other CPUs over dial-up and private lines.

The system can also be used as a mainframe console for local input and data display. The TD 800 can operate with the Burroughs TC 500, 700 and 3500 intelligent terminals and has a display capacity of 960 or 1,920 characters.

The 960-character model costs $4,750 or $112/mo while the higher capacity display costs $5,490 or $138/mo. First deliveries are scheduled for the second quarter of 1973.

Minis Get Multiplexer

ANAHEIM, Calif. – General Automation has added to the SPC 16, 40 and 45 minis an asynchronous communications multiplexer that can interface up to 32 full-duplex data sets.

Characters transferred from the CPU to the 1590 are transferred serially to the data set without the need for program control. The multiplexer costs $3,125. General Automation is at 1055 S.E. St., 92805.

Display Has MOS Memory

PENNSAUKEN, N.J. – Video Systems Corp. has added an MOS memory to one of its CRT units. Designated the VST-1440, the display has a capacity of 1,440 characters with a teletypewriter keyboard plus a 10-key numeric pad.

The display can operate at switch-selectable speeds ranging from 110- to 1,200 bit/sec and can generate all 128 Ascii characters. The CRT can display 64 Ascii characters in 80-character lines.

The VST-1440 is priced at $1,995 from the company at 7300 N. Crescent Blvd., 08110.

Resources 'Rationed'

Management Terms Applied to Data Nets

By Ronald A. Frank
Of the CW Staff

ANAHEIM, Calif. – Computer communications networks which include interconnected DP sites also create management problems that parallel classic wholesale/retail relationships. And management terminology, analysis and problem-solving techniques are being applied to these situations.

Despite the technical complexity of many resource-sharing networks, conventional business distribution methods are being used to allocate costs and available CPU time, according to speakers at a session here on computer network management.

Available computer resources are a valuable commodity that must be "rationed" among the organizations entitled to access such facilities, noted Leland H. Williams, president and director of the Triangle Universities Computation Center (Tucc) in North Carolina.

The non-profit computation center is essentially a wholesaler providing its services to subscribers, who in turn retail those CPU resources to the end user, Williams explained. Tucc serves schools and colleges throughout the state.

Management Voice

While the center provides a resource "wholesaling" function to the Institutions it serves, it also provides the "retailer" (the school) with a voice in the management of the operation, Williams said.

Williams

CW Photos by Ronald A. Frank

Uhlig

"Essentially our 370/165 is four separate machines and its resources are rationed out to the schools so everyone gets his fair share," he said.

A similar concept was described by David Grobstein and Ronald Uhlig of the Army's Material Command. The wholesale/retail concept applied to networks of interconnected CPU sites provides a better understanding of the management structure of these systems, Uhlig said.

These nets are similar to business corporations which have centralized production with decentralized control of consumption, he added.

The management of a resource-sharing network would like to collect all available CPUs into one room and then "slice them up" for each user according to how much of the total capability each needs, Uhlig said. But since this is impossible, the users will have to be satisfied with a "ration of time," he said.

Machine Fits Job

A major advantage to the user is that he can now find the machine to fit his job instead of having to tailor his job to fit only one machine, Uhlig said.

With the Tucc concept of one major regional center, the wholesale function remains decentralized, Williams said.

One of the problems with the management concepts' being applied to these network relationships is that the absence of market competition can hurt the user, the session participants agreed.

Bert Herzog, director of the academic Merit computer communications network in Michigan said today's limited state nets are undoubtedly the forerunners of future national resource-sharing networks.

The management of these nets should guard against possible conflict of interest situations where users and retailers are one and the same, Herzog said. If the management complexities of implementing the Merit network for schools had been considered in the design phase, the net might never have been built, Herzog said.

Proposed FCC Registration Plan Could Aid Interconnection User

WASHINGTON, D.C. – A proposed "registration" plan that would expedite approval of customer-owned data and other equipment has been prepared by the Federal Communications Commission's chief engineer.

The registration procedure would be applicable to all non-carrier equipment to be "directly connected to the switched telephone network," according to a report issued by the commission's technical division.

Similar in nature to present type acceptance procedures, the registration plan "would be based on information and measurement data submitted by the manufacturer or prospective user and evaluated by the commission," the report said.

Data submitted by both users and vendors would have to comply with technical standards specified in the FCC's rules and regulations, according to the report. These standards would be based on "the interface criteria developed by the various [FCC interconnection] advisory committees," the study said.

Any independent equipment complying with the technical standards "would be registered and considered authorized for direct connection" to the telephone network, the report said. Testing of equipment for registration would be done "by any organization which demonstrates its ability to perform the required tests."

Stating that technical standards for customer-provided equipment "should be uniform throughout the U.S.," the report urged the "cooperation and active participation of state regulatory agencies," calling this "essential for the effective implementation of an interconnection program."

The distribution and sale of interconnection equipment which does not comply with technical standards and has not been registered present an additional problem, the report said.

"Although we know of no instances where such connections have caused harm to common carrier facilities," this type of problem should be considered, the FCC document said. While the proposed registration program "would cover the user of the devices," it would not directly apply to the manufacturer, it added.

Equipment causing harm to the telephone network could be disconnected but the complainant will have to "demonstrate that an actual harm exists."

A condition of harm would exist if equipment were operating outside the interface standards or if it had been installed so there was "imminent danger" that the interface criteria would be exceeded, the report said.

The registration of equipment would be initiated by the vendor who would pay two fees according to the proposal. For data processing equipment $500 would be required for registration and a "grant" fee of $100 would be required at the time the procedure was completed. Data equipment which included network control signaling would cost $800 for registration and a $200 grant fee.

Buffer Allows TTYs 1,200 Bit/Sec Speed

FALLS CHURCH, Va. – Pulse Communications Inc. has introduced a terminal buffer with built-in memory to allow teletypewriters to operate at 1,200 bit/sec.

With a 4K character memory, the buffer allows Model 33 or 38 TTYs to store data for transmission at the higher speed.

Designated the Model 7132, the buffer eliminates the need for magnetic tape storage and is less expensive than CRTs. First deliveries are scheduled for March 1973. The firm is at 5714 Columbia Pike, 22041.

Now...get both in one... a batch terminal and a time sharing terminal.

No longer is it necessary for the batch terminal user who has a need to access a local time sharing system to maintain a simple, low-speed terminal just for this purpose in the same office. Sycor now has eliminated this expense by adding low speed (100-300 baud) asynchronous communications capability to its Model 340.

A Sycor 340 user can access any major time sharing system, input the problem, receive the solution, and continue with the data entry operation. Captured data then can be batched to the central computer facility at 1200-4800 baud speeds using IBM-compatible BSC procedures.

In addition to this unique dual communications capability, Sycor provides users with T.A.L., a programming language developed specially for data entry applications. A wide choice of peripherals also is available—printers ranging in speed from 30 cps to 200 lpm, 7 or 9 track magnetic tape drives, and a 250 cpm card reader.

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SYSTEMS & PERIPHERALS

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Digitizer Plots X-Y Accurate to .001 In.

BROOMALL, Pa. – The Model 55-R digitizing system measures and records sequentially numbered points of X-Y coordinate data to .001 in. resolution, according to Broomall Industries, Inc.

The system consists of a control unit and a standard digitizing table – measuring 48 in. by 60 in.

Data can be recorded on punched cards, punched tape, magnetic tape, flexowriter or electric typewriter, the firm stated.

Additional features include: full-scale zero offset with preset; output scaling; variable word length formatting; code compatible to standard output devices; automatic readout; multiple output; and keyboard entry into output word.

Optional features include grid round off, constant data entry and additional scaling.

Prices range from $12,000 to $16,500 from 515 Abbott Drive, 19008.

Mini Offered to Insurance Firms

NEW YORK – Olivetti Corp. has announced a minicomputer especially designed for insurance companies.

The P 603 uses microcoding to operate as an electronic accounting computer or as an aid in preparing policies and endorsements, the firm stated.

A user application, for example, would be attaching the unit to other peripherals – e.g., magnetic tape, paper tape reader – to store all the liability and physical damage rates for several insurance companies.

Lease rates range from $165 to $285/mo from 500 Park Ave., 10022 or any branch office.

D-116 Mini Users Get Upgrade

FAIRFIELD, N.J. – Digital Computer Controls, Inc. has released a 32K version of its D-116 minicomputer.

Priced at $18,050, the CPU comes with 32K core memory, power supply, TTY interface and I/O capability for four peripherals from 12 Industrial Pk., 07006.

Tape Drives Go to Interdata Users

SUNNYVALE, Calif. – Users of Interdata 3, 4, 5, 70 and 80 minicomputers can obtain compatible tape drives, according to Bright Industries.

Tape decks are available in two sizes: BI 2600 – 8-1/2 in. deck – or the BI 2610 – 10-1/2 in. deck. Data transfer is variable on both units with tape speeds of 35 in./sec, 37-1/2 in./sec and 45 in./sec.

Data can be transferred on either the program I/O channel, the selector channel or the multiplex channel. Parity and redundancy checking is built into the controller – so the drive is IBM-compatible, a spokesman noted.

Price of the BI 2600 with 1108 controller is $7,532. The cost of the BI 2610 and 1108 controller is $7,623. Delivery is 90 days from 686 W. Maude Ave., 94086.

Shows Internal Activity

Monitor Promises Better System Use

By Michael Weinstein
Of the CW Staff

CHEVY CHASE, Md. – The Micro-Sum monitor from Tesdata Systems Corp. is designed to allow the user to see on a display screen the frequency and duration of internal computer activities and from this information take steps to improve system operation, according to the developer.

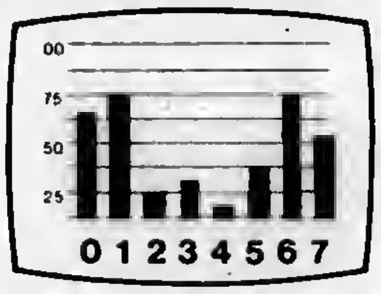
Connected directly to the host computer during program execution, the monitor stores a record of activities and arithmetically averages them for display on the CRT screen in the form of a bar graph with eight bars, a firm spokesman said.

Each bar represents a different system function – e.g., CPU time, time used for disk seeks, channel activity – indicating the percent of time each function was active during program execution, he added.

The user can specify what activities will be monitored – such as peripheral functions, time in system state and time in work state.

System Capacity

This capability allows the user to monitor job processing and determine actual system capacity, determine the optimum system configuration for the workload, schedule job streams for efficient resource utilization, determine which programs degrade system performance and determine system imbalances caused by data organization, the spokesman continued.



Display shows internal activities of system.

For example, the display on this page indicates high CPU activity and low channel activity – bars 0, 2 and 3.

The display shows that the system is highly compute-bound. The possible cause could be scheduling I/O- and CPU-bound jobs concurrently in a multiprogramming environment. This often results when the nature of the jobs in the stream is not fully understood, the spokesman noted.

Corrective Action

Using the information on the display, the user can take corrective action such as entering in the stream an I/O-bound job with a higher priority than the CPU-bound job. If necessary, the user should lower the priority of the job in execution, he suggested.

General options include real-time clock, column printer, magnetic tape transport, report generator software, remote operating stations and remote slave displays.

The Micro-Sum is the low end of Tesdata's System 1000 line which consists of hardware measurement processors ranging in cost from around $3,000 to over $100,000.

The Micro-Sum monitor price of $2,995 includes a basic 8-element processor unit and CRT display, sensors, cabling, video output interface and operating controls.

Options can be added to the basic system with principal features of an expanded system including Boolean logic functions, up to 16 elements with 20 sensors and a tape cassette with playback capability, from 5530 Wisconsin Ave., 20015.

NCR Adds to Century 101 Series To Compete for System 3-Type User

DAYTON, Ohio – The NCR Century 101 computer series has been expanded – at the low end – to compete for IBM System 3, Univac 9200, Burroughs 1700 and Honeywell 105 and 115 users.

The basic 101 system consists of a new printer and disk subsystem configured with the standard 101 CPU, memory and card reader.

The printer (NCR 649-300) has a speed of 300 line/min across 132 columns. Columns are printed six lines to the inch with an option to allow printing at 8 line/verticle in., a spokesman stated.

The 656 disk unit is a single-spindle, dual-cartridge unit with one fixed and one removable disk. Each disk has a storage capacity of 4.9M characters – for a total storage capacity of 9.8M characters. Transfer rate is 312 kbyte/sec with an access rate of 47 msec, the spokesman said.

Internal memory for the Century 101 processor can be expanded from an initial 16K in increments of 8K to 32K, an then in 16K increments to 64K without increasing the size of the CPU. Cycle time is rated at 1.2 msec for 2 bytes, the spokesman added.

Users can increase disk storage by adding a single removable disk – enlarging external memory capacity to nearly 15M characters, or a dual-disk subsystem – one fixed and one removable – for a total storage capacity of nearly 20M characters.

The basic Century 101 is aimed at small or medium-size businesses which are first time computer users or which have small systems and want to upgrade.

Typical of prospective users, the spokesman stated, are financial institutions, hospitals, manufacturers, hotels and motels, educational institutions and government offices.

New printer and disk subsystem is configured with standard Century 101 CPU, memory and card reader.

The basic 101 system must be purchased or leased in its entirety and cannot be obtained as separate units.

Purchase price is $89,520 with a rental cost of $1,820/mo. The optional single removable disk add-on increases the rental by $320/mo, while the optional two-disk enhancement increases rental cost by $415/mo, the spokesman concluded.

Deliveries will commence in the third quarter of 1973.

Reader Gets Line Tracking

MIAMI – An auto line tracking feature, which performs all alignment functions for paper fed into the OCR unit, has been added to the 3001 Dataflow Page Reader, from Datatype Corp.

The cost is $1,000 on new or modified units from 1050 N.W. 163rd Drive, 33169.

Users Get Interface For IBM 1800 Series

TUCSON, Ariz. – Bell Engineering has developed an interface for the IBM 1800 Series of computers that transfers control signals and 16 data bits from microcircuit or relay data sources.

The Model 275 features optically coupled isolation for elimination of ground loops, logic level conversion with adjustable noise immunity, plus adjustable time delays for generating process interrupts.

Data transfer from a source device can be initiated through a source device by generated interrupt or under program control.

Options include built-in status (LED) indicators, a diagnostic test panel and modified logic levels to interface with other computers and/or data sources, the firm stated.

Prices start around $2,500 from 1425 N. Ridgeway Drive, 85712.

We're making history with this new member of the Data Products family. It's the *first* high-performance printer for small computer systems and terminals at a within-reason price. That's our new Model 2230 line printer, the first of a whole new family. It's a real breakthrough with a two-way cost break.

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Mini Makers Move to Become End-User System Source

By Michael Weinstein
Of the CW Staff

With separate releases of new peripherals, Data General Corp. and General Automation Inc. are increasing efforts to appeal to customers as systems sources and not only as manufacturers of minicomputers.

The newest peripherals for use with Data General CPUs include two visual display terminals and a paper tape reader.

The 6010 visual display terminal has a 53-key keyboard, and operates in roll mode, with the text appearing at the bottom of the screen.

The 6012 terminal is an upgrade from the basic 6010, a firm spokesman said, and includes a movable cursor to assist editing from the screen. Other features include the roll, page and buffered modes of operation and a hardware protection feature to format the screen in data entry applications.

The page mode permits data to be edited by moving the cursor and the buffered mode permits editing before the data is transmitted to the computer, the spokesman said.

The paper tape reader is said to be plug-to-plug compatible with existing Data General tape readers and is a unidirectional unit that reads standard 8-channel paper tapes at 300 char./sec.

Price for the 6010 is $2,300 with the 6012 costing $2,700. The reader costs $1,150. The interface for the display terminals costs $200 and the paper tape reader control is priced at $850, from Southboro, Mass.

GA Units for SPC-16 Series

General Automation Inc.'s line printer, disk drive, combination line printer/card reader and combination paper tape reader/punch complete the peripheral line available to users of the SPC-16 series of minicomputers.

The low-speed line printer operates at 200 line/min with a standard Ascii 64-character subset across 132 columns, a spokesman said.

Printing density is 10 char./in. with optional spacing of six or eight lines per verticle inch. The paper feed uses pinfold sprockets to advance paper at a speed of 24 line/sec and incorporates an alarm to advise the user when paper reaches one inch from the bottom of the form, a firm spokesman said. Cost of the printer is $8,500.

Head per track disks come in two versions: 64-track disk providing 128K 16-bit word storage or a 128-track unit providing 256K 16-bit word storage.

Both units use one dedicated head per track for a random-access rate of 8.7 msec. Disk drives are priced at $8,000 for the 64-track and $9,300 for the 128-track model.

Four Speeds

The combination line printer/card reader is available with four speed combinations. The 3355 is a 600 line/min printer and a 1,000 card/min reader for $19,100. The 3356 is a 600 line/min printer and a 600 card/min reader for $18,300. The 3357 and 3358 incorporate a 600 line/min printer with a 400 and 300 card/min reader respectively. Cost for the 3357 is $17,000 while the 3358 sells for $16,400.

The paper tape read/punch combination with controller includes a 300 card/sec reader and a 75 card/sec punch with optional fan-fold paper-handling options at a basic cost of $4,500. Fan-fold option is another $300, from Anaheim, Calif.

Credit System Uses Microfiche

SANTA ANA, Calif. – A credit authorization system from Micrographic Technology Corp. uses the MTC Model 95 microfiche retrieval-display unit as the output device for a Computer-Output-Microfilm (COM) data base.

The system is designed for credit authorization and name-number look-up operations in department stores, the firm stated.

Quick History

The unit can retrieve and display one specific customer history in seven seconds by placing a cartridge into the model 95 and entering the customer account number from the keyboard, the company said.

Units are priced at less than $2,500 from 1815 S. Ritchey St., 92705.

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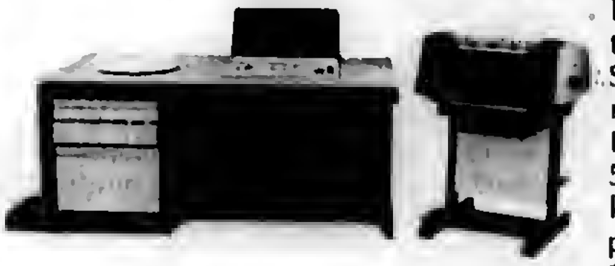

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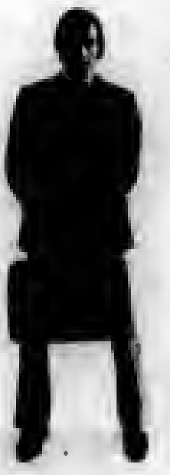

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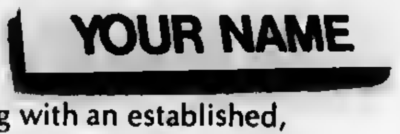

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COMPUTERWORLD

1972: The Year in Review

December 27, 1972 / January 3, 1973

1973 May See Showdown Of IBM Antitrust Suits

By E. Drake Lundell Jr.
Of the CW Staff

The antitrust suits against IBM picked up steam in 1972 and appear headed for a showdown in 1973 with the ultimate conclusion promising to affect computer users and the industry for years to come.

In the private arena, the Control Data suit continued to plod along with a trial date being set for November of 1973. Greyhound got knocked out of the box in its suit – the first to come to trial – but was quickly replaced by a new entrant, Telex Corp., which filed an antitrust action early in the year.

Now Hare This!

But the major action came in the Justice Department suit against the industry leader, with the previously tortoise-like Justice Department beginning to act like the hare.

Justice asked for the complete divestiture of IBM into "several discrete, separate, independent and competitively balanced entities capable of competing successfully in domestic and international markets with one another and with other domestic and foreign competitors."

At the same time, Justice asked that the divestiture action contain safeguards to ensure that present IBM computer users would continue to receive a high level of support during the transition to the multiple company concept.

While most of the suits were still in the pre-trial phase, one managed to come to court last year.

The Greyhound Computer Corp. case against IBM was not strong enough to be sent to the jury, a federal judge in Phoenix ruled, even before IBM had presented testimony in its defense.

The issues in the case were limited to the leasing sector, so the case cannot be considered as a precursor of other suits pending, sources indicated; the sources noted the case proves that other companies suing IBM will have to do their homework carefully if they expect any chance of success.

The ruling is being appealed, and 1973 will see some further action in this area – either a reopening of the case or its final conclusion if the appeals court agrees with the lower body.

Denting the Armor

The Control Data suit, which has been the most active since it was filed four years ago, is as broad as the one filed by Justice and also seeks a form of divestiture. The CDC lawyers have been poring over more than 27 million documents produced by IBM for their inspection under court order, looking for chinks in the IBM armor.

Late in the year, Judge Philip Neville, who is hearing the case in the Federal District Court in Minneapolis, ordered the parties to be ready for trial by November, after several earlier dates were ruled out by CDC and IBM.

It appears likely the case will come to trial, therefore, in 1973, and most likely will not be complete until 1974. Nevertheless, there is a good chance the CDC case will be the first to be resolved.

To replace Greyhound, Telex entered the lists last year, with a suit aimed at IBM's moves in the peripherals business.

Since this suit is limited to specific issues in the peripherals area, it appears now that the presiding judge will set a trial date for 1973, possible even before the CDC case goes to court.

Some sources have estimated the Telex action could be ordered for trial as early as June, but a fall date is regarded as more likely.

The big one, however, that is generating the most interest, is the Justice suit – and some early action appears likely in that case this year.

IBM has requested an early trial on the market definition issues alone for early 1973. This is seen by several legal observers as a move to sidestep the issues of IBM's practices in the marketplace.

Judge David Edelstein of the Southern District Court of New York is anxious to get on with the case, realizing it will probably set precedents for all future

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Lessons Are Learned

Users Have Their Trial by Flood

Computer users learned some invaluable lessons the hard way in June as flash floods spawned by Tropical Storm Agnes ripped into computer centers throughout the Middle Atlantic section of the U.S.

Out of the weariness that gripped many DP people after days of trying to clean up computer centers came the realization that in the future, height would be the best protection in possible flood areas.

State Guidelines

The desire to locate centers above potential high-water marks was evident thoughout the flood-stricken region, and the State of Pennsylvania began to draw up formal guidelines that would require state-run computer centers to be located on higher floors.

DPers in the flood region that ranged from Virginia to upstate New York put in superhuman efforts trying to reconstruct records and get their computer equipment – which was often the backbone of the financial systems of many companies – working without delay.

In many cases, it was a matter of putting their profession ahead of their own personal affairs. Programmers, managers and keypunch operators were often back to work in full force even while their houses and personal belongings had been lost to the flood waters.

In one case, DP personnel shuttled between their destroyed computer center in Harrisburg, Pa., and a quickly located back-up center in Washington, D.C., so that others hit as hard by floods would receive paychecks on time.

Innovation and patience marked much of the effort to recapture data and systems lost to the flooding.

The manufacturers proved to be a great help in this effort, both in locating back-up computer centers for temporary use by the ones affected and by rushing replacement systems to the area without delay.

In this day when more and more people rely on computers for the essentials in life – payrolls, financial records and hospital reports – the reaction of the DP people to this crisis was admirable.

The Trends Tell the Story

For computer users, the significant news of 1972 came mostly in trends and in the continuation of earlier processes (lawsuits, etc.) rather than in specific events.

There was, of course, the June flood, which affected homes as well as businesses. And there was the IBM "blessing" to virtual storage, through its announcement of the 370/158 and 168.

But aside from these two instances, the computer community will be impacted by trends and processes discussed in these pages. Here, as seen by the Computerworld editors are those "headliners" in the approximate chronological order in which they occurred or were recognized.

- Activity increases in IBM antitrust lawsuits.
- DOS/360 is "stabilized."
- Controversy surrounds add-on memories.
- Cobol standardization effort nears climax.
- Breach-of-contract suits continue unabated.
- Flood from Storm Agnes ravages businesses.
- IBM announces its version of virtual storage.
- Computer conferences respond to user needs.
- Privacy, social implications activity heightens.
- "Liberated" users get new savings opportunities.
- Computerized vote-counting runs smoothly.
- Software patent overturned.

DOS/360 User Finds That He Controls His Operating System

By Don Leavitt
Of the CW Staff

The year 1972 was one of transition for the DOS/360 user: he realized he had to stand on his own in planning the operating software he would use, just as he had always had to decide what application software should be installed.

The year got off to a poor start for many users with the IBM announcement that Release 26, distributed in December 1971, was a "functional stabilization" of DOS for the 360. Release 27, the company said, would not operate on the 360, but only on the newer 370 CPUs.

End of the Game?

Users thought this meant the end of support for DOS/360, but as 1972 wore on, the real meaning of the phrase "functional stabilization" became clearer, and by year end most users seemed fairly satisfied. They could stop playing "catch up" with IBM.

IBM isn't going to add any new features to DOS for the 360, but neither will it be putting out new releases – as it has in the past – that require a lot of work on the part of the user without any apparent compensating gain in throughput or operating ease.

Earlier DOS releases that required wholesale rewrites of Job Control Language (JCL) parameters, or recompilations of all programs using Indexed Sequential (Isam) files, have become part of the folklore of 360 installations, and users want no more of that.

User Now In Control

Though "functional stabilization" means IBM is dropping its development work on new features for DOS/360, the resourceful user sees things more positively. He realizes now that he, and not the hardware vendor, controls how and when the operating system will change.

He has begun to look more closely at DOS itself and at the many enhancement packages already available or being announced by independent software houses. It's safe to look at these packages now that there is no danger of IBM's putting out a DOS release that is either incompatible or redundant with what the independents offer.

The non-IBM sources provide an impressive array of features, all generally designed to provide support comparable to that of the IBM Operating System, without the immense core requirements of the larger control system.

The user saw that the dollar costs of the independent software might well be a reasonable trade-off for the unknown costs of conversion to OS on the 360, or

(Continued on Page 19)

The Shows Change And the Users Gain From New Approach

By Edward J. Bride
Of the CW Staff

Users change, and organizations that serve or sell to computer users must also change in order to be successful.

That lesson was learned by the "show" segment of the computer community in 1972, exemplified to some degree by the Joint Computer Conferences.

To make the conferences more meaningful to users, the sponsoring organization moved the meetings to major cities (centers of user population) and beefed up the technical program with user sessions.

The American Federation of Information Processing Societies (Afips) also changed the name of the conferences to the National Computer Conference and Exposition; the NCC will be an annual show, after the former JCCs had been run twice yearly for the past 20 years.

Also on the "show" scene, *Computerworld* became a factor, as the Computer Caravan was attended by more than 18,000 users in nine cities.

It became apparent that the caravan was more than "competition" for Afips, as 70% of the attendees had never attended a national conference.

The caravan also used a different approach to the technical program, with management-level computer users participating in panels and conducting workshops on operational problems, rather than expounding on the state of the art.

The Data Processing Management Association was one of the few non-Afips societies that conducted a conference with exhibits, a practice temporarily abandoned by some other groups.

The Association for Computing Machinery took a different approach to obtaining commercial support: the group rented rooms to software companies, which explained the various benefits of their products to invited customers.

The changing nature of these conferences was viewed by many people as a maturing of the organizations – as the industry had matured – and a realization that the very existence of a conference would not attract the buying public.

Lines Take Shape

1972 Was 'Virtually' Important Year for DP Products

Data Entry Options, Mainframes Popular

By Michael Weinstein
Of the CW Staff

That was the year in which the large mainframe builders filled out their product lines, the minicomputer makers tried to convert from suppliers of minis to systems suppliers and input-device firms took advantage of new technologies to offer users low-cost data entry options.

IBM established a commitment to "virtual memory" with the announcement of virtual storage capabilities for the 135 and 145 – at the same time introducing the 158 and 168 as virtual memory upgrades for the 155 and 165, respectively.

Two months later, the 370 Series was "filled out" with the unveiling of the 370/125 at the low end. A significant feature of the 125 brought all controllers inside the main box making it harder for users to attach peripherals from outside vendors and thus reinforcing IBM's position as a total system source.

Some conjecture has been raised on the possibility of a future announcement of a smaller 370 – for example, a 370/115. The gap between System/3 and a suitable 370 upgrade supports this view, some observers noted. Detracting from this view is that, with existing software, it seems unlikely that IBM can reduce real memory, and still support virtual operations.

The possibilities are a "System/4," a 370/115 without virtual memory or new software and/or firmware.

Other Machines

In May, Burroughs nearly doubled its number of medium-size computers with 13 models added to the 700 Series. This was followed one month later with what many experts consider the most significant release of the year: the B1700.

The small business-oriented B1700 offers virtual memory operations and makes use of micrologic to provide for variable word length – down to one bit – programming through interpreters instead of compilers, and solid state memory.

Honeywell unveiled the 2000 Series early in the year as an upgrade for 200 Series users. The 2000 machines included a communications front-end processor, visual control console, and disk subsystem.

Later in the year, Honeywell added to the 2000 and enhanced its Model 58 so it could play the role of a front end to larger systems.

NCR filled the gap between its Century 100 and Century 200 with the announcement of the Century 101. The 101 offered users 2-1/2 times the speed of the 100 and incorporated a disk subsystem and the ability to handle 256 communications lines.

Identity Problem

The mini builders continued efforts to break away from the role of OEM suppliers with the intent to supply end-user systems.

Much effort was put into building peripherals that operated with the small computers, and by mixing these peripherals, users could get turnkey-type systems.

By taking the basic mini mainframes, adding a few peripherals and software, companies were able to offer complete systems.

The area of data input was quite active with offerings centered around the concept of recording data at remote stations – either on internal memory or some storage media – for later transmission to the central CPU.

Microprogramming was used to create low-cost intelligent terminals capable of performing basic operations such as formatting and editing off-line.

The advantage to the user is that the central processor is left free until it can perform the more arduous computing tasks.

Another tack taken to free the CPU until data is ready was low-cost storage media devices. And in what seems to be a major fight for user support, the advent of floppy disks could be running head-on with the proponents of cassettes.

1972: Growth Year For Software Users

By Don Leavitt
Of the CW Staff

The year 1972 has to be considered a growth year for software.

IBM finally came out with virtual memory support, in effect "confirming" what several other vendors had been offering for many years.

Spectra 70 users found that RCA's dropping out of the business probably was the best thing that could have happened to them, as Univac came through with good strong updates of all the old RCA control software, including a Virtual Memory Operating System.

Announcement of the Burroughs B1700 was seen as potentially important, but users wanted to know how well the concept of a "universal host" machine worked for others, before they committed themselves to the admittedly impressive capabilities of the new machine.

Time-Sharing Matures

During the year, users began to look for means of backstopping or extending the capabilities of their in-house mainframes. Remote-computing networks, with a new maturity lost in the older phrase "time-sharing," introduced a variety of strong communications support systems, as well as improved centralized processing potential, for multi-location users.

Minicomputer makers and independent software houses announced the availability of control systems and packages to make the small machines more useful to the business-oriented end user. DEC introduced its Commercial Operating System.

Hewlett-Packard, Varian and Microdata all extended their support and near the end of the year a small software house in Kansas announced a software-only system that is said to provide virtual memory for the Data General Nova, and, with slight modification, for other minis as well.

Through all the vendor announcements and backed by the hard experience of getting through the economic crunch of 1970-71, users began to take a deeper interest in the basic tools of their trade. Performance evaluation packages, run-time analyzers and Cobol optimization techniques took on new significance, as did scheduling systems. Simulation possibilities were studied as they hadn't been before, particularly by the larger users.

And users became more concerned and more active in the area of standards.

Direct user interest, evidenced by letters and phone calls, has been credited with keeping Report Writer in Cobol, despite the objections of the language purists.

One hundred and fifty or more users have written to Control Data Corp. for copies of Marge Hill's handbook on *The World of EDP Standards*, and more than 1,200 have "subscribed" to the quarterly Codasyl newsletter, the very publication of which is a strong indication of user pressure to know more about what is going on in the hitherto mysterious halls of the standardization groups.

Virtual Storage a Liberator; Are Conversion Horrors at End?

Virtual storage effectively releases the programmer from undue concern about the size of his program, and lets him concentrate on the work to be done, regardless of how much "core" it requires. At the same time, the operations manager is relieved of many of his scheduling problems, as long as he can identify the priorities of jobs.

These freedoms are important, particularly as on-line data base management and inquiry systems grow. But the most important part of IBM's VS announcement last August may lie in a different area altogether: each of the three VS control programs is compatible with an existing version of OS or DOS.

Conversion Horrors

This means users can avoid the conversion horrors that previously marked changeovers from one operating system to another, such as upgrading from the 1400 Series to DOS/360, or even today, in moving effectively from DOS to OS.

Existing application programs would be "extremely compatible" with the VS sytems, IBM spokesmen said. Users have indicated even more success than that. They say there is no need to qualify compatibility: programs used in "real memory" systems run under VS without

OS/VS1, used in the demonstrations of virtual storage, is an outgrowth of the recompilation or any other modification. "real memory" OS/MFT option. User test sites reported some problems but none serious enough to deter them from continuing use of VS.

OS/VS2 is a natural upgrade for the OS/MVT installation, and DOS/VS, scheduled for release next summer, will allow the DOS users on the smaller 370s to gain virtual capabilities.

Partitions Continued

IBM's approach to VS continues the use of partitions to structure the storage, and the use of priorities, available to user programs.

But during execution only active pages are brought into real memory. These are stored without regard to other active pages of the same program.

Paging under software supervision adds to both the amount of real memory and the time that must be devoted to control so there are tasks which tend to be degraded by being run in a VS environment.

OS/VS1 monitors the paging rate and suspends low-priority partitions until the more important jobs can be completed. Even the user whose system was too small, at 160K bytes, to support more than one partition in concurrent operation intended to stay with VS, since the virtual partition he could use was 192K bytes.

Competition Gives Data Users New Equipment and Services

By Ronald A. Frank
Of the CW Staff

Competition was the new watchword in communications during 1972. As AT&T and the Bell System slowly unveiled plans to compete with the independent suppliers and carriers, users discovered they had new alternatives in several areas relating directly to their computer/communications needs.

IBM reacted to the independent front-end suppliers by announcing its 3705 programmable front end for 360/370 users. Designed to upgrade the capabilities of 270X line controllers, the full capabilities of the 3705 should be realized in 1973 when the Network Control Program becomes available to provide message access and control capabilities.

Independents Move

But independent suppliers followed with their own versions. Both Prentice Electronics and PHI Computer Services offered equivalent systems along with Univac.

Users served by Rochester Telephone Corp. in New York began to use an interconnection coupler called a Network Protective Device (NPD) which was the basic element in a plan to simplify the connection of non-carrier equipment.

The Rochester plan was approved by the New York Public Service Commission (PSC), which proved to be one of the more progressive state regulatory bodies when it said interconnection had bred innovation and competition and was here to stay.

At year's end the commission was studying a complaint by the Independent Data Communications Manufacturers Association which claimed the Data Access Arrangement rates were too high and the units themselves were unnecessarily cumbersome.

One of the more innovative communications units came from Paradyne at the Fall Joint Computer Conference with its PIX system. Although limited to an RJE card/printer environment, the PIX system combined interface, modem and line controller into one package for 360/370 users.

The net result made the communications capability as simple as "an extension cord," according to one observer.

After holding a series of nationwide seminars for selected users, AT&T filed plans with the Federal Communications Commission for its Digital Data System scheduled to begin operations early in 1974. And a bulk rate plan was announced that would levy a dual-rate structure on private line users.

Following Microwave Communications Inc.'s (MCI) lead in providing service between Chicago and St. Louis, other specialized carriers moved to serve data users. Western Telecommunications planned to provide data channels under its long haul video facilities and several other carriers began constructing their systems. And Western Union got tentative approval to match MCI rates along the specialized carrier's first route.

After years of watching the Advanced Research Projects Agency network refine its resource-sharing concepts, several firms began to promote a commercial network to provide similar services. While no one was sure exactly how these nets would operate, the concept of interconnecting geographically scattered CPUs of differing types seemed to promise much.

Despite the slow progress of the FCC interconnection advisory committees in setting standards for the use of non-carrier equipment, the number of DAAs continued to rise. And despite the grim warnings of a damaged phone network, none of the existing carriers could produce instances of harm when requested to provide such data to the FCC.

Spotlight on User's Lib

IBM-Independent Battles Mean More Options for User

By Molly Upton
and E. Drake Lundell Jr.
Of the CW Staff

Users emerged from 1972 with more options, in more areas, as the independent manufacturers carried on their battle to offer the most price-competitive equipment.

Scarred by tightening budgets, users turned more than ever before to the various price-cutting ideas from the various manufacturers, as price/performance, cost comparisons and "more bang for the buck" became the slogans in DP shops across the country.

The major trend among the cost-conscious and liberated users centered around keeping the 360s operating as opposed to turning to the newer 370 gear from IBM.

This movement took several forms, including new lease plans, reduced 360 lease rates, add-on memory to make the 360s more cost effective and the introduction of advanced disk and tape equipment for the 360 line.

In addition, the lessors, after first bemoaning the new rent/price ratio on the 370, found they could in fact offer users price savings on 370 equipment, if users were willing to take independent peripherals as part of the deal.

In the fight to keep installed bases installed, the lease rates dropped drastically so by the end of the year the cry of two 360/50s for the price of one 370/145 was becoming familiar.

And with the addition of 3330-like devices, the 360/65 became an effective competitor with much of the 370 line, particularly with the 370/155 in many applications.

And there was a lot of activity in the 3330-compatible area, with most independents offering units compatible with the 360/65 and up even though IBM would only offer the disk system for the 360/85 and up.

One independent even put in a buffer in the controller for a 3330-like disk drive and offered the unit to users of the IBM 360/30, 40 and 50.

The unit, made by International Peripherals and Computer Corp. and marketed by Computer Investors Group, uses the buffer to slow down the transfer rate and make it compatible with the particular mainframe.

Lower Prices

In all cases, the independents managed to offer compatible 3330-like devices at prices that were under the umbrella price set by IBM – and the same applied in the tape area, where several manufacturers began to offer the 3420 tape drive at prices ranging from 10% to 20% off the IBM price.

Add-on memory for the 360 and 370 lines was also pushed by both the independent peripherals makers and the leasing companies, in an effort to remain cost-competitive with IBM.

Even though an IBM threat to withdraw CPU maintenance from systems with memory upgrades over the IBM limits scared off many users from taking advantage of this service, the brave ones were pleased with the results, often canceling upgrade plans.

The withdrawal threat also made many users realize there were third-party maintenance firms in the business who were glad to pick up the business dropped by IBM – and at a savings.

While the independent lessors fought hard to keep the 360 inventory in the field, they also found they could compete in the 370 area.

Several lessors found that by packaging independent memory with the 370 CPU from IBM they could offer the user great savings.

But the savings were time-dependent. For example, a packaged lease plan for a 370 with independent gear might save the user 25% if he signed up for a three-year period, but the savings could go much higher if he were willing to commit himself to as much as eight years.

IBM Antitrust Suits Head for Showdown

(Continued from Page 17)

antitrust actions.

He has been pushing both the government and IBM for quick action on the case, and even though it is unlikely he will accept the IBM motion for a trial on the market issues alone, it appears there will be some sort of trial in 1973.

Several sources believe that Justice cannot get ready for the entire case early this year, but that it might be able to take on at least part of the case.

DOS/360 Users Find They're on Their Own

(Continued from Page 17)

to installation of 370 gear.

Even the fear of "loss of support" for problems within DOS began to fade as 1972 passed. IBM had said, when Release 26 was made public, that normal centralized support would continue for Class A portions of DOS until March 31, 1973. Any problems formally reported by then would be resolved, and any coding changes would be distributed to all DOS/360 installations.

In any case, problems encountered after that date will still be fixed by IBM staffers – free if the solution has already been worked out for someone else; or, for a predefined hourly rate.

Many users have also begun to realize that even though IBM may claim the right to charge for systems engineer support related to DOS after April 1, 1973, there's a good chance much of this work will in fact be provided without cost, just because the local IBM office wants to keep the user happy.

". . . and for 1973, audio response, audio input and three-dimensional graphics. . . ."

WITH OUR NEW 370/STOR, YOU HAVE NO MORE REASONS TO BUY IBM MAIN MEMORY.

370/STOR is the new add-on and replacement main memory for IBM System/370 Model 155. From Cambridge Memories.

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FIRST, IT'S "FAIL-SAFE."

In 370/STOR, if a sector of memory fails, it is reassigned immediately to the highest address level, and the rest of the memory keeps running. That means almost zero downtime due to memory failure. No other memory has such a feature.

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One 370/STOR unit has the capacity of four IBM memory cabinets. We store up to two megabytes in the same space that IBM stores 512 kilobytes. That saves floor space, machine room changes, and time during upgrade. No other memory has such a feature.

FACT #3. IT IS FIELD-EXPANDABLE.

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FACT #5. WE'LL GUARANTEE 72-HOUR EXPANSION.

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Columbus (DPS) (614-224-4081)

Some Program Patents OK, But Trade Secrets Better

In a widely publicized 1972 decision, the Supreme Court struck down a software patent, casting uncertainty on the handful of existing software patents and on the chance for future patents.

Because of the complicated nature of the decision, CW asked attorney Roy N. Freed to assess its impact on users and on the industry. The following article was excerpted from a copyrighted paper.

By Roy N. Freed, Esq.

Special to Computerworld

Despite the Supreme Court's broad rejection in the Benson and Tabbot case of patenting as an appropriate legal measure to prevent unauthorized use or marketing of many types of computer programs, the software industry still must utilize some means to prevent commercial piracy of its valuable properties.

Other measures already have been identified and used for some time, especially reliance on rules barring misappropriation of trade secrets. If, as Justice William Douglas stated in his opinion, programs are deemed to be ideas and information, then the trade secret route for protecting ideas must be used primarily and with maximum effectiveness.

The rather flip characterization of programs as ideas must not be taken to mean that they may not be protected. We are quite accustomed to protecting ideas of various kinds from unauthorized use, as trade secrets and in other ways.

Since it appeared even prior to the Benson and Tabbot ruling that few software programs would be good candidates for patenting, either because of lack of inventiveness or the expense and delay involved in applying for a patent, the negative decision probably does not represent as great a blow as it might seem. The advisability of the trade secret approach simply is reinforced.

However, it seems more important than ever that the scenarios created by the licensing agreements and related business arrangements establish the groundwork for sympathetic judicial intervention where it is necessary to deter or seek redress for misappropriation of programs. Many existing license forms now in use do not provide a sufficiently sound legal basis for such enforcement.

What Is Software Program?

It seems that the Supreme Court, like many people in the industry itself, cannot yet conceptualize the real phenomena of software programs and automatic information processing by digital computer. Computers carry out information processing *processes* in the same way industrial processes are performed by machines under the direct guidance of people. Programs reflect the processes.

In this respect, it is essential to recognize the true nature of punched cards and magnetic tapes and disks. These input media serve as signal generating means. They cause specific sequences of electronic signals to be entered into the CPU. Those signals change the physical conditions of the internal memories of computers, thereby creating tailored electronic circuits, as distinguished from hardwired circuits not so readily alterable, but probably more easily patentable.

The new media either cause magnetized spots to be placed on surfaces of memory media or selectively magnetize memory cores. While the resulting changes in condition might, in some cases, be considered records of information on the new media, they represent physical elements that provide control and guidance of machines that process information automatically.

Justice Douglas apparently was not convinced of those facts, because he could not see in the processes carried out by means of computer programs the "transformation and reduction of an article [e.g., the internal memory, and hence essentially the entire CPU of which it is a part] to a different state or thing," a *sine qua non* for patentability of a process.

Engineering Effort

In the conceptualization effort, it should be recognized that programs are created by engineering effort, the initial result of which is the formulation of engineering design specifications. Industrial processes of the types admittedly patentable or treatable as trade secrets are created in the very same way.

The longstanding practice of characterizing activities involved in creating and using programs with such terms as "writing programs," "program libraries," and "coding" suggests to many people that programs are the result of literary efforts rather than engineering work. This also tends to suggest that programs are ideas in the sense used by Justice Douglas.

Moreover, computers are used with programs to carry out many industrial processes of the type that are either patentable or protectable as trade secrets.

The Benson-Tabbot decision corroborates the view generally held when the case was selected for Supreme Court review – that the program did not provide a good test case for software program patentability.

It well might be that the very basic nature of the method carried out by the program is too general and pervasive, while lacking in major inventive qualities, to justify a patent monopoly; the Court mentioned its many possible applications.

In light of Justice Douglas' careful disavowal of a denial of patentability to all digital computer software patents, it might have been preferable to base the decision on the more traditional and appropriate ground of absence of "invention."

Input Chief Vote-Count Problem

On election eve, programmers and computer operators hoped there would not be a recurrence of the type of vote-count disaster that happened in 1970.

When it was all over the next day, and more ballots had been counted in less time without any major system snafus, the people in charge declared the entire operation a glowing success.

While this initial reaction was correct on the system side there still were many problems on the input side, especially when punched cards were used.

Typical of the punched-card problems were those in Harris County, Texas, where election officials "just had to guess" which holes on the card the voter had intended to punch.

The pressures of counting votes late at night, combined with the large volume of votes, present a temptation to volunteers to simply brush chads off the cards without verifying whether the resultant card represents the voter's true choice.

One official observer in Oregon kept a personal record and found that in some precincts as much as 16% of the ballots had chads removed by officials.

The second major problem arising from using punched cards as the input medium this year was humidity which thickened cards so they were unreadable by the system.

In several places, humidity swelled the cards to the point where they had to be dried and shrunk to normal size before processing could continue.

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'Memory Problem' Partly Solved

By E. Drake Lundell Jr.
Of the CW Staff

"This is the first time I have ever stepped outside the fold, and since [IBM] reacted so strongly, I don't think I will ever go to independent equipment again, no matter how price-competitive."

This was the reaction of one user caught in the middle of the "Great Memory Controversy" that erupted in 1972 between IBM and the users of independently manufactured memory that extended 360 computers beyond the maximum limits available from IBM.

Shocking Announcement

Early in 1972, IBM shocked the user community as well as the suppliers of independent memory equipment with the announcement that it could not maintain central processors with such independent memory upgrades.

And even at year end, after the industry giant had been ordered to continue to offer at least "best effort" maintenance service to such users, many users were still afraid to turn to the independents for fear they would not receive adequate maintenance service.

360/30s First

The immediate cause for the action concerned 360/30s with either 96K or 128K of memory since IBM did not offer more than 64K for the systems, but many users thought IBM would not maintain any CPU with more than the IBM maximum amount of memory.

Even though IBM is required, under the 1956 Consent Decree, to maintain unaltered portions of its equipment that have independent equipment attached, the industry giant said it was "impractical" for its field engineers to maintain the CPUs with foreign memory attached, and "impracticality" is one loophole in the 1956 order.

Orders went from White Plains to several users ordering them to either restore the machines to the 64K size or turn elsewhere for maintenance services.

However, many of the users getting the notices were located outside of areas where third party maintenance firms were offering services – a move that some saw as intentional on the part of IBM.

The initial orders went out only to customers of Data Recall, but immediately the entire body of independent memory makers realized the threat wasn't limited to just one company and could spread to all of them.

IBM Pressure

Users also realized the move was a threat to their continued cost-effective use of 360 systems and that it signaled the beginning of IBM pressure to force them to upgrade to the newer 370 line, whether or not such a move was the most cost-effective.

However, Itel and Advanced Memory Systems entered the fray with a court case against IBM which eventually forced the firm to roll back its non-maintenance order.

Under a stipulated judgment entered in the Federal District Court in San Francisco, IBM agreed to continue to maintain CPUs with Itel-AMS memory beyond the IBM limits on a "best efforts" basis. Subsequently, IBM said it would also offer the "best efforts" deal to all memory manufacturers.

New Twist

During the squabble, most of the memory designers also added a new twist to their systems – a switch that allowed the IBM engineers to bypass the extra memory when diagnosing the system.

With the court case and the new design, the situation settled down, with IBM quickly approving add-on memories from most of the independent manufacturers for continued maintenance.

But the whole situation indicated the enormous power of IBM to scare off customers in the marketplace.

Change of Mind

Several users contemplating upgrading their 360 memory as opposed to getting a new 370 system changed their minds, afraid they would no longer be able to get adequate maintenance, no matter what the court agreement said, and even if they were not personally affected by the moves.

And what worried everyone – from users of independent gear to the suppliers – was that such a controversy could erupt again at any time, since the court order only really affected 360/30s with extended memory.

Committee Seeks Opinions On New Cobol Standard

By Don Leavitt
Of the CW Staff

The public comment period on a draft revision of the 1968 Cobol standard, completed in late summer by the American National Standards Institute (Ansi) technical committee X3J4, was stretched to next Feb. 13, because printing problems delayed production of the 600-page proposal.

The draft, described as a major revision of the old standard, includes a number of substantive changes – additions and deletions – as well as editorial and format changes to improve readability, according to X3 Secretary Robert Brown.

Under the new plan, there will be a nucleus and 11 "functional processing modules" in the complete Cobol standard, rather than the current nucleus and seven modules.

The current Random Access module is to be completely replaced by two new modules: Relative I/O and Indexed I/O. Additional facilities are provided by three new modules dealing with debugging, interprogram communications and communication between a program and its user.

Reflecting the results of a user fight with the Programming Languages Committee earlier in the year, the Report Writer feature is retained in the new standard. The feature has been completely rewritten, however, to remove ambiguities and to provide what its supporters feel is a stronger and more useful facility.

Copies of the proposed standard are available for $6 each from Brown at Computer and Business Equipment Manufacturers Association (CBema), 1828 L St., N.W., Washington, D.C., 20036.

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The Novar 5-50 and 5-60 terminals prepare both hard copies of business papers and tape copies of the information they contain. The data can be transmitted from tape in the batch mode at any time to a Novar 7-70 Data Collector which records the information on IBM computer compatible tape, ready for processing. It's an immediately available telecommunication system.

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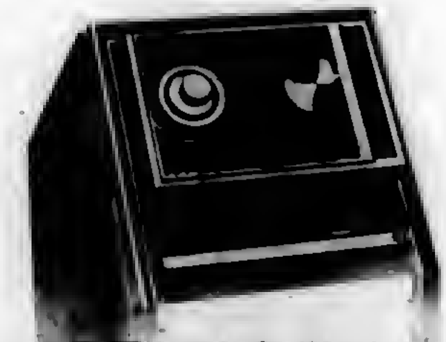

The 7-70 Data Collection System, used with Novar 5-50 or 5-60 communication terminals, provides a complete and immediately available telecommunication system. The 7-70 collects incoming data from any number of terminals and records it on half-inch tape in a 9 track 800 bpi format—IBM compatible and ready for computer processing. And at far less expense than teleprocessing.

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Further information may be obtained from the application of the trustee dated November 28, 1972 filed with the Court or from counsel to the trustee, Messrs. Wachtall, Lipton, Rosen & Ketz, 230 Park Avenue, New York, New York 10017. (212) 889-4300, Attention: Laurence D. Cherkis, Esq.

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Public Sector Shows Its Concern

Demonstrations and bombings have all but disappeared from the U.S. business scene.

Different manifestations of the social implications of computing have followed in their place.

A blue-ribbon committee was formed in 1972 by Elliot Richardson, Secretary of Health, Education and Welfare, who wanted to identify the possible negative effects of a universal identifying number, as balanced by the needs of computer users ' easy access to files of customers and/or clients.

Others Get Attention

While little public attention was paid to the HEW committee, the opposite was true of some other aspects of DP use. The Association for Computing Machinery (ACM) received front-page coverage of its ombudsman program. Prof. Alan Westin's National Academy of Sciences study into privacy was completed and published in book form, and pacifists continued to picket some computer companies concerned with the defense effort.

At year's end, the HEW committee had not compiled its report, but was studying the fruits of two other similar projects, the NAS study and another in Canada.

Danger to Privacy

In each case, it was suggested that a clear danger to privacy does exist and this is evident in the tendency of business and government to consolidate files, but such consolidation is not so widespread as is believed by some people. The citizenry received much of the blame for its unconcern about this problem. The reports also suggested computers can help protect – not just jeopardize – privacy.

Public Awareness

And the public is becoming more aware of computers, recent trends indicate. ACM started its ombudsman program about two years ago, and now about 25 chapters have volunteers trying to rectify computer-type problems.

While the ombudsmen do not generally seek publicity, a wire service recently distributed a story on an interview with Gordon Smith, executive director of ACM, and the "blame-the-computer" syndrome was the main topic.

Last year also saw members of the public taking computer users to court when systems were inflexible or when the users failed to correct computer-related errors.

In two cases, courts ruled that computer users are responsible for their systems, and for the output.

Insurance Battle

An insurance company customer who had let his policy lapse won a court battle, after being involved in an accident and after the company's computer erroneously informed him he had been covered.

In another insurance case, sloppy handling of input documents was ruled insufficient defense against another company which failed to issue a policy after payment was received.

With the public becoming more DP-wise, and with the consumer age bursting upon the scene, these cases were seen by observers as likely precedents for future public-interest lawsuits.

Contracts Clouded by Continuing Suits

Large and small users were active in breach of contract suits against their DP vendors in 1972.

A decision handed down by the U.S. District Court in Philadelphia, if taken as precedent, could make vendors distinctly uneasy about the gaps in standard contracts, which salesmen attempted to clarify.

The jury in the case of Carl Beasley Ford Inc. vs. Burroughs Corp. ruled that a salesman's oral promises were binding, at least where they are made in order to clarify vagueness or generalities in the contract.

In an out-of-court settlement of the giant of user-vendor lawsuits, Trans World Airlines and Burroughs agreed on terms of the $70 million suit filed two years ago by TWA.

Still pending is the suit filed by the International Chemical Workers Union (ICWU) against Singer Corp. and Systemation Inc., claiming that the System Ten installed "completely failed the needs" of the union because it allegedly had not performed "according to the allegations and promises made by representatives of either defendant."

The Ford agency was awarded a $56,000 settlement in the suit which focused on a promise by the Burroughs salesman of complete program development for the agency's E4000.

Burroughs filed a motion for a new trial.

TWA's suit charged that "misrepresentation and breach of contract" had rendered the airline's passenger reservation system useless.

Under terms of the settlement, TWA was absolved from paying its remaining balance of $11.5 million; the airline will have free access to Burroughs computers worth about $14 million in the next 10 years or can choose a $5.5 million cash payment instead.

Burroughs agreed to buy about $2 million worth of TWA software, which includes both reservations systems and control software, an airline official said.

Total settlement value was estimated at around $30 million.

The action filed against Singer seeks about $800,000 in damages. In addition to claiming the system didn't suit its needs, the ICWU charged Systemation, a software and consulting firm with recommending Singer, only to assure its continued employment.

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CI Notes

Data General Gets Own Core

SOUTHBORO, Mass. – Data General is the most recent mini maker to turn to an in-house facility for manufacture of core memories.

The firm, which had originally bought cores from RCA and later from EM&M after Digital Equipment Corp. took over the RCA facility for its in-house core operation, has invested over $500,000 In the new operation.

"We are producing cores at lower cost than the vendors who previously supplied us," according to Harvey Newquist, vice-president for manufacturing.

When DEC turned to in-house core production, it reduced memory prices, indicating the lower production costs made the reductions possible. Data General has not followed that lead yet, even though some observers indicated it might in the future.

Book Covers RFPs, Costs $200

SACRAMENTO – A 14,000-page book which sells for $200 and which will never make the best seller lists has been published by the State of California.

The book, in two volumes, is a request for proposals for the first of five consolidated data centers the state is planning.

The first center – business and services – is expected to cost around $10 million, depending on how well read the book is by seven qualified vendors.

G. Lee Smith, state data processing officer, said the two volumes describe hardware as well as 7,000 programs and 3,000 data bases to be converted.

Aussie DP Industry Growing

CANBERRA, Australia – Prospects for the Australian DP industry look brighter for 1973 than for the past few years.

A marketing manager in Sydney has predicted Federal Government spending will run at the $10 million-a-year level for the next three years.

Although the tenders were released during the outgoing Liberal-Country Party coalition government, the new Labor government is not expected to make any changes. Labor in fact is said to be more committed to GNP growth and productivity expansion than the previous administration.

Supershorts

Lorne K. Lodge has been elected president of IBM Canada Ltd., replacing William V. Moore who has resigned. Lodge has been a director of the company since 1968 and was previously vice-president for finance and administration.

– – –

A patent for the automatic Paging feature in its Delta 5000 and Telterm Series of video display terminals has been awarded to Delta Data Systems Corp.

– – –

Data General has announced plans for direct sales and service of its Nova minicomputer products in Australia.

– – –

Fabri-Tek has announced an agreement with Terminal Equipment Co. to represent Fabri-Tek in Japan.

– – –

Vermont Research Corp. has announced an agreement In principle to acquire OMI Memories, Inc.

– – –

Computek, Inc. announced that production has begun on Its new line of graphics terminals, selling at $3,900.

– – –

Reproduction Systems Inc. has changed its name to Synergraphics.

– – –

Construction has started on the new home of the Vocal Interface Division of Federal Screw Works in Troy, Mich. The firm makes the Votrax Voice Synthesizer.

'It Was a Very Good Year. . .'

By E. Drake Lundell Jr.
Of the CW Staff

For the first time In several years, the computer Industry ended its "season" in an upbeat mood with brighter visions expected to dance in the heads of most marketing men and Industry prognosticators.

But while 1973 promised even bigger sugarplums to most industry figures, there were certain clouds on the horizon that could quickly turn the dream into a nightmare.

After a shaky first half, when the economic signs were mixed at best, 1972 picked up in almost all sectors.

After three laggard years, orders for new computer systems increased solidly in the year with the rise in order rates running around 25% on the average for both minis (up 50%) and larger units, according to International Data Corp., an Industry research firm.

For the first time, too, the orders were up In the domestic marketplace (30%) as well as overseas (20%), where the high order rate had been holding up well during the U.S. recession of the past few years.

Many firms that previously had to depend on their overseas business in order to report Increased profits also found the domestic scene helped bolster earnings during 1972.

But even while the U.S. market was better during 1972 than in the previous two years, the importance of the international marketplace could not be overlooked.

Also during the year, Honeywell was finally able to digest its take-over of the GE computer operation and Univac came to the rescue of the stranded RCA computer customers who were left holding the bag when RCA dropped out In 1971.

Both of these moves are seen as strengthening the mainframe industry, because there is now a relatively stable base of competitors to contend with IBM.

But the necessity for the take-overs worries some sources, who wonder whether the remaining firms will be better able than GE and RCA to compete with IBM.

In the peripherals area most of the firms reported coming off very bad years and showed improved earnings In spite of the rules of the Accounting Principles Board which make it harder to show a profit in a lease-based business like data processing.

(Continued on Page 24)

Firms Showing Profits, Too

T/S Services Flourish, Users Happy

By a CW Staff Writer

MOORESTOWN, N.J. – Time-sharing services have survived the economic crunch that started in 1969 with more than 100 such services operating and "a goodly number of them are now showing profits on their time-sharing operations."

At the same time, there is now "a high degree" of user satisfaction with such services, according to a report from Datapro Research Corp., a computer industry research firm here.

"Total revenues for on-line data processing services including both interactive time-sharing and remote batch processing, rose from just $20 million in 1966 to an estimated $400 million in 1971 and $540 million in 1972," the firm reported.

"This figure is expected to grow to approximately $1.4 billion by 1975," according to the report, "All About Computer Time-Sharing Services."

GE Ranks First

The leading supplier in the time-sharing services market is presently GE, "which entered the business in 1965 and has invested over $150 million in developing an international network that serves the U.S., Canada and Western Europe," the report stated.

In the future, the report continued, the number of users and applications available from the time-sharing services will "increase dramatically."

"There will be several large, nationwide suppliers of time-sharing services," or true information utilities in existence offering a broad range of services nationwide, Datapro noted.

The "smaller time-sharing companies that survive will generally do so by offering highly specialized services to specific types of business firms," Datapro added. "Companies attempting to market plain 'computing power' will find it increasingly difficult to stay alive," the firm warned.

Another trend, Datapro said, is that many current users of time-sharing services will turn to some type of in-house systems to meet at least part of their computing needs.

"Some companies will install small computers (such as the IBM System/3 Model 6 or the proliferating minicomputers) to replace individual time-sharing terminals, while others will install full-barreled in-house time-sharing systems of their own.

"To make up for these lost customers and maintain their growth, the time-sharing suppliers will have to keep on attracting new customers, primarily from the huge ranks of small business firms," the report indicated.

At the same time, Datapro predicted that in the future time-sharing users will have an ever-growing variety of packaged application programs to chose from, either developed by independent software houses or the time-sharing firms themselves.

Riding 'Piggyback'

"Piggy-backing of specialized services on existing time-sharing networks will become much more common," the study reported.

"Finally," Datapro said, "both suppliers and users will begin to take advantage of the fact that the nationwide time-sharing networks can be used effectively for a broad range of communications functions.

"The same time-sharing system that satisfies a company's computational needs and holds its data files will also be able to handle its message transmission, data collection, report distribution and other communications requirements," the firm said.

Pricing Complex

Presently one of the most confusing things about the time-sharing services Is their pricing schemes, the report indicated.

"There has been no general agreement to date as to the best technique for accounting and charging for the system resources used by each customer.

"As a result, prospective users are confronted by a bewildering array of rate schedules," and this confusion makes "cost comparisons very difficult and accentuates the desirability of benchmark testing," the firm said.

Computer Exports Show Gains; Western Europe Largest Buyer

WASHINGTON, D.C. – U.S. exports of computer equipment ran at the $99.8 million level during October, up from the 93.7 million during September, but off from the $101.6 million figure registered during October 1971.

But even though October shipments were off slightly when compared with the year-earlier period, the total shipments through that month reached $956.4 million during 1972, up from the $928.1 million for the first 10 months of 1971, the Department of Commerce's Bureau of the Census reported.

Most of the shipments went to Western Europe, continuing the trend of the past year.

In all, equipment valued at $552 million was shipped to this area, with $360.1 million going to member countries of the European Economic Community and $101.8 million worth of equipment shipped to the UK.

The other countries in the old European Free Trade Association, took equipment valued $72.4 million and other areas in Europe Imported equipment worth $7.5 million during the month.

Shipments to communist areas In Europe totaled $6 million, the bureau reported.

Canadian Market Healthy

The Canadian market continued to hold up well during October, with shipments worth $123.1 million going to this area, making it number two behind the European market.

The Japanese market was close behind Canada, with shipments worth $113 million imported from the U.S. during the month.

Latin America followed next as the most popular market for U.S.-made equipment, receiving a total of $44.2 million worth. Of this, $43.7 million worth went to the countries that are members of the Latin American Free Trade Association, the bureau said.

On-Line Computer Systems Seen Catching Batch Units, Parity Predicted for 1979

ANAHEIM, Calif. – The concept of remote computing – having a centrally located computer accessed from terminals over phone lines – appears to be gaining acceptance, based on the comparison of systems shipped that were batch processing-oriented with those shipped that were designed for on-line operations, according to M. J. Tobias of Honeywell Information Systems Inc.

In 1966, 86% of all systems ordered were of the batch variety and only 14% could be used for on-line applications. Today this figure stands at 70% batch and 30% on-line with predicted parity for 50% batch, 50% interactive for 1979, according to Tobias.

One of the major factors causing the increase in interactive systems, Tobias feels, is population mobility.

1973 Looks Even Better

Industry Outlook Shows Improvement in All Sections

(Continued from Page 23)

The tape and disk makers announced new products to compete with the new range of IBM peripherals and at first glance appear to be able to hold their own against the IBM units, but 1973 will be the big test in this marketplace.

Ominous signs appeared, however, for the tape and disk makers as IBM integrated the controllers on new mainframes introduced during the year, indicating the independents will have less gear eligible for replacement in the future.

And several sources indicated the big replacement money was in the controllers, and that replacing just the disk or tape drives might not be that practical for the independents.

There also continued a movement away from direct replacement of IBM gear with compatible equipment and a move toward-offering a user a piece of equipment with more capability than the replaced IBM gear.

Several sources in the business believe this is the only avenue open to the independent who wishes to succeed.

"We've got to offer better products at essentially the same price or for a little less," is how one of the marketing men for an independent puts it.

But all of the independents agree that if IBM's movement to integration is carried to its extreme, then it may well spell doom for their products – or at least for their profit margins.

Remember This

The independent memory makers bore the brunt of the IBM moves against the independents during the year, having to fight a court battle to get an IBM pledge to maintain CPUs with their products attached.

But after the dust cleared, this segment of the market also continued to grow, supplying the users' needs for products that made their 360s more competitive on a price/performance basis with the newer 370s.

But most of the firms in the memory business also reported some slowing in the projected order rates for new equipment due to the IBM threat to withdrew maintenance.

Particularly in the volatile European market, the memory firms reported users were becoming leery of independent equipment due to the IBM pressures.

In all, though, the memory makers did well with the 360 line and announced plans to enter the 370 add-on and replacement memory market, with a particularly large market seen in the 155 and 165 area for those customers who do not wish to upgrade to 158s and 168s.

The memory makers had a close ally in this area in the form of the leasing companies, which had the largest stake in keeping the 360 cost-competitive in order to keep their 360 inventory in the field.

The rates for leased systems also dropped during the year, providing a break to users, and also helping keep the inventory in the field.

The leasing firms found they could also compete in the IBM 370 marketplace by offering mixed systems made up of independent memory and peripherals on a long-term basis, proving the financial resiliency of this industry segment.

But trouble could loom for the lessors, who will be hard pressed to maintain their 360 equipment in the field as the 370 becomes more and more price-competitive.

Since most of the firms have to keep the equipment out for at least five more years to get their investment back, it appears there will be some significant moves in the next two years in improving the price/performance of the 360 beyond present limits.

Closing the Gap

In the data entry side of the business, the gap between OCR and key entry began to close, with several manufacturers offering systems which combined the advantages of each technology, a trend that is expected to continue into 1973.

Many sources still expect a shakeout, however, in the data entry business, which will probably be evidenced by mergers between firms, such as the deal announced at year end between Inforex and Scan Data.

The software industry also showed signs of revival during the year, but on a lesser scale than in the heyday of this sub-industry.

Many software houses reported profits or at least lower losses than in the past few years, but most of those profitable firms had retrenched so they were essentially sticking to the areas where they knew they could do well instead of extending their resources into many different areas.

The biggest question mark for the industry remains: the possibility of future IBM actions.

Both the memory producers and the independent peripherals firms learned during the year that IBM actions could significantly impact their business and wondered what the new year would bring.

The data entry people also have the same worry, since IBM is marketing a new data entry unit in Europe and there remains a possibility the firm will bring the same or similar device to the U.S.

IBM 'Iron Curtain' Lifting In Disk Market: Calcomp

ANAHEIM, Calif. – Calcomp can "coexist with IBM" in the disk memory sector of the computer peripherals industry, Calcomp President Lester Kilpatrick assured stockholders at the firm's recent annual meeting here.

"The iron curtain surrounding IBM as the dominant supplier of disk drives has been penetrated by independent suppliers," he said, adding, "Calcomp can coexist with IBM and continue to grow on the market share available to independent producers."

Calcomp's position in the OEM market, where it sells to such firms as Burroughs and Univac, gives it "a broad production base permitting Calcomp to achieve competitive costs and competitive prices in the end-user market," he told the stockholders.

OEM sales, he said, will be around $24 million in fiscal 1973 out of total revenues of around $73 million.

The firm's position in the graphics field continues to account for around 35% of the firm's revenues and plotting equipment is growing at an annual rate of around 20% yearly, he added.

Some IBM 360 users have chosen to upgrade their existing systems rather than jump into a 370. Many others still face this important decision. And if you're in that position, our January 31st Supplement will be a big help.

Supplement Editor Ron Frank has talked to users who have upgraded, and he'll report on their experiences and problems. Cost factors will be analyzed, and there will be a survey of the various tools now available for upgrading a 360, including:

- Independent main memories
- Faster peripherals
- D.A.T. Boxes
- Independent software

If you're a 360-user, you'll find a lot to think about in this supplement. And if you have a product or service which can up a 360, you should be advertising in this special supplement. Your Computerworld representative can give you all the details. Or call Judy Milford at (617) 332-5606.

On January 31st, Computerworld shows "How to upgrade your 360."

$725 Telex Cassette System Can Replace Punch Units

MINNEAPOLIS – The Termi-138E, a digital cassette memory subsystem designed to replace paper tape reader/punch units, has been developed by the Telex Communications Division.

The Termi-138E operates at switch-selectable rates of 10-, 15- or 30 char./sec. An EIA RS-232-C data interface is provided and single or multiple ports are available. Incremental operation is at 30 step/sec, with fast forward/reverse at 330 char./sec.

The unit features editing capability and control via data-encoded commands.

In quantities of 100, the Termi-138E sells for $725 each from 9600 Aldrich Ave. S., 55420.

Core Has 20-Bit Word

MARINA DEL REY, Calif. – A modular core memory with 20-bit word size and a full cycle time of 650 nsec has been developed by Ampex Corp.

The 2065 may be expanded modularly from 8K to 64K words of 20 bits each, or up to 32K words of 40 bits each.

The 2065 is based on the 1800 Series and costs less than 15 cent/bit in quantity. Delivery is 60 days from 13031 W. Jefferson Blvd., 90291.

Micro-Ram 3000 Produced

HAWTHORNE, Calif. – The Micro-Ram 3000, a complete 8K by 20 semiconductor memory system on a single card with an 180 nsec cycle time, has been unveiled by Electronic Memories.

With an access time of 200 nsec, the Micro-Ram 3000 can be used to enhance equipment currently using the Micromemory 3000, an 8K by 18 core memory.

The Micro-Ram 3000, priced at $4,800 in quantity, is available from 12621 Chadron Ave.

Other OEM Products

Memorex Corp. has announced the 651 Flexible Disk File, an enhanced version of the Memorex 650, with track-to-track access time of 10 msec with 10 msec settle time. Average latency time is 80 msec.

The 651 will be available with the new FD/IV Flexible Disk Cartridge that gives a minimum of 50 million passes, evenly distributed, and dual 60/50 Hz operation, the firm said.

Available in production quantities in the second quarter, prices start at $750 per 651 unit and $6.50 per FD/IV from San Tomas at Central Expressway, 95052.

– – –

Intel Corp., Santa Clara, has introduced a set of Proms and TTY tapes that enable an MCS-8 microcomputer prototype to assemble programs for itself, translating symbolic assembly language into MCS-8 machine language.

When the Proms are plugged into an SIM8 prototyping board and the tape is read into the RAMs on the board, the prototype is ready to perform the functions of a Fortran IV assembler run on a conventional computer.

Assembly program on eight Proms plus one tape costs $648, while assembly program on tapes only costs $200 from 3065 Bowers Ave., 95051.

– – –

The ruggedized MK-28M keyboard from Data Electronics Corp., Burlington, Mass., is currently being delivered with 2-key rollover and data interlock features. N-key rollover can be ordered as an option.

The keyboard uses a standard 5-level Baudot code. Optional codes include Fieldata and Ascii.

– – –

A "roll your own" modem capable of operating to 600 baud has been introduced by the Data Products Division of OPT Industries, Inc., Phillipsburg, N.J.

New OEM Products

The 1030 Series modems, which are end-to-end compatible with the Bell 103 family of data sets, are contained on a single printed circuit card assembly with signal accessibility via card edge connector. The number of pins, designated outputs and size of the card may be determined by the user. The major functions are assembled in modules and frequencies, speeds and interfaces can be changed in the field.

Four standard interfaces are offered: EIA RS-232 B/C, Teletype, CCITT and DTL/TTL.

A complete card sells for $95 in OEM quantities from 300 Red School Lane, 08865.

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The Series 555 solid-state keyboard available with a choice of five standard roll over features has been announced by Licon, Division Illinois Tool Works, Inc., Chicago. The LSI allows programming of any number of functions that a customer requires, the firm said.

– – –

A disk pack recording head designed for the updating of 2314 systems to 3330 capability has been introduced by Information Magnetics Corp.

The Model R 4400-NT read/write head writes at 200 track/in., with a recording density of 4,400 bit/in. The unit has the same flying height as conventional 2314 heads.

– – –

The Matrix Systems Corp., Chatsworth, Calif., has announced the Model 5000 Programmable Controller designed specifically to control Matrix's line of programmable coaxial and low-frequency switching systems.

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Data Processing Digest, October 1972.

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Iomec Purchase Plan Allows Intermixing

SANTA CLARA, Calif. – Iomec is offering a new purchasing plan to OEMs that allows them to intermix peripherals to get quantity discounts, plus a beefed-up service and support program.

Under the purchase plan, if an OEM orders 50 disk drives and 50 tape drives, for example, he will be eligible for the 100-unit price on each since the total order is for 100 units.

The Peripheral Package Purchase Plan will affect the firm's six different electro-mechanical peripheral lines: magnetic tape drives, mini-cartridge tape drives, large and small cartridge disk drives, and a paper tape line including readers, punches, and handlers and line printers.

Almost all OEM vendors offer discounts to large quantity purchasers on units in a single product line, in effect passing on the savings in selling cost to the purchaser, since the selling costs for 100 units, for example, is not that much greater than for 10 units, the firm explained.

In addition to the purchase price savings, the plan should also help reduce the cost to the purchaser in time spent on contracting for equipment, Avery Blake, marketing vice-president pointed out.

"A firm will only have to deal with one vendor for an entire range of peripherals instead of with several," he said, "which should save it considerable costs in evaluation and contracting."

Support and Service

The beefed-up support and service program includes the design of interfaces to enable OEMs to interface the peripheral equipment to their specific minicomputers, Blake noted, adding that the service should be particularly beneficial to systems houses.

"Multiple peripheral vendors, various types of interfaces, noncompatible software, and narrowly trained service technicians" cause problems for systems houses, both in their own facilities and in their end-user locations, he noted.

To overcome this problem, Iomec is offering interfaces and software support systems designed to common standards in order to provide complete compatibility of all peripherals, he said.

In addition, it is offering field service contracts not only for its own equipment, but for complete systems, even systems that include non-Iomec peripherals.

The Iomec Customer Engineering Department will provide service for the entire system built by the OEM, whether it is in the OEM's shop or in an end-user location, he stated.

The maintenance service for minicomputer systems will also be offered directly to end users on a contract basis, he said, allowing the end user with a mini and peripherals from several sources to get service from one source for the entire system.

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Executive Corner

MINNEAPOLIS – Fabri-tek has promoted two executives in both the end user and OEM sides of its marketing organization.

Ken Geason, formerly national sales manager for end user products, became director of end user marketing, while Gerry W. Larsen, formerly national sales manager for OEM core memory products, was promoted to director of OEM marketing operations.

Other Moves

■ James P. Scheer was named general manager of data management systems for the Products and Systems Division of Lockheed Electronics. Scheer was formerly Northeast regional manager for Mohawk Data Sciences.

■ Michael Kaminsky Jr., formerly a division vice-president of operations at Norden Division of United Aircraft Corp., has joined Sanders Associates as corporate director of manufacturing.

■ William R. Roach, previously with Paul Hardeman Engineers and Constructors, has moved to Optimum Systems as vice-president of finance. He was also named corporate secretary.

■ Philippe Yaconelli, founder of Caelus Memories and previously president of his own development firm, has re-joined Memorex in the new position of general manager of the business products group.

■ Norman M. Lourie moved to Cambridge Memories as vice-president and group product line manager for end user products.

■ Time Data appointed two regional sales managers: Richard E. North in the Western region and David D. Arnold in the Southwest region.

■ James S. Rice was appointed president of Data Technology Corp.

■ Thomas E. Scholten has been appointed president of CFI Memories, Inc.

■ John C. Lewis is now vice-president, marketing for Xerox Computer Services.

■ Robert L. Reis has joined Capidyne Systems Corp. as vice-president, marketing.

■ John H. Ward was named vice-president, business products operations at Control Data Corp.

■ James G. Turner has been named general manager and chief operating officer of Data Recall Corp.

■ Frank H. Tyaack has been appointed general manager of the process equipment and systems division of Westinghouse Electric Corp.

■ Arthur Blumenfield has been named a vice-president of OEI Computer Systems Division of Vernitron Corp.

■ Paul J. Fimett has been appointed director of scientific systems at Informatics Inc., Western Division.

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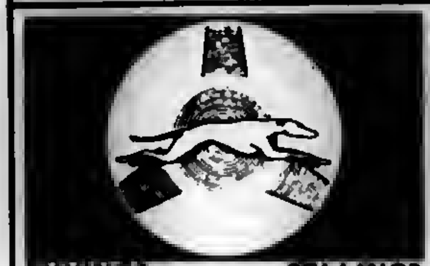

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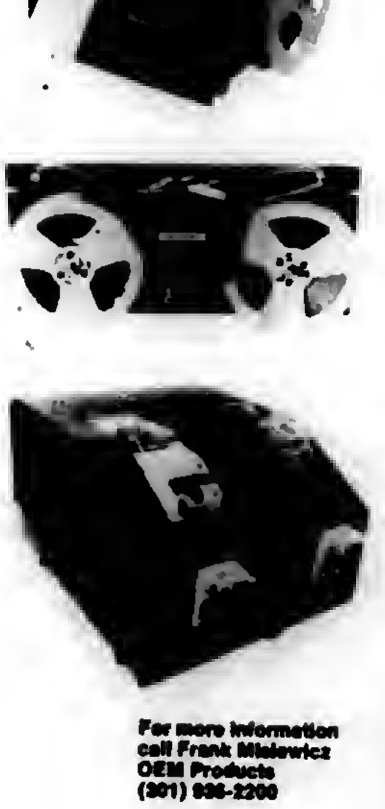

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Hewlett-Packard, General Automation, Varian Report Improved Earnings

Three West Coast mini makers – Hewlett-Packard, Varian and General Automation – have all reported better results for recent financial periods.

General Automation, Inc. in Anaheim, Calif., had a record-setting first quarter ended Oct. 31, with revenues totaling $5.9 million and earnings before extraordinary credits reaching $389,000 or 19 cents a share.

The company's backlog rose to $8.2 million, an increase of almost 200% from $2.8 million in the same quarter last year.

"Sales grew steadily for our SPC-12 and SPC-16 families of minicomputers, while they doubled for our System 18/30 line and quadrupled for our 18/30-based Disk Monitor Systems," observed President Lawrence A. Goshorn.

Response has been "greater than anticipated" to the firm's Adapt-A-Path production control units, he added.

With a $355,800 or 15 cents a share tax credit, first quarter earnings rose to $725,000 or 34 cents a share.

In the same quarter last year, revenues totaled $2.9 million with earnings of $104,000.

Good Year at H-P

The year 1972 was "an extremely good one" for Hewlett-Packard in Palo Alto, Calif., with virtually all operating divisions reporting a "higher level of business," observed President Wiliam R. Hewlett.

"Incoming orders amounted to $506.9 million, up 28% over orders of $397.5 million in fiscal 1971," he noted.

For the year ended Oct. 31, the firm reported a 26% increase in sales and a 57% increase in earnings.

"Our domestic markets were particularly strong, with orders from U.S. customers rising 32% to $307.2 million. International orders were up 22% to $199.7 million," he said.

Revenues rose to $472.4 million from $375.1 million last year. Earnings, including a $1.2 million or 5 cent a share extraordinary gain from a change in valuing inventories, totaled $37.6 million or $1.42 a share, up from the $23.9 million or 92 cents a share in the preceding year.

Varian Emerges

Varian Associates, also in Palo Alto, emerged from last year's loss of $6.7 million to earnings of $3.7 million in the year ended Sept. 30.

"Our markets are returning to more normal levels and together with improvements in operations are resulting in increased profits," observed President Norman Parker.

In the fourth quarter, earnings totaled $1.7 million or 23 cents a share compared with $603,000 or 9 cents a share a year ago. Revenues rose to $53.3 million from $49.2 million.

In the year, earnings, including a special credit of $258,000 or 4 cents a share, totaled $3.7 million or 52 cents a share, compared with last year's loss of $6.7 million, including a $2.5 million special charge. Revenues rose to $203.8 million from $187.2 million.

Continuing Operations Seen Boosting EM&M

LOS ANGELES – Trude C. Taylor, president of Electronic Memories and Magnetics Corp., is expecting Santa to leave a present of over $1.5 million from continuing operations in the year ending Dec. 25.

There may also be a slight profit from discontinued operations, and some hefty credits from the sale of Electroglas Inc. and tax loss carryforwards, he said.

EM&M expects about two-thirds of its estimated $74 million in sales this year to come from its memory products group, and the rest from Indiana General group, which makes magnets and ferrites.

Taylor predicted growth from a new line of core memory and disk memory systems currently in production and said he sees "continuing growth in demand" for core memories at "satisfactory profit margins."

The firm's entrance in 1972 into the end user market, with its engineering, marketing and start-up costs, "resulted in about a $2 million loss," Taylor said, but added "end user operations are expected to show a positive contribution in 1973 and quarter-to-quarter improvement."

In fiscal 1971, EM&M's earnings of $2 million from continuing operations dissolved into a loss of $8.5 million after a $908,000 loss from discontinued operations and special charges totaling $9.6 million.

Taylor said fourth quarter earnings this year will better the third quarter net of $1 million, and he sees substantial improvements in operations in fiscal 1973.

"The computer industry is coming back to life. It was still depressed on the manufacturing level in 1971 and early in 1972," he said.

He expects the industry's "up" cycle to continue through 1974, he said.

Nickels & Dimes

Itel has obtained a $7.5 million line of credit from the Bank of America for a subsidiary of the Itel Finance Corp. Funds will be available through August 1973 at the prime rate and will enable Itel to finance full payout lease receivables associated with its 370 packaged lease program.

$$$

Memorex has signed an agreement with First National City Bank for a $5 million revolving line of credit to finance leasing of Memorex computers and equipment abroad. Memorex expects this amount will be fully used by the end of the first quarter of 1973.

$$$

Control Data's computer operations were solidly in the black for the fourth quarter although possibly not "quite at the level" of the third quarter, and CDC is looking for earnings increases in 1972 and 1973.

$$$

Commerce Group's DP leasing volume increased 63% in the first half of fiscal '72, but an accelerated depreciation rate held second quarter earnings to 12 cents a share. Commerce recently acquired the computer leasing business of NCC Industries, N.Y.

$$$

Leasco has declared a quarterly dividend of 10 cents per share payable on Jan. 15 to shareholders of record Dec. 15.

$$$

Central Data Systems has announced a 7 cents per share year-end dividend to be paid Dec. 29 to shareholders of record Dec. 19.

$$$

Name Change: Computer Terminal is now Datapoint. Stockholders also voted to increase the authorized number of common stock from six million shares to 10 million shares.

$$$

Revenues, writedowns and soft demand and price erosion for used computers were cited as primary reasons for the $1 million loss at The Computer Exchange for the year ended June 30, but the first quarter improved, with earnings of $33,794. Backlog as of Sept. 30 exceeded $1 million.

$$$

Advanced Computer Techniques showed a turnaround from a six-month loss of $48,134 to earnings of $51,407 in the period ended Sept. 30, on a 40% rise in revenue.

$$$

Greyhound Computer shareholders were awarded a year-end dividend of 20 cents a share on Dec. 15.

Computerworld Stock Trading Summary

TRADE*QUOTES

All statistics compilad, compulad and formattad by TRADE★QUOTES, INC. Cambridga, Mass. 02139

CLOSING PRICES 7HURSOAY, DECEHBER 21, 1972

SOFTWARE & EOP SERVICES

EXCH		PRICE 1972 RANGE 111	CLOSE OEC 21 1972	WEEK NET CHNGE	WEEX PCT CHNGE
O	AOVANCEO COMP 7ECM	1- 3	1 7/8	- 1/4	-11.7
A	APPLIED OATA RES.	3- 7	3 3/8	- 5/8	-15.6
O	APPLIED LOGIC	1- 4	3	0	0.D
N	AUTOMATIC OATA PROC	72- 99	90 1/2	-4 3/8	-4.6
O	8RANOON APPLIEO SYST	1- 2	1	0	0.0
O	COMPU7ER OIMENSIONS	4- 14	3 3/4	- 3/4	-16.6
O	COMPUTER OYNAMICS	1- 4	1	- 1/4	-2D.0
O	COMPUTER NE7WORK	3- 7	3 3/4	- 1/4	-6.2
N	COMPU7ER SCIENCES	4- 10	4 3/4	- 3/4	-13.6
O	COMPUTER TASK GROUP	1- 2	1 1/4	0	D.0
O	COMPUTER TECHNOLOGY	3- 8	3 1/8	- 1/8	-3.8
O	COMPU7ER USAGE	7- 14	9 3/8	+ 1/4	+2.7
N	COMPUTING & SOFTWARE	14- 28	14 1/4	-1 5/8	-10.2
O	COMRESS	1- 3	1 1/8	0	0.D
O	COMSMARE	5- 10	7 7/8	- 1/4	-3.0
O	DA7A7A8	4- 9	4	0	D.0
O	EDP RESOURCES	2- 8	2 3/4	0	0.0
A	ELFCT COMP PROG	1- 5	1 3/4	+ 1/8	+7.6
N	ELECTRONIC OATA SYS.	43- 65	54 1/2	- 1/4	-0.4
O	INFORMATICS	5- 11	5	- 1/4	-4.7
O	I.O.A. OATA CORP	1- 3	3/8	- 1/4	-40.0
O	KEANE ASSOCIATES	4- 7	3 1/2	0	D.0
O	KEYDATA CDRP	7- 13	10 3/4	- 1/4	-2.2
O	LOGICON	4- 9	4 1/2	- 3/8	-7.6
A	MANAGEMENT OATA	4- 10	4 3/4	0	0.D
O	NATIONAL CSS INC	8- 31	26 1/2	-2 3/8	-8.2
O	NATIONAL INFD SRVCS	2- 5	1 3/8	- 1/8	-8.3
P	ON LINE SYSTEMS INC	8- 29	24 1/4	+ 1/4	+1.0
N	PLANNING RESEARCH	6- 17	6 1/8	- 3/8	-5.7
O	PROGRAMMING METHODS	2D- 25	24 1/2	-1	-3.9
O	PROGRAMMING & SYS	1- 2	1 1/8	- 1/8	-10.0
O	RAPIOA7A INC	5- 27	24	-1 1/4	-4.9
O	SCIENTIFIC COMPUTERS	2- 4	1 5/8	- 1/8	-7.1
O	SIMPLICITY COMPUTER	1- 5	4 1/2	+ 3/4	+20.0
O	T8S COMPUTER CENTERS	3- 6	3 1/8	D	0.0
O	TCC INC	1- 3	1/2	- 1/8	-2D.D
O	TYMSHARE INC	7- 11	9 1/4	- 1/8	-1.3
O	UNITED DA7A CENTER	5- R	6 1/4	+ 1/4	+4.1
N	UNIVERSITY COMPU7ING	9- 26	10 3/4	- 3/8	-3.3
A	URS SYSTEMS	6- 10	7 1/2	- 5/8	-7.6

PERIPHERALS & SU8SYS7EMS

EXCH		PRICE 1972 RANGE 111	CLOSE OEC 21 1972	WEEK NET CHNGE	WEEX PCT CHNGE
N	ADORESSOGRAPH-MUL7	32- 49	32 1/8	-1 7/8	-5.5
O	ADVANCEO MEMORY SYS	12- 23	14 1/2	- 1/2	-3.3
N	AMPEX CDRP	5- 15	6	- 3/8	-5.8
O	ANDERSON JACO8SON	4- 8	4 1/4	- 1/8	-2.8
D	8EEHIVE MEOICAL ELEC	1- 8	6 3/8	- 1/2	-7.2
A	ROLT,8ERANEK & NEW	5- 21	11 1/4	-1 1/4	-10.0
N	BUNKER-RAMO	9- 14	9 1/4	- 1/4	-2.6
A	CALCOMP	9- 25	10 3/4	-1	-8.5
O	CAM8RIOGE MEMORIES	9- 15	12 1/4	+ 1/4	+2.0
O	CENTRONICS OATA COMP	6- 2R	19 1/2	-4	-17.0
O	CODEX CORP	6- 25	18 3/8	- 3/8	-2.D
D	CDGNITRONICS	2- 5	2 1/2	- 1/4	-9.0
O	COMPUTER COMMUN.	1- 7	2 3/4	+ 1/4	+10.D
A	COMPUTER EQUIPMENT	2- 4	2 1/4	- 3/8	-14.2
O	COMPUTER MACHINERY	7- 13	9 1/8	- 1/2	-5.1
O	COMPUTER TRANSCFIVER	2- 9	5 3/8	- 3/8	-6.5
A	COMPU7EST	3- 9	4	0	0.D
N	CONRAC CORP	24- 39	30 1/2	-3 1/4	-9.6
A	OATA PRODUCTS CORP	3- 7	3 3/4	- 1/8	-3.2
O	DATA RECOGNI7ION	1- 5	1 1/4	0	D.D
O	OATA 7ECHNOLOGY	2- 5	2 1/4	- 1/8	-5.2
D	DI/AN CONTROLS	D- 8	4 1/8	- 1/4	-5.7
N	ELECTRONIC M & M	3- R	4 7/8	- 1/4	-4.8
O	FA8RI-TEK	2- 5	4	- 1/8	-3.0
O	GENERAL COMPUTER SYS	6- 16	6 3/4	+ 3/4	+12.5
N	GENERAL ELECTRIC	59- 70	68 3/8	- 1/8	-0.1
N	HAZELTINE CORP	7- 13	8 1/4	- 3/8	-4.3
O	INFOREX INC	20- 36	20 1/4	- 1/4	-1.2
O	INFORMATION DISPLAYS	1- 5	1 1/2	0	0.0
O	INFORMATION INTL INC	R- 25	12 3/4	- 1/2	-3.7
A	LUNOY ELECTRONICS	8- 14	8 1/8	0	0.0
O	MANAGEMENT ASSIST	1- 2	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	23 1/4	- 5/8	-2.6
N	MOHAWK OATA SCI	12- 27	11 5/8	-1 1/4	-9.7
O	OOEC COMPUTER SYST.	6- 12	5 1/2	- 1/4	-4.3
O	OPTICAL SCANNING	6- 16	5 1/2	- 1/2	-8.3
O	PER7EC CORP	8- 17	8 1/8	- 5/8	-7.1
O	PHOTON	6- 15	6 1/4	- 1/8	-1.9
A	POTTER INSTRUMEN7	7- 21	8 5/8	- 3/4	-8.0
O	PRECISION INST.	3- 13	3 1/2	- 1/4	-6.6
O	RECOGNITIDN EOUIP	5- 15	7 3/8	-1	-11.9
N	SANDERS ASSOCIA7ES	13- 21	17 1/2	- 3/8	-2.0
O	SCAN OATA	5- 13	5 5/8	- 1/8	-2.1
O	STORAGE TECHNOLOGY	17- 39	27 5/8	-1 3/8	-4.7
O	SYCOR INC	7- 11	9	- 1/4	-2.7
O	TALLY CORP.	8- 15	10	- 1/8	-1.2
N	TEK7RONIX INC	34- 64	49	-1 1/2	-2.9
N	TELEX	6- 15	5 3/4	- 3/4	-11.5
O	WILTEK INC	10- 26	16 3/4	- 3/4	-4.2

SUPPLIES & ACCESSORIES

EXCH		PRICE 1972 RANGE 111	CLOSE OEC 21 1972	WEEK NET CHNGE	WEEX PCT CHNGE
O	8AL7IMORE 8US FORMS	5- 9	6	0	0.0
A	8ARRY WRIGH7	9- 14	11 3/4	-1 5/8	-12.1
A	OA7A OOCUMEN7S	17- 26	21	-1 1/2	-6.6
O	OUPLEX PROOUCTS INC	8- 16	9 3/4	- 1/2	-4.R
N	ENNIS 8US. FORMS	6- 10	7 1/8	+ 1/8	+1.7
O	GRAHAM MAGNE7ICS	15- 27	14 1/2	+ 1/4	+1.7
O	GRAPHIC CONTROLS	11- 15	12 5/8	- 1/8	-0.9
N	3M COMPANY	76- 86	82	-3 3/8	-3.9
O	MOORE CURP LTO	42- 57	56 3/8	+ 7/8	+1.5
N	NASHUA CORP	48- 62	57 1/4	- 7/8	-1.5
O	REYNOLDS & REYNOLD	37- 77	45 3/4	-3 3/4	-7.5
O	S7ANDARD REGIS7ER	14- 20	18 1/8	+ 3/4	+4.3
O	TA8 PRODUCTS CO	14- 23	22 1/2	+ 3/4	+3.4
N	UARCO	21- 28	22 1/2	- 7/8	-3.7
A	WABASM MAGNETICS	6- 11	6 3/4	- 1/8	-1.8
N	WALLACE 8US FORMS	21- 26	24 5/8	-1 3/8	-5.2

COMPUTER SYSTEMS

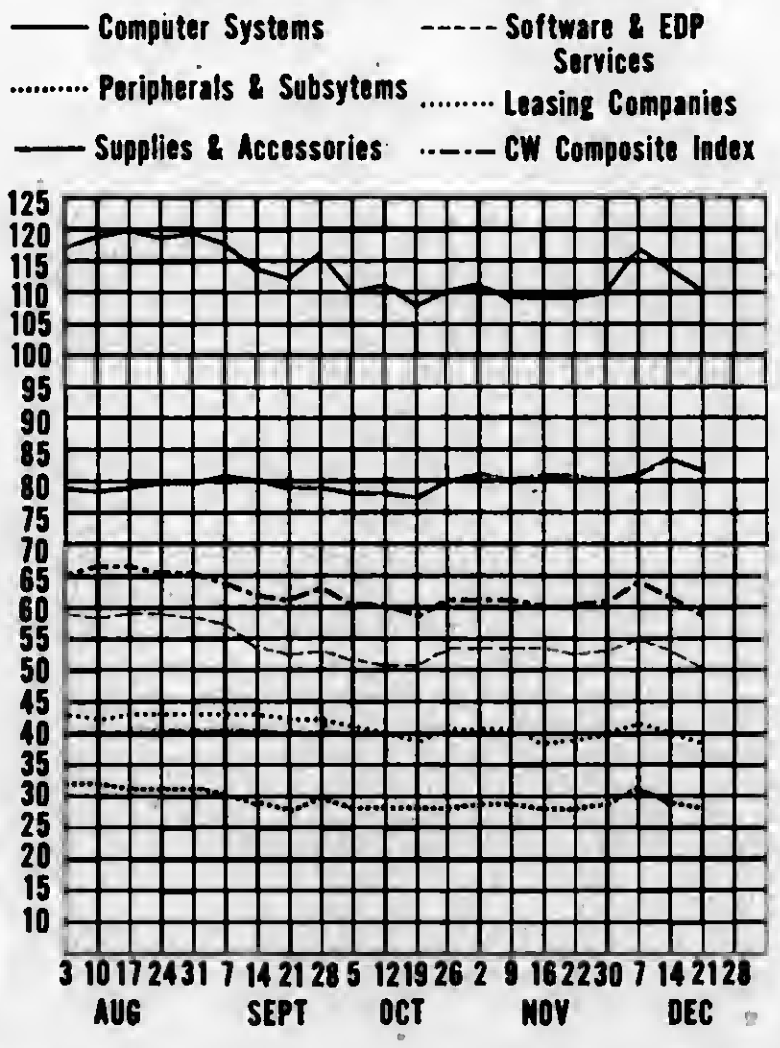
EXCH		PRICE 1972 RAMGE 11)	CLOSE DEC 21 1972	WEEK NET CHNGE	WEEK PC7 CHNGE
N	8URROUGHS CORP	147-229	215 7/8	-9 1/8	-4.0
N	COLLINS RADIO	14- 27	23 1/8	- 1/2	-2.1
N	CON7RDL OATA CORP	43- 78	58 3/4	-2 1/2	-4.D
O	OATA GENERAL CORP	56-115	11D	0	D.D
O	DIGITAL COMP CONTROL	5- 25	5	- 1/4	-4.7
N	OIGITAL EQUIPMENT	72-101	90 1/4	-4 1/2	-4.7
N	ELEC7RONIC ASSOC.	6- 13	7 7/8	- 7/8	-10.0
A	ELECTRONIC ENGINEER.	6- 14	8 1/4	- 3/8	-4.3
N	FOX8ORO	23- 41	28 1/2	-2 3/8	-7.6
O	GENERAL AU7OMATION	13- 44	43 1/2	+4 3/4	+12.2
O	GRI COMPUTER CORP	2- 5	2 1/2	- 1/4	-9.D
N	HEWLET7-PACKARO CO	46- 81	81 1/4	+3 3/8	+4.3
N	HONEYWELL INC	118-170	130 3/8	-2 7/8	-2.1
N	IBM	333-426	385 1/2	-1D	-2.5
O	INTERDA7A INC	8- 16	9 5/8	0	D.D
N	MEMOREX	15- 38	17 1/8	-1 5/8	-8.6
O	MICRODATA CORP	5- 10	8 1/4	+ 1/8	+1.5
N	NCR	29- 38	30 1/R	-1 1/4	-3.9
N	RAYTHEDN CO	27- 47	33 5/8	-2 5/8	-7.2
N	SPERRY RANO	3D- 5D	48 1/8	-1 7/8	-3.7
A	SYSTEMS ENG. LABS	7- 16	7 1/4	- 3/8	-4.9
N	VARIAN ASSOCIA7ES	14- 22	17 1/2	-1	-5.4
N	WANG LABS.	23- 61	27 7/8	+ 5/8	+2.2
N	XEROX CORP	121-172	145 3/8	-3 5/8	-2.4

LEASING COMPANIES

EXCH		PRICE 1972 RAMGE 11)	CLOSE DEC 21 1972	WEEK NET CHNGE	WEEK PC7 CHNGE
A	8OOTHE COMPUTER	3- 18	3 1/8	- 1/2	-13.7
O	8RESNAHAN COMP.	1- 3	1 1/2	- 1/4	-14.2
O	COMDISCO INC	3- 18	13 1/2	D	D.0
O	COMMERCE GROUP CDRP	5- 11	6 1/4	0	D.0
O	COMPUTER EXCHANGE	1- 3	7/8	- 1/R	-12.5
A	COMPU7ER INVSTRS GRP	7- 14	6 3/4	- 1/2	-6.8
O	CDMP. INSTALLATIONS	2- 5	2	D	D.D
N	OPF INC	5- 13	5 5/8	- 1/4	-4.2
M	OATRONIC REN7AL	2- 4	2 1/8	+ 1/8	+6.2
A	OCL INC	2- 10	2 3/8	- 5/8	-2D.R
A	DEAR8URN-STORM	16- 26	19	-1 3/4	-8.4
A	OPA, INC.	5- 8	7	- 1/8	-1.7
A	GRANI7E MGT	5- 11	5 7/8	+ 1/2	+9.3
A	GREYHDUNO COMPUTER	6- 11	6	- 1/2	-7.6
A	ITEL	7- 12	10 7/8	+ 3/8	+3.5
N	LEASCO CORP	17- 24	17 1/4	-4 3/4	-21.5
O	LEASPAC CORP	6- 15	6 7/8	- 1/2	-6.7
O	LECTRO MG7 INC	1- 4	2	- 3/8	-15.7
A	ROCKWOOD COMPUTER	2- 7	2 1/4	- 1/4	-10.0
O	SYSTEMS CAPITAL	3- 20	1D	- 3/8	-3.6
N	U.S. LEASING	19- 33	30 1/4	0	D.D

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NA7IONAL EXCHANGE; O=OVER-7HE-COUNTER
P=PHIL-8ALT-WASH
O-7-C PRICES ARE 8IO PRICES AS OF 3 P.M. OR LAST 8IO
(1) 7O NEARES7 OOLLAR

Computer Stocks Trading Index



Earnings Reports

TCC
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$0.1	$.01
eRevenue	1,811,000	1,649,000
Disc Op	(11,000)	40,000
Spec Item	b66,000	d12,000
Earnings	65,000	76,000
9 Mo Shr	05.	.04
eRevenue	5,374,000	4,639,000
Disc Op	49,000	81,000
Spec Cred	178,000	49,000
Earnings	321,000	209,000

a-From continuing operations. b-Credit. d-Debit.

TELEX
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.07	$.09
Revenue	21,490,000	19,597,000
Earnings	704,000	953,000
6 Mo Shr	.14	.26
Revenue	40,944,000	44,241,000
Eernings	1,415,000	2,716,000

TEXAS INSTRUMENTS
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$1.06	$.71
Revenue	227,442,000	178,071,000
Eernings	11,725,000	7,849,000
9 Mo Shr	3.10	2.22
Revenue	679,559,000	562,087,000
Earnings	34,346,000	24,543,000

METRIDATA COMPUTING
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.16	$.17
Revenue	1,243,000	670,000
Tex Cred	28,000	29,000
Earnings	68,000	61,000
9 Mo Shr	.60	.42
Revenue	2,992,000	1,986,000
Tex Cred	92,000	66,000
Eernings	226,000	151,000

STORAGE TECHNOLOGY
Three Months Ended Sept. 29

	1972	1971
Shr Ernd	$.35	.....
Revenue	8,392,000	$1,464,000
Tex Cred	478,000	.....
Eernings	1,228,000	(766,000)
9 Mo Shr	.66	.....
Revenue	17,972,000	1,727,000
Tax Cred	919,000	.....
Earnings	2,160,000	(3,854,000)

STERLING ELECTRONICS
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.01	.....
Revenue	14,913,857	$14,212,592
Disc Op	a(27,186)	(167,192)
Tex Cred	16,342	32,908
Eernings	31,043	(177,340)
6 Mo Shr	.04	.....
Revenue	30,102,813	27,361,785
Disc Op	e(58,285)	(233,115)
Spec Item	b79,986	d(159,463)
Earnings	168,069	(467,558)

e-From operations to be discontinued. b-Tex credit. d-Loss from sele ol lend.

DATA GENERAL
Year Ended Sept. 30

	1972	e1971
Shr Ernd	$1.47	$.67
Revenue	30,324,000	15,341,000
Eernings	3,897,000	1,561,000
4 Mo Shr	.56	.29
Revenue	11,382,000	6,231,000
Eernings	1,497,000	700,000

a-Restetad to reflect ecquisition of Systems Equipment Corp., Atlenta, In April 1972.

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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
Weekly Newspaper
Second-class postage paid at Boston, Mass., and additional mailing offices
January 10, 1973
Vol. VII, No. 2

NEWSPAPER

NEWS IN BRIEF

City, County DP Links Up, Cuts Cost

MOBILE, Ala. – A joint computer project set up by the city and county governments has saved the taxpayers here about $57,000 during the first nine months of operation.

The city had originally budgeted $101,527 for its own data processing service and Mobile County allocated $110,743 for its operation. But the county decided to buy its own computer, rather than rent, and the city contracted for time on the county computer, according to County Commission President Howard Yeager.

Personnel from both operations were combined so that the actual cost of equipment and expenses for the joint service was nearly $57,000 less than the combined budget, he said.

Yeager said when the computer is completely paid for in about 18 months the county can expect to save an additional $4,000 per month.

Certification Foundation Sets Organization Meeting

CHICAGO – The executive councils of the Association for Computing Machinery (ACM) and the Data Processing Management Association (DPMA) have approved participation on an organizing committee seeking to generate a final proposal for establishing a Computer Foundation. The committee will be cochaired by Fred H. Harris, director of the Computation Center, University of Chicago, and John K. Swearingen, CDP, vice-president and general manager of Environmental Research Corp., Las Vegas.

The concept of the foundation was approved recently by both ACM and DPMA. It originated out of recommendations made by the Certification and Testing Advisory Committee.

An open meeting will be held Jan. 17 at 10 a.m. in O'Hare Inn, Des Plaines, Ill., to discuss plans for the organizing period. Individuals as well as representatives of interested societies wishing to attend should contact Ms. Jamie Fox at Computer Foundation Organizing Committee, P.O. Box 1442, Chicago, Ill. 60690.

On the Inside This Week

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Disk drives are shielded from any water damage.

(California Highway Patrol Photos)

Univac mainframes assume an air of secrecy at National Guard headquarters.

Water Damage Avoided

Plastic Protection Proves Worth in Fire

By Marvin Smalheiser
CW Correspondent

SACRAMENTO – A $1,200 investment in plastic covers several months ago protected about $15 million worth of computer equipment during a fire which ravaged the state headquarters of the California National Guard.

The equipment was on the second floor of the block-square building here which housed the Guard headquarters and the state Department of Motor Vehicles (DMV).

Ira Isbell, chief of the EDP Division of the DMV, said the plastic covers prevented any water damage. The equipment was up and fully operational within four days after the effort to preserve the files, he said.

The fire, discovered about 11:30 p.m. Christmas day, caused $5 million damage in the 10-year-old building.

The DMV EDP Division is located in two buildings, the second across the street.

In the gutted building the equipment included a Univac Series 70/55 which controls and accesses all vehicle records in the state, and a Univac Series 70/6 in a multiprogramming mode that controls the name index with 35 million names, and serves as a cross index to both driver records and vehicle records.

Across the street are a Univac Series 70/45 that acts as a front-end communications processor and a Univac Series 70/55 to control the data base for all driver records.

Adjacent to the computer center in the building where the fire occurred is a large key-entry room with 200 CRT terminals and about 40 keypunch machines.

Isbell was called to the fire within a half

(Continued on Page 2)

Memory Path Like 40's

Accelerator Boosts 360/30

By Ronald A. Frank
Of the CW Staff

NEWTOWN, Pa. – Computer Hardware Consultants & Services Inc. has announced a hardware enhancement for 360/30 users to make their system operate at speeds comparable to the Model 40.

The 360/30 Accelerator feature doubles the memory "fetch" rate of the mainframe, decreases channel interference and alters the microprogramming to increase throughput.

The fetch rate is doubled from 1 byte/cycle to 2 byte/cycle with the accelerator. Asked whether this would actually double the throughput of the mainframe, a CHCS spokesman said actual increases "will be in the eyes of the beholder."

The decrease in channel interference means that faster peripherals will see a marked improvement in efficiency, a spokesman said. The Model 30 operates on a cycle steal principle, and using a priority scheme it services the slower I/O devices first. By eliminating the number of cycles that each channel needs, faster peripherals will perform more efficiently, a spokesman said. The net effect will be to drive I/O devices such as 1,100 line/min printers at rated speeds, he added.

By improving "all of the Model 30 microprogramming," some instructions will execute at "double the normal speed," the spokesman said.

While the accelerator feature "will not be all things to all people," it will be most significant for compute-bound Model 30 users, the spokesman said. However, an I/O-bound 30 user will also see some improvement, he added.

"We are following right behind the 370/125," a CHCS spokesman said. "Everything the 125 can do, the Model 30 user will be able to do with real memory and the new [accelerator] features."

The hardware enhancement will require the Model 30 user to have at least 128K of storage. The present IBM memory limit is 96K for the Model 30, the spokesman said.

Spotlight on User's Lib

Because of the major changes to the system, CHCS is assuming that IBM will not support 30s which have been upgraded with the accelerator. But CHCS will provide complete maintenance and diagnostics, the spokesman said, through its existing field force.

The device will be easy to install on any 30 and will be located on the backboard within the mainframe. It can be installed "over a weekend," the spokesman said. The accelerator is scheduled for first deliveries in April but initial installations will begin this month, the company said.

The accelerator will cost $880/mo on a two-year lease. Purchase price will be about $33,000. The feature will be available through all major leasing companies which have installed Model 30s, or direct from CHCS. The company is at 8 Pheasant Run, 18940.

Vendor Switch Involves IBM, User in Hassle

By Michael Weinstein
Of the CW Staff

WARWICK, R.I. – IBM is using "the resources available to the bureaucratic structure of a large corporation" in an attempt to dissuade a user from moving to another vendor, according to this city's DP director.

"These resources manifest themselves in a letter from IBM – submitted after it became known the city was contemplating switching mainframe sources – which implies local data processing personnel are not competent to decide on hardware selection," DP Director George Waterman said.

The letter, which found its way into the hands of local officials, suggested that no decisions be made until the city had time to improve certain areas of operation and formulate a long-range plan.

Looking Around

"Before we started looking at other sources for equipment, IBM had no com-

(Continued on Page 2)

Plastic Covers Save DP Equipment

(Continued from Page 1)

hour after it was discovered and had the plastic covers put on all of the equipment in the 9,000-square-foot computer area and in an adjacent data-entry area.

The covers were safely on before the water was able to seep through from the fire on the fifth floor of the six-story building.

About 3 a.m., Isbell said it appeared the whole building would be lost and an effort was made to move the data files out of the building into a second computer center across the street.

Isbell said plastic covers had been acquired for equipment in both buildings and there was enough to cover all electronic equipment in the computer room, peripherals in the key-entry area and tapes in the library.

The division has been very security-conscious, he noted, and had formulated plans in case of an emergency. As an afterthought, it was decided to buy the plastic covers.

Data Bases Moved

Two data bases were moved – one involved 80 magazines of magnetic cards containing all vehicle records in the state and the other included 50 disk packs containing 35 million names used to cross-index both the vehicle records and the state driver record file located across the street.

About 25 persons including the computer night crew, janitors and Univac service engineers helped move the data files out of the burning building.

Some 8,000 reels of tape in the tape library, covered by plastic, were moved out the next day to protect them from the dampness remaining in the building.

The DMV computer system serves the state's Law Enforcement Division, courts and the DMV, which needs access to available records, particularly during what is now the peak vehicle registration period.

Input involves 10,000 additions or deletions a day.

Cause of the fire was not determined but state fire investigators are considering the possibility of arson. No one was injured in the fire.

Good Backup

With the help of the equipment located in the building across the street, Isbell said, it was possible to get as much as three-quarters of the vehicle record file up by 1 p.m. the day after the fire.

While the power in the main building was still down late in the week, the security plan allowed either center to draw on the other's power source, so that the equipment in the damaged building could be operated.

California Highway Patrol Photo

James J. Waterbury, Univac Division, points to water that leaked from fire on the fifth floor to the computer room on the second floor.

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CW Promotes Farmer, Patterson

NEWTON, Mass. – An expansion of editorial activities and several staff promotions have resulted from *Computerworld's* continued growth.

Patrick J. McGovern, president and publisher, announced that Robert M. Patterson has been promoted to the corporate office of vice-president, editorial, responsible for planning the growth and development of the newspaper.

V.J. Farmer has been promoted from news editor to managing editor "in recognition of his organization and leadership skills" which, McGovern said, "have played a key role in the development of *Computerworld.*"

Washington Office

Additionally, E. Drake Lundell Jr., computer industry section editor, has been transferred to the new Washington, D.C., office, where he will also serve as bureau chief.

Staff writer Edward J. Bride has assumed the newly created position of general news editor. Bride and Technical News Editor Ron Frank report directly to the managing editor.

During Patterson's tenure as executive editor, McGovern noted, CW achieved "leadership rank in paid circulation," over 54,000, as well as in reader preference and editorial recognition, among all business and trade publications related to computers and data processing.

Patterson will initially concentrate in his position on investigating new publishing opportunities in major foreign markets.

E. Drake Lundell Jr.

Edward J. Bride

CW Photos by Leslie Flanagan

V.J. Farmer

IBM Involved In User Hassle

(Continued from Page 1)

plaints about the manner in which we ran our department," Waterman noted.

"In fact, in April of 1972, IBM felt we were competent enough to order a System 3 Model 10, but when we reevaluated our needs and moved toward a B2510, they felt a study was required," Waterman charged.

Waterman cited a letter from the local IBM sales representative and systems engineer which states:

"We (IBM) are of the opinion that a hardware recommendation upon our part would be premature at this time. There are immediate problems such as machine scheduling and documentation which should be addressed. We feel that a survey of user departments and the completion of a long-range plan should serve as the basis for hardware and software considerations.

"With this view in mind, we are recommending a specific plan of action for the Warwick Data Processing Department, and are including areas of assistance to which IBM can provide aid in the implementation of the action plan."

Waterman maintained: "IBM's recommendations have led to a rise in our organizational problems, and have hampered our working relationships.

"Had our IBM System 3 been left on order I am sure no such analysis would have been made," he continued.

IBM's ensuing recommendation to delay ordering any hardware until a long-range plan could be developed by municipal administrators – as opposed to data processing personnel – seems to be an attempt to retain this account, he asserted.

As to the assertion that the city had no plan, Waterman stated, "We had a plan, but our plan did not conform to IBM's plan."

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On the near horizon, another Ampex breakthrough in semiconductor engineering – the ARM-158 and the ARM-168.

Disks. The new DS-330 subsystem to match the IBM 3330 has a capacity up to 1600 megabytes with 16 drives. This system, with complete plug-to-plug compatability with IBM 370 systems, is faster and easier to change, and offers operators greater convenience.

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BUT THERE'S MORE COMING . . . A new super-space-saving tape subsystem with 4 tape drives in the same space as 2 standard tape drives.

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Mainframe memory enhancement. The ARM-1108 operates at the same speed and is completely compatable to 1108, 1106 and 494 systems operating with Exec 2, Exec 8 or OMEGA. Furthermore, this memory enhancement has a built in MMA to facilitate use in multi-processor environments. No minimum UNIVAC memory is required.

Discs. The Ampex DS-8430 disc subsystem is a high-performance alternative to either UNIVAC disc or drum systems. The DS-8430 has a radial interface to provide disc operation with proven FASTRAND software. This disc subsystem may also operate in a FASTRAND emulation mode, providing all the advantages of removable discs.

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Dead Man Still on Welfare Rolls

BOSTON – Sixty Massachusetts welfare checks totaling $5,400 were sent to a man who has been dead since January 1970. The erroneous checks were blamed on the Welfare Department's computer system.

In addition, the checks were recently reported stolen from the home of the dead man's sister-in-law who said she called the department and asked them to stop sending the checks but "there they were in my mailbox, every two weeks." She said she never cashed any of the checks.

News Wrapup

According to the Welfare Department, Irving Moore's case was closed two months after he was reported dead. But at that time several other cases were erroneously closed and when these cases were put back on the rolls, Moore's case was also reopened.

Massachusetts Welfare Commissioner Steven A. Minter called the mistake an "extraordinary case" that should not have happened. Payment on all the checks has been stopped and the department is checking for similar errors.

Registration System Adds Off-Highway Vehicles

LOS ANGELES – California's computerized Registry of Motor Vehicles has been expanded to include all types of off-highway vehicles.

The new service is an outgrowth of legislation effected last year which requires all vehicles used, such as trail bikes, dune buggies and snowmobiles, for recreation on public land to be registered with the Department of Motor Vehicles. The frame number and engine number of the vehicle are stored in a computer which aids the police in tracking stolen vehicles.

About 46,000 of the estimated one million off-highway vehicles have been registered.

The American Association of Motor Vehicle Administrators said California is the first state to offer such a program.

Gift Net Links Drugstores

MAHWAH, N.J. – Western Union Corp. is introducing a gift sales service to link drugstores in any of 48 states into a computerized network so they can guarantee cross-country delivery within hours.

The project, named Gift America, will include 15 to 25 brand-name items (at retail prices ranging from $15 to $35), which research has shown to be the products most often sent as gifts. Gift America is expected to be operational within a year, with an anticipated network of 6,000 dealers, according to its president, Charles O. Johnston.

Computers will assign each delivery automatically when the order is placed, to be delivered by the dealer serving that destination's Zip Code area. Further, each dealer's inventory will be automatically replenished via centralized computer control, Johnston said, and paperwork will be minimal.

Gift America headquarters are at 85 McKee Drive, 07430.

Chess Playing Moves Ahead

LOS ANGELES – Bobby Fischer, take notice. The computer is "learning" to play chess as it never has before, according to Drs. A.L. Zobrist and F.R. Carlson, assistant professors of electrical engineering and computer science at the University of Southern California.

They are developing a program which they claim will enable the computer to form a long-range game strategy by recognizing and evaluating patterns on the chess board. It can play another computer program or a human player.

Carlson explained that the USC program, after pattern recognition and evaluation, seeks to move into as many good patterns as possible while avoiding the bad ones.

"The most exciting innovation is the creation of a chess pattern language which enables an expert chess player to give advice to the program without having to know how the program itself operates," he said.

Although "teaching" the computer to play chess as well as a master is a fascinating goal in itself, the USC research has more significant implications for the development of computer programming, Zobrist indicated.

"Many computer scientists, as well as science fiction writers, have predicted that computers of the future will learn in order to reach a human level of intelligence.

"This work raises the possibility that the learning will take the form of advice-taking, which we're exploring in our chess program. We should all hope that the computers do not receive bad advice," he said.

BBC Would Expand TV

LONDON – The British Broadcasting Corp. is planning to equip British televisions for use as read-only video display terminals.

Under the Ceefax plan – approved by the BBC's governors – home viewers will have a small keyboard from which they can choose 30 different services, including news flashes, continuous stock information and weather reports.

Any standard television set will be able to access a service with the addition of the keyboard unit – costing about $250 – that will either be permanently attached to the TV or plugged into the electrical output.

The technology for Ceefax is already available and a prototype should be built by 1973 with full service starting in 1976, a BBC spokesman stated.

During normal hours of transmission the intent is to have "pages" of each service continually updated so that a user could key in any selected portion – for example news – and spend the day watching page after page of text role across his TV screen.

Another feature would have keyboard units with storage capabilities so when the transmitter was shut down for the night viewers still would access the most recent "page" of data from each service.

A less expensive keyboard unit is being designed to allow only one service to be keyed into the viewer's home. Under this concept the viewer might see the news on the hour, stock reports on the half hour and cooking hints twice a day on a published schedule.

Future plans for the viewer include video cassettes to store information and an input capability so the viewer can access commercial services. For example, a producer might run his commercial and the viewer could buy the product by telephone directly from his home.

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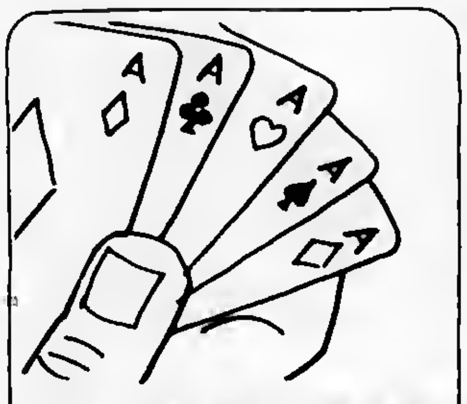

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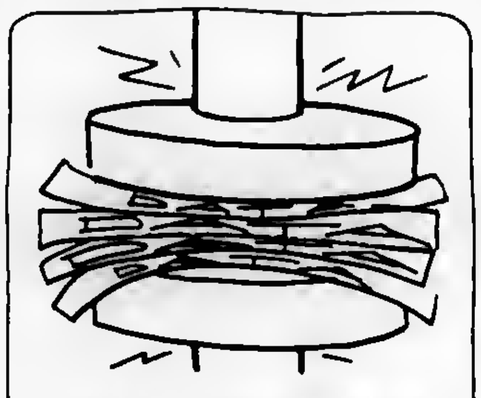

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Editorial

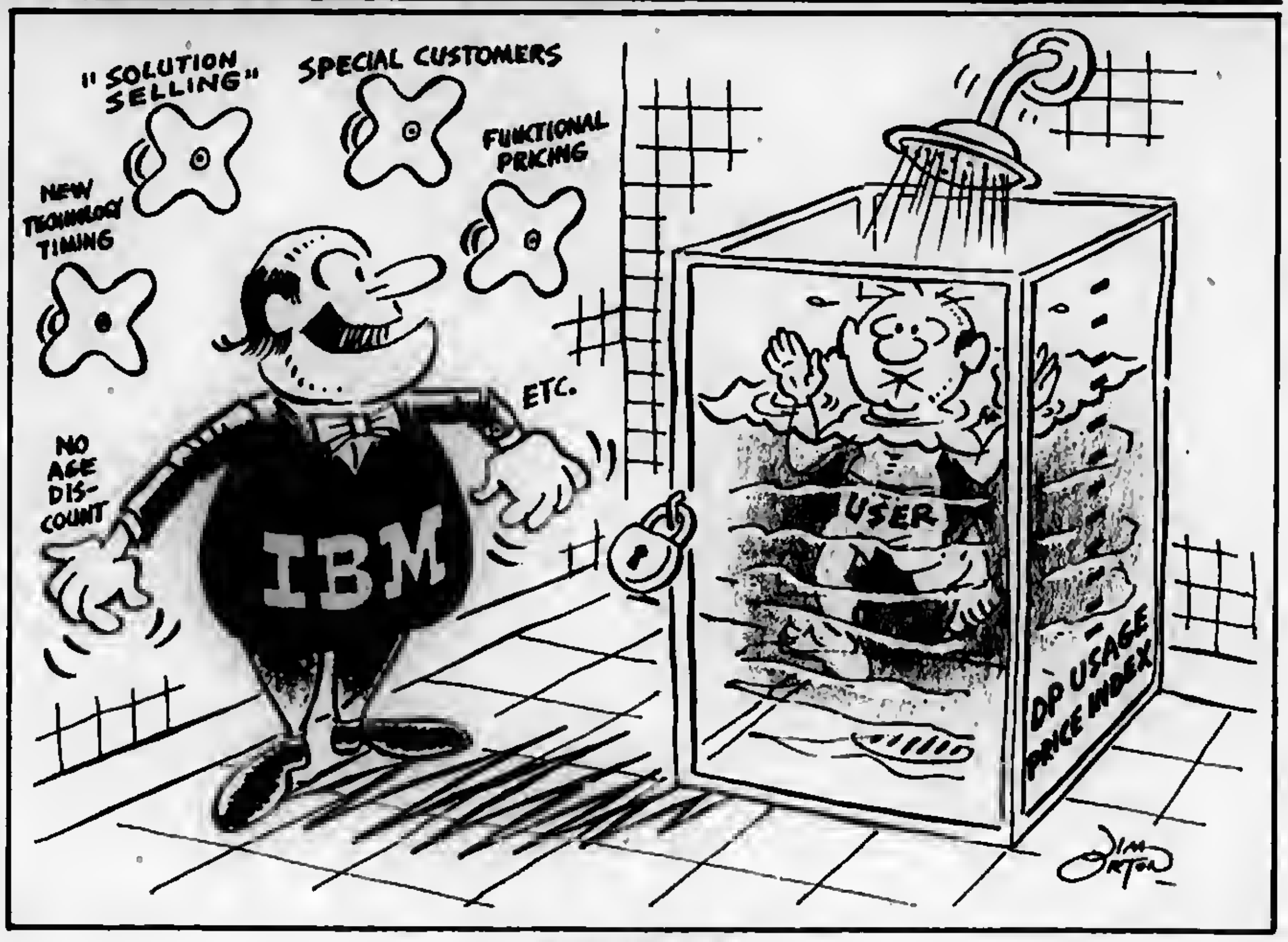
A Professional Responsibility

Only positive action on the part of computer users and others in the computer community can debunk the charge that computer people have traditionally failed as social activists.

Groups like the ACM and the DPMA should lead in the effort to translate the ideals expressed by many in the computer community who want to use their DP skills for the whole society.

While many social causes cannot be endorsed by everyone in the community, there is little disagreement over the need to clean the environment or train disadvantaged persons for meaningful careers.

With a central focus on society's problems the professional groups must show the way, thus emphasizing their responsibility to their members as well as the entire DP community.



'Deep Enough?'

A Complex Industry Demands Accurate Knowledge

By Bruce Gilchrist and Milton R. Wessel

Special to Computerworld

Viewpoint

On Nov. 20 the U.S. Supreme Court handed down its first decision on a strictly computer-related issue. Specifically, the court ruled against the patentability of certain kinds of computer programs. Important as this particular ruling is, perhaps the greatest long-term significance lies in Justice William O. Douglas' final paragraph where, in behalf of a unanimous court, he writes:

"If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage, for broad powers of investigation are needed, including hearings which canvass the wide variety of views which those operating in this field entertain."

These words, focus on a fundamental problem applicable to many aspects of the computer industry. It is not only a new but a very complex industry, which is difficult to deal with in terms of either established procedures or ways of thinking.

A computer program was simply not considered by the writers of our patent laws. Similarly, the framers of the antitrust laws had no concept of the relative inflexibility which the computer may be building into our economic structure or the ease with which information could be passed between companies by means of computer-controlled communications.

Investigation Needed

In suggesting that a broad congressional inquiry is necessary, Douglas is adding the weight of the Supreme Court to other suggestions that the time is ripe for some form of investigation.

While others perhaps have not been as specific as Douglas, the common concern is that decisions are being made about and within the computer industry which will undoubtedly have a major impact on our economic life but that these decisions are being made without adequate knowledge.

Antitrust is clearly a primary area of concern, and the confusion which has typified the discussions about what form of relief the Justice Department should seek in its current suit against IBM illustrates the difficulty of the problem.

If the Supreme Court feels the patenting of programming should be decided on the basis of extensive congressional hearings, doesn't it follow that the outcome of the current Justice Department/IBM contest would be improved if the parties had access to the information derived from broad public hearings?

Sen. Philip Hart (D.-Mich.), in his proposal for an industrial reorganization court, appears to be thinking along the same lines. More generally, a study of the government's involvement in the computer industry prompted us to recommend establishment of a Commission on the Computer Industry to conduct a two-year inquiry, and to recommend elsewhere that the Justice Department hold public hearings on the form of relief to be sought in its case against IBM.

To be sure, all these proposals may be somewhat inconsistent with our tradition of having the Justice Department alone prosecute antitrust cases on behalf of the general public. But inroads have already begun to creep into that tradition, and the question to be considered is whether the complexity of the computer industry does not demand a modification in our ways of doing things.

Francis Bacon wrote, "Knowledge is power." Perhaps the best way the country can manage the computer industry and hence make sure it is used for the public good is to make sure that knowledge of the industry is both reliable and widespread.

The computer is indeed a key tool of the growing knowledge industry. It would be ironic and possibly tragic if we get into difficulties because of our lack of knowledge about the computer industry.

Bruce Gilchrist and Milton R. Wessel are the authors of "Government Regulation of the Computer Industry" (Afips Press 1972). Gilchrist is executive director of the American Federation of Information Processing Societies, Inc. Wessel is a New York attorney.

Letters to the Editor

Certificates Complementary

I have just finished reading Alan Taylor's column on "Attack on SDE Certification May Have Backfired" [CW, Dec. 13]. I must say that as a CDP holder and a member of DPMA, I agree with Taylor and am rather horrified at the attack to which he replied.

While I'm not certain the attack could be construed as unethical when matched against the Code of Ethics of the CDP holder, it is certainly unprofessional. Since Taylor is a fellow holder of the CDP, I believe he should make the name of Mr. X known to the rest of us so we might make appropriate requests to the Certification Council to have him removed and, possibly, if his comments are indeed unethical, have him stripped of his CDP.

I am at present undergoing the certification process by SDE and don't believe the two certificates are incompatible, but complementary.

Eugene T. Dolan, CDP
Assistant Professor
Federal City College
Washington, D.C.

Beware the Quack!

Alan Taylor's article on "Attack on SDE Certification . . . " and previous articles in *Computerworld* are my only sources of information on the examination for the Certificate in Data Education.

But, Taylor seems to point out the most serious flaw of that examination. He states: "The CDE is based on the concept that practitioners are entitled to certification if they cannot be proven ignorant or dangerous."

It seems to me that, for any examination, the burden of proof rests on the candidate. She or he must prove competence. That is true for journeyman plumbers, elementary school teachers and surgeons.

No less can be accepted from persons wishing to teach "data."

Adventitiously acquired ability sufficient to doubt ignorance is adequate for becoming a quack. Many universities offer formal courses leading to certification as teachers or "data" professionals.

Helmut E. Thiess
"AB, MBA, CDP"
Washington, D.C.

IBM Leads the Band

The Dec. 6 article entitled "Users Awaken to Security Needs" contains a major error.

The article states in the fourth paragraph:

"Examining the problem from new or different angles has become somewhat popular and the last to climb on the bandwagon was IBM, which last spring announced its long-term, $40-million project to develop secure systems."

On the contrary, IBM started the bandwagon in November 1967, when it created a separate department exclusively concerned with customer data security. In addition, IBM has been building security provisions into its hardware for over two years. Just one example of this is the magnetic stripe card reader on terminals. There are numerous other examples.

Francis M. Carter
President
CTMS, Inc.
New York, N.Y.

Some DPers Take Plunge

On the front page of the Dec. 13 issue is the headline "DPers 'Fail' Social Role." We would like to inform your readers that there are some DPers currently getting their hands dirty on a long-term basis with the United Farm Workers movement in California.

In the April 5 issue we explained how we had dissolved the paper jam that had developed in the union by bringing in several DP professionals (living on subsistence wages) to design and implement a data processing system.

They were successful in that project, and they did not cop out and return to their safe, middle-class existence and leave the union "holding the bugs." They are all still here maintaining the system and working on further applications.

David Smith
Director of Data Processing
United Farm Workers, AFL-CIO
Keene, Calif.

...From This Corner

I take exception to an article in the Nov. 29 *Computerworld* entitled "APL/Ascii Terminals Provide Grahpics," in which Scientific Time Sharing is said to be one of the first companies offering APL Ascii support.

We are the first APL vendor to support Ascii at speeds of 10/15/30/60 and 120 char./sec. TSR has a number of applications in production for customers, using Ascii devices.

J.J. Weisenfeld
Vice-President, Marketing
TSR Inc.
Great Neck, N.Y.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

1973 Objective:

Let's Make DP a Recognized Profession

The Taylor Report

By

Alan Taylor, CDP

Recently Robert Sennet wrote that he had always feared my possession of the CDP had blinded me to the virtues of other data processing professionals who might not hold it [CW, Dec. 6]. Well, Robert, this first report of 1973 is for you – and for all others who are interested in improving the quality of data processing. And you do not have to fear what I am going to say – because it includes a forecast that data processing quality improvement is going to be greatly emphasized by CDPers and non-CDPers alike during 1973.

Naturally, I shall try to do my part in these columns, because my personal interests have always been in favor of really good data processing. I have perhaps overemphasized certification in the past because I believed it could be valuable in improving data processing. This belief has recently proven true, through the actions of the CDP holders who have formed the Society of Certified Data Processors (SCDP). They have now become a major force moving toward strong professional data processing standards.

In the two years since it was formed (at the instigation of a reader of this column), the SCDP has pioneered the development of standards for data bases, for constitutionally protected data and for other items.

It is working within the established groups and while it is still too soon to see the full effects of its work, the value of the trailblazing is obvious.

But this work would not have been performed, and its value would have been lost to the profession if the certification program had not existed to pull the members together.

Late in 1972 the SCDP discovered that interest in developing better standards for data processing was not unique to CDP holders who joined the SCDP – but is a major interest of most CDP holders, inside and outside the SCDP.

This interest was discovered when a large group of CDP holders was polled by SCDP Secretary Jerry Martin. He designed the questionnaire to leave the CDPers complete freedom to answer what they felt a CDP holders' organization should do.

The results showed most of the respondents were putting one aspect or another of improving the quality of data processing as being their prime professional interest.

Perhaps the most succinct, effective response came from Grover Rodich, CDP of Portland, Ore. He wrote "Prime Objective – establish DP as a recognized profession." Only a few words, but plenty of meaning.

For while making DP a recognized profession certainly calls for some form of wide certification, it also requires a lot more than that. Professions do not get recognized – unless they have standards. For DP to become recognized therefore implies that standards of DP quality will have to be created.

And professions do not get recognized unless they both possess and enforce professional ethics that protect the public. These currently do not exist either, so to carry out Rodich's "prime objective," we will have to develop standards and arrange for their enforcement.

Now, I know the SCDP is listening to Rodich and the rest of the CDPers, because the SCDP is already at work studying these problems.

> *"I cannot see how votes can be meaningful unless they not only guide the (society) administration into certain positive acts, but also warn them away from other not so popular items." – Hamilton Armstrong Jr.*

But the SCDP is only a small group. I find, however, that other groups, quite unconnected with the CDP, are getting equally concerned. This is all for the best, for professionalism is not the exclusive prerogative of any single society, certified or not.

The November newsletter of the Society of Professional Data Processors, for instance, held great promise of action for professional quality activism, and the SPDP is more representative of the data processing community than the SCDP. The SCDP will only admit practicing data processors and data processing instructors, which keeps out hardware salesmen, etc.

Like the CDP, the SPDP was counting ballots recently – to determine what areas should be worked on in 1973. The results were surprising, because it was the ethical questions rather than the technical ones which came out on top of the voting. Codes of ethics, auditing, and DP standards were the first concerns, while committee work and Cobol languished at the bottom.

One particular item clearly gave SPDP President Hamilton Armstrong Jr. cause to think.

The question was how important are meaningful elections in a professional society. The response was that they are "vital." But how was this 'motherhood' goal to be implemented? That was left to Armstrong!

I am glad to say that Armstrong's thinking does him and his society credit, for he appears to have taken steps to provide effective elections and real membership control.

Writing in the newsletter he suggested starting a tradition of "after-vote statements."

"These after-vote statements," he wrote, "I envisage being produced by the SPDP president immediately after any election or vote. The statement will lay down his interpretation of what the results mean and of how they are going to govern his actions in the future.

"Subsequently," he continued, "such a statement can be used, where appropriate, against him!"

Armstrong explained what he expects to gain from these after-vote statements, and how he thinks they can make the members' votes really meaningful.

"The interpretation statements will therefore limit the authority of the [SPDP] president . . . I cannot see how votes can be meaningful unless they not merely guide the administration into certain positive acts, but also warn them away from other not so popular items."

That is the most professional statement from the president of any data processing society that I know of. I certainly commend both him and his members.

Moreover, let me suggest that if you are seriously concerned about making data processing the profession it deserves to be – (and if you are actually in data processing practice or teaching) – why don't you join the SPDP?

A coupon is attached. Filling it in will help Rodich, Armstrong and myself attain our 1973 objectives for data processing.

GOAL-RANK 'Vital' %age Vote	SHORT DESCRIPTION OF GOAL	UNWANTED %age Vote
1 75%	DP Umbrella Socty for Profs.	7%
2 70%	Create DP Audit Standards	0%
=3 65%	(Make Socty. Elections Meanigful (Create Enforcable Ethical Code	0% 0%
5 60%	Provide Monthly Activity Report	0%
6 55%	Finance by Compatible Activities	0%
=7 45%	(Use Project-type SPDP Structure (Provide Interpretitive Reports	4% 0%
9 40%	Budget 60% Dues for Tech Rpts	10%
10 25%	(Urge More Users on Codasyl (Use SPDP 'Regional Convenors' (Publish SPDP Register (Work at Cobol Liason (Work on Cobol Co=ord. Committee	6% 6% 11% 10% 7%

The above table, taken from the November Monthly Activity Report of the Society of Professional Data Processors shows how members voted for 1973 projects. It can be seen that ethical subjects far surpassed technical ones, indicating 1973 may well see a welcome concentration upon making DP a recognized profession.

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BCCXREF will reduce by over 50% CPU usage for the generation of the CROSS REFERENCE listing provided by ANS COBOL. BCCXREF will significantly reduce elapsed time in the compiler partition or region, increase throughput, and allow greater system usage for other purposes.

DOSRELO

DOSRELO provides a method of making DOS problem programs self-relocating. DOSRELO accomplishes the self-relocation capability for all programs, regardless of the language, by adding entry point logic to the object code of the program before the Linkage Editor catalogs it on the Core Image Library.

CIMS

The Computer Installation Management System (CIMS) provides a method to supply management with pertinent information in the utilization of their data processing hardware. CIMS accepts data collected by the System Management Facility (SMF), formats the data and presents the data in varying sequences and formats.. Reports for job accounting, multiprogramming throughput, hardware analysis, and others are provided.

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Random Notes

As Many as 1,000 Variables Modeled With GE's 'PA300'

BETHESDA. Md. – A probabilistic analysis program (PA300), just implemented on the General Electric remote-computing network, provides business managers with a modeling tool that evaluates all important parameters rather than just one best alternative.

PA300 is able to handle 1,000 variables, 500 of which can be probabilistic, a GE spokesman said. Minimum and maximum impact of variables can be determined. Both single and multivariate sensitivity analyses can be run.

'FDR' Enhanced to Dump 9 Disks Sequentially or Concurrently

FLANDERS, N.J. – Users of Version 1.4 of the Fast Dump Restore (FDR) package from Innovation Data Processing can handle serial dumping of from one to nine 2314-type disks in 65K in one OS job step. Concurrent dump of as many as nine disks can also be done in one OS job step, with an additional 60K needed for each additional concurrent operation, the company said.

Improved diagnostics pinpoint physical errors such as invalid VTOC information, invalid count fields and nonstandard zero records while dumping. The $99 FDR can be ordered through P.O. Drawer F, 14 Cloverhill Drive, 07836.

'Dmars' Works With Data Bases

WALTHAM, Mass. – Subscribers of the First Data Corp. time-sharing service can now use the Data Management and Retrieval System (Dmars) which features a report generator, a user-oriented command language and random access file processing. With Dmars, users can define, modify, retrieve and update data bases.

Dmars can search for items by comparing data base fields with numeric values, or with specified text strings on a complete match or a "contains string" basis. Dmars may be used to create subfiles pertinent to a following application, First Data said from 400 Totten Pond Road, 02154.

'Magic' Optimizes Circuits

DALLAS; Texas – The Modern Analytical Generator of Improved Circuits (Magic) general purpose electronic circuit optimization program, is now available through the Univac 1108 centers of the University Computing Co. time-sharing network.

Developed by Scientific System Technology, Inc., also of Dallas, Magic allows the user to specify a circuit and set of element values, after which the computer calculates the circuit responses. In optimization mode, the user also specifies the desired response and the system adjusts the elements to best meet that objective.

Staff, Tools, Approach

System Evaluation Must Be Planned

By Don Leavitt
Of the CW Staff

SADDLE BROOK, N.J. – System performance evaluation has a definable dollar value, but who should do the evaluation and what tools should be used are questions each installation must answer for itself, David Vilek, manager of computer systems support for State Farm Insurance Co., said here recently.

His company saw a need for "some sort of measurement effort," Vitek said, as plans progressed to shift much of the policy inquiry and updating work from 25 "more or less independent" regional DP centers to a centralized site.

The shift involved a changeover from batch-oriented programs written in Autocoder and run on 360/30s and 40s in emulation mode, to pseudo-"real time" programs, largely in PL/I, to be run on 370/165s, with 360/30s used as "intelligent terminals" out in the regional offices.

If present plans are completed, the 165s, located at corporate headquarters in Bloomington, Ill., will be linked together in a quadriplex configuration. The company also has a pair of 155s in Bloomington, for home office use, Vitek noted at a Boole & Babbage User Group meeting.

Faced with such a drastic change, State Farm began to explore all sorts of measurement tools – hardware and software monitors, simulators and program performance evaluators. A study indicated the company might save .8% of DP expenses/analyst/tool used and, perhaps ironically, it might be easier to cost-justify two rather than just one analyst.

Two Measurement Teams

Following a well-structured strategy that moved from an original definition of objectives, through a feasibility study and reports to management, into development and implementation of a measurement group, the company now has four types of tools and eight analysts divided into two teams.

Each of the team members has become strong in the use of a particular tool, but project leadership rotates among them to enhance all their skills. Normally one plans the project, another installs the proposed changes and a third evaluates the results. The fourth member adds his expertise where it will do the most good, Vitek said.

The technical support group, including the measurement teams, has the same status as programming and operations, and leaders of each group report to the same vice-president. There is therefore no built-in "clout" due to organizational position, Vitek noted, and recommendations have to be backed by strong evidence before they are considered.

State Farm uses a mix of packages and devices from a range of vendors. The company acquired the Supermon software monitor from the Cosmic clearinghouse, and the Paces package from Pace Applied Technology to extract and summarize statistics accumulated by IBM's SMF.

The company also uses two versions of Lambda's Efficiency Analysis Program (Leap) from Lambda Corp. – one geared to system analysis, and the other for individual programs and instructions within programs. Leap works well with "standard" PL/I programs, Vitek said, but is not too good with output from the PL/I Optimizing Compiler now available from IBM.

Applied Data Research's System Analysis Machine (Sam), actually a software package, has been used for simulation of proposed hardware configurations.

The teams have used IBM's System Measurement Instrument, and Xray from Tesdata Corp., but have not yet made a final choice of hardware monitor.

'Data Analyzer' Gains Library And Linkage to 'Total' Files

NANUET, N.Y. – The Data Analyzer retrieval/reporting system from Program Products Inc. (PPI) has been enhanced by a procedure library feature which permits sets of user statements to be cataloged and accessed later through CALLs imbedded in other programs.

Stored procedures can include substitution parameters to be supplied in the CALL, and elements of the procedure can be included or omitted conditionally, PPI sources said.

The basic Data Analyzer can create bar graphs, histograms and cross-tabulations without special programming. The package also provides the DOS or OS/360 user with computational capabilities for statistical functions, with table lookup and label writing support.

In addition to the procedure library feature, available without cost to all Data Analyzer installations, PPI is also introducing a separately priced Data Base Interface Language (DBIL) which currently allows the user to link up with the Total data base management system from Cincom Systems, Cincinnati.

The interface makes its possible for Total users to retrieve information from any combination of data sets within a Total data base, and to combine a Total data base with any non-Total files, PPI claimed.

Defining a Total data base to the Data Analyzer is comparable to defining a standard file, the company said, with additional information needed to describe the relationships of data sets within the data base and record types within a variable entry file.

DBIL, providing a series of simplified commands, permits the user to define precisely the method of accessing a set of master or variable files for a particular application or set of applications.

The Data Analyzer uses a 40K partition under DOS/360, or a minimum of 80K under OS. The DBIL module will utilize between 10K and 15K additional bytes, depending on the size of the data base being handled, a spokesman said.

Data Analyzer costs $15,000. The DBIL logic is available for $4,000, from PPI at 20 Turnpike Road, 10954.

Module Shapes Expense Spread

SAN DIEGO, Calif. – An allocation module introduced by Infonational that distributes expense items throughout an organization can be used in stand-alone mode, though it is principally intended for use with the company's general ledger and report writer systems.

The module logic is customized at run-time for each usage and can be applied to a single expense, such as a telephone bill, or to the expenses of an entire cost center, such as corporate overhead, Infonational said. It is parameter-driven so the user defines the input, the target accounts to which it is to be distributed, and the priorities and percentages.

Used with the general ledger system, the allocation processing would normally take place between the basic data gathering and the posting operations. Already designed to isolate "out-of-control" situations that need corrective action, the ledger system with the allocation logic added can pinpoint the bad situations even more precisely than before, the firm said.

The report writer system, like many others, is geared to helping the non-DP professional prepare his own reports. Again, the allocation logic of the new module would enable him to develop reports in more detail than would be possible with the undistributed data, Infonational said.

The allocation module functions under either DOS or OS/360 environments within 32K bytes of storage. It will operate along with available versions of Infonational's general ledger system, on Burroughs B2500/3500, Honeywell 200 and NCR Century 200 systems as well.

The new module is available for $1,500, from 620 C St., 92101.

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DOS Mortgage Run Fits in 24K

DETROIT – Banks with a minimum 24K partitions under DOS can implement a full mortgage servicing and general ledger accounting system, including up to 60 periodic reports, with the Mortgage System (MS) software developed by Ft. Wayne Mortgage Co.

MS supports multi-branch operations and attacks what a Ft. Wayne spokesman called one of the prime expenses in mortgage banking – postage costs. The system generates books of payment coupons which are sent to mortgagees a year in advance, rather than producing individual monthly notices of payments due.

Delinquency notices are sent to mortgagees, and corresponding reports given the bank's collection department, if payments are not received when due. Monthly reports to collection include a breakout of accounts that are 30-, 60- or 90-days overdue, the company noted.

18 Cash Reports

When payments are received, MS distributes the funds into principal repayment, interest and escrow accounts. Some 18 separate reports are produced daily to monitor the cash flow, the spokesman said. Money in escrow can be assigned to several purposes, even within a single mortgage account, he added.

The system generates payments of real cstate taxes for each mortgagee, based on funds in his escrow account and on receipt of the tax bill from the relevant municipality. MS also notifics the bank management when insurance renewals are required and can be adapted to generate premium payments, if the mortgagee has an escrow balance for that purpose.

In addition to reports for the mortgagee and bank management, MS also produces reports in compliance with Federal National Mortgage Association regulations, the company said.

The package is written in Coboi and requires four disk drives in addition to the 24K bytes of memory. MS sells for $7,500 including source code, program listings and user documentation. Expenses for on-site support by Ft. Wayne personnel must be paid by the purchaser, the company said.

Ft. Wayne Mortgage Is in the First National Bldg., 48226.

Compiler Output Moved To DOS Relocatable Library

PINOLE, Calif. – DOS/360 users can catalog compiler output directly in the relocatable library without punching object decks, using tape drives or coding Job Control Language (JCL) statements, with the low-cost Catalr software now available from Marcus Power Associates (MPA).

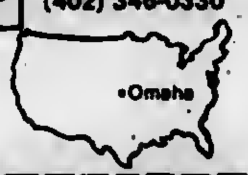
The $99 package eases modular programming, the company said, by enabling programmers to compile individual modules and then link-edit the entire program from the library. Modularity will become especially important as DOS operations are implemented in a virtual storage environment with demand paging, a spokesman noted.

The package operates in conjunction with any standard languages. It copies language translater output from Syslink to the relocatable library, which may be a 2311, 2314 or 3330 direct access storage device. Control cards may be placed in the card reader or preceding the object code on disk.

The Catalr package runs in about 20 seconds in any DOS partition that supports link-editing. It accepts the standard DOS Catalr card, and a pair of additional parameters that providc backup and modification-level maintenance.

The new entries allow the user to tag an incoming module by date and version number so that proven modules cannot be inadvertently overlaid, for example, by a revision. Without this protection, the user would lose his backup in the event the new version was faulty, MPA said.

Catalr may be ordered in object form by sending a check or money order for $99 to MPA, 2694 Doidge Ave., 94564. Source code and program logic will be available for an additional charge, thc spokesman added.



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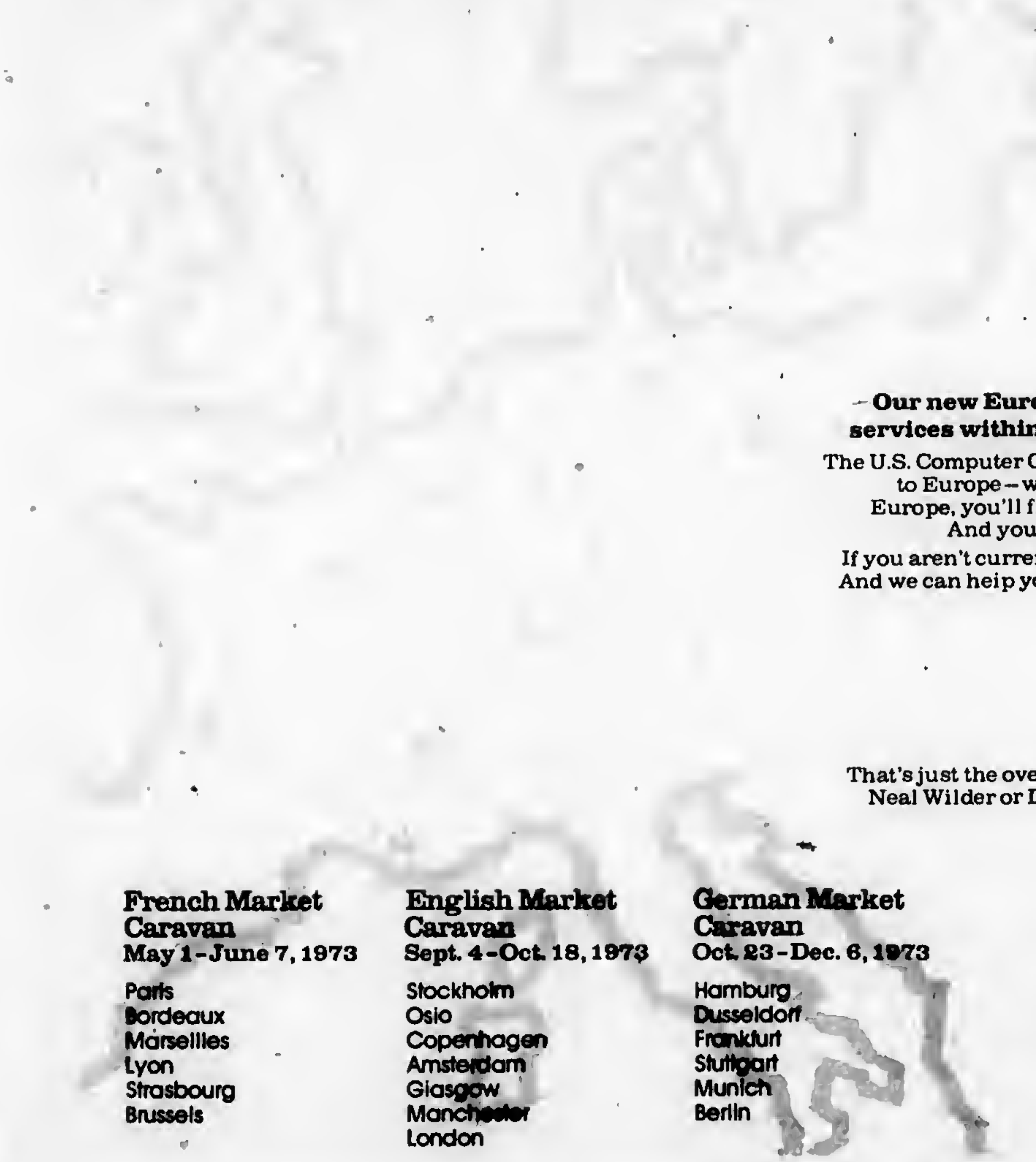

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Foreground/Background 'In'

Nova 800 Jumbo Also Gets Shared Disk

SOUTHBORO, Mass. – A Real-Time Disk Operating System (RDOS) from Data General Corp. can allow users to run concurrent fully protected foreground and background tasks in each of the two processors that make up the Nova 800 Jumbo computer system.

The new software, scheduled for delivery next spring, also supports shared disk operations, the company said, so data might be collected in foreground, for example, and then immediately processed in a background operation.

No Interference

In the protected mode, neither foreground nor background user can interfere with the other or with the operating system. On-line applications such as communications or process control can be run in the foreground while computations, report generation or program development tasks are being handled in the background.

With the disk software, which Data General considers a multiprocessing/multiprogramming package, both data and programs can be shared by the two processors. There is, therefore, no need to maintain separate libraries and use of disk space can be optimized.

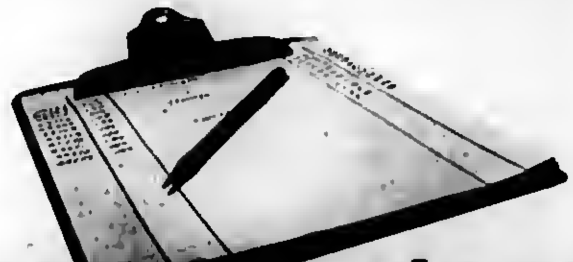
Backup System

The system also eliminates the need for separate peripherals for each processor, the company noted, and, from a different perspective, includes a built-in backup computer if a malfunction occurs on either one.

RDOS also supports expanded memories with up to 128K words of core available in each of the processors. The addressing mechanism allows dynamic allocation of up to 31K words of memory to either or both the foreground and background users, and protection of RDOS-controlled peripherals against inadvertant addressing by user programs.

To function, RDOS requires installation of the hardwired memory management subsystem which is mounted on a single printed circuit board. It costs $3,500 and will be available in the spring.

RDOS itself will be distributed free, Data General said from corporate headquarters on Route 9, 01772.



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GA Package Includes Improved Fortran IV

ANAHEIM, Calif. – Under the Real Time Operating System (RTOS-16), newly available from General Automation Inc. (GA) the company's SPC-16 minicomputer will execute scheduled and interactive programs in a foreground mode concurrent with operation of batch programs in the background.

This means, the company said, that a user could be running time-shared Basic work while simultaneously compiling, editing, debugging or executing Fortran programs, utilizing system resources that might otherwise be idle.

RTOS-16 will run on any SPC-16 configuration, including the smallest one allowable for program generation: 16K of memory, a disk unit and a teletypewriter.

GA's multi-user Basic is described as a complete implementation of standard Dartmouth Basic, including matrix, alphanumeric strings and file-handling capabilities.

An extended version of ANS Fortran IV is also available, incorporating additional features to make more efficient use of the mini's capabilities with few if any changes in programs being transferred from earlier GA operating systems or from other machines.

RTOS-16 is being distributed free to current and future users of the SPC-16 minis, GA said from 1055 S.E. St., 92805.

Varatek Software Drives Process Control PDP-11s

BEDFORD, Mass. – Data acquisition operations can be handled in a multitasking environment on DEC PDP-11 equipment with the DOS-M package from Varatek Computer Systems Inc. Used in conjunction with DEC's standard DOS-11, the new software allows concurrent execution of many foreground tasks along with a single background task.

The foreground tasks are normally event-driven routines working from sensors or other acquisition equipment. The background task supports a control terminal utilizing a command language identical to the one supplied by DEC for single-tasking operations.

Both foreground and background tasks have full file-handling capabilities available on both file-structured and non-file-structured devices. The foreground tasks have file access but no terminal access in the present implementation, Varatek said.

In effect, this means that data captured by each of the foreground tasks can be posted to individual files or other data structures even though no processing is done at the time of acquisition.

DOS-M is available for $3,500, from 1 deAngelo Drive, 01730.

Data Briefs

Communications Interface Added to OCR Scanner

MOORESTOWN, N.J. – Orbital Systems Inc. has added a communications interface to its Orbit/2 OCR scanner.

The scanner can read handprinted characters, pencil marks or punched holes, and with the interface can transmit the scanned data at 110-, 300-, or 1,200 bit/sec. The communicstions capability turns the scanner into a source data-entry terminal, the company said.

The interface can be added to installed units for $700. The complete scanner with interface costs $2,495 from Church & Fellowship Roads, 08057.

Modem Replaces Bell 103F

SUNNYVALE, Calif. – Anderson Jacobson Inc. has an L 184/12 modem to directly replace the Bell 103F data set.

The unit operates in the answer mode over 2-wire private lines and interfaces with standard RS 232-type terminals.

Pushbutton switches allow testing of the equipment and the line. Unlike the Bell data set, the independent unit provides both half- and full-duplex transmission. The modem costs $190 or $9/mo with first deliveries scheduled for early 1973. The company is at 1065 Morse Ave., 94086.

Portable Unit Has Ascii

NEW HAVEN, Conn. – Mite Corp. offers a portable data terminal that can operate at 10- or 15 char./sec over a dial-up line using an acoustically coupled phone.

The device can generate the full 128-character Ascii set and print 64 characters. The unit includes an impact printer that can handle up to six-part forms.

Called the 150T, the terminal costs $2,100 from 446 Blake St., 06515.

NCR Adds Cassettes

DAYTON, Ohio – NCR has added a cassette capability to its thermal printing terminal. Called the 260-6, the unit includes a cassette storage of 2,000 80-character blocks and operates at 300 word/min.

Messages can be keyed in, stored on cassettes and left for later dial-up polling by a central CPU, NCR said. The terminal costs $150/mo with first deliveries in June.

Communications Meeting Planned

SAN JOSE, Calif. – The second annual Computer Communications Conference at California State University (CSU), scheduled Jan. 24 and 25, will explore the communications aspects of time-sharing systems.

Information is available from Dr. E.K. Shaw, 125 S. Seventh St., 94303.

User Benefits Seen

Access Methods Could Reside in VS

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – The addition of virtual-storage concepts will give the teleprocessing (TP) user increased operational flexibilities, Robert M. King, IBM's product manager for large systems, told *Computerworld* in a recent interview.

Such an addition to a communications system may mean that the user can move his TP access method such as Btam, Qtam, etc. out of main storage and into his virtual environment, King said. "If you are going to page your TP access method in and out, you are going to have to pay a penalty of paging. But if that gets to be an intolerable situation, the system can freeze all of the TP access method in memory."

Less Dedication

For the low-volume TP user, virtual storage might make the difference between having a communications capability and not being able to handle this type of job, King said. "It will be easier to justify the low-volume application because less of the system will have to be dedicated to it," he added.

With the TP access residing in virtual storage instead of main memory, the access methods might well become more sophisticated and detailed, but this is strictly conjecture at this point, King said. "As the data processing community begins to exploit virtual storage with its techniques, this type of development certainly becomes possible," he said.

"The remote user has always been subject to the applications programs that exist at the central site. And since virtual storage allows these applications to be more completely implemented, the remote user will get better service," he said. And the central site will be able to offer these increased capabilities without disrupting normal operations, King predicted.

More Complete Implementation

Thus, one of the biggest advantages for the remote TP user lies in the possibility of more complete implementstion of the applications and in being able to run unuaual jobs that previously may not have had sufficient priority in a more conventional communications environment.

"Now the engineer who once a year runs a 500-by-500 matrix inversion and needs a 2 Mbyte region, can get it," King said. This type of remote user previously could not get on the system because of fixed-size partitions, and the fact that no one at the central site could justify the expense of setting this up on a low-volume basis, he explained.

Additional Channels

But increased central-site capabilities may require additional network capabilities, he said. While a virtual system may be able to handle a larger number of TP jobs, additional channel and I/O capabilities might have to be included by the user, he said.

By managing smaller portions of his program (pages) rather than regions, the user will be able to perform "deeper" multiprogramming and handle more on-line tasks in the CPU concurrently, King said.

Testing Easier

The testing of new applications programs for an on-line system will be easier in a virtual-storage environment, King said. As an example, a 512K 145 could be used to test programs that would later be run on a 2 Mbyte 165. The entire application could be tested on the 145 even though the performance on the smaller system might not be equal, he said.

And since the virtual environment "is more dynamic, the user can get more frequent test shots," King said.

Most large users that convert to virtual-storage capability will already have some TP operations, King said. And these systems will be enhanced with the increased flexibility which the new operating systems provide, he said. This in turn will make it easier to expand the communications functions, he said.

As a final point, King said virtual systems used in on-line applications provide the user with easier backup since small systems (512K) can be made to "look like" large systems (2 Mbytes) – making it less of a problem to switch a different system into the network. But such a switch to an alternate mainframe would still require a manual switchover, he said.

Turnkey Teleswitcher Runs Message Network

MILWAUKEE – Although a store-and-forward message-switching system usually requires customized software, some users prefer to get this capability on a turnkey basis.

For a company without extensive in-house capability configuring a message-switching network can be a real problem. One firm solved this problem by selecting a turnkey system.

Loewi & Co. Inc., an investment banking firm, serves its customers by entering large volumes of orders direct to the floors of various stock exchanges. To handle the 47 teletypewriters used by the firm's various offices, Loewi installed a Teleswitcher system from Computer Control Systems Inc. (CCS).

First Things First

The Teleswitcher acts as a controller for the TTYs and assigns priority status to messages determining in what order they will be sent. Before installing its own system, Loewi depended on a store-and-forward system operated by a correspondent broker, according to Terry Watts, manager of order processing.

Whenever a part of the system went down, Loewi would have to arrange for maintenance through the correspondent which controlled the system, Watts said.

With the in-house Teleswitcher, the company has "complete control," Watts said.

To Floor in Minute

The company uses Model 28 TTYs, according to Treasurer Bill Sullivan. With the Teleswitcher and 83 B3 lines from the telephone company, messages can be transmitted to the floor of an exchange in less than a minute, Sullivan said. The messages are transmitted at 100 word/min using 15 half-duplex teletypewriter circuits. Each message is in contention for available circuits depending on priority.

At present the Teleswitcher store-and-forward system is self-contained. The company also has a 360/30 which could be connected on-line to the Teleswitcher. But any administrative data that is accumulated by the front end is key-punched and entered off-line into the mainframe. If the company decides to connect the two processors, CCS can also provide that capability on a turnkey basis, Sullivan said.

The complete Teleswitcher installation cost the company about $100,000, according to Watts. Because Loewi avoided the configuration of the system in-house and also achieved closer control over its order-entry system, the firm feels it was worth the cost, Watts said.

Cuatom Job

The Teleswitcher is based on a DEC PDP-8 which is customized with software and the necessary peripherals to operate in the Loewi network. The firm considered two other front ends, according to Watts, and based on the two-yesr rental costs of the other systems, it was decided the company would be better off buying its Teleswitcher.

Although used primarily to execute buy-and-sell orders, for securities received from branch offices, the Teleswitcher system also transmits sales messages and handles administrative traffic between Loewi offices. The front end maintains a log of all messages and also provides management with reports and trends of network activities.

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'Our Service Offerings Base On Needs of Users': MCI He

By Ronald A. Frank
Of the CW Staff

CHICAGO – "All our service offerings are based on the specific needs of users and we are always looking for additional input from our customers."

This is how John Goeken, president of MCI Communications Corp., reviewed the first year's operations of MCI at an anniversary meeting for 16 of the new carrier's initial users.

Tracing the long regulatory fight to begin service, Goeken said most of the 21 different digital channel bandwidths now available between Chicago and St. Louis were selected based on user's needs. He cited one large publishing company which wanted to transmit data in one direction to its regional printing plants. "This is what led us to offer one-way service," Goeken said.

The specialized carrier will begin to serve users between Chicago and New York in July 1973, according to John DiGregorio, MCI national account representative. About 51 tower sites have to be constructed along the New York route and almost half of these are already in place, DiGregorio said.

The equipment for each site is being preassembled in Dallas and each tower building and its equipment are transported into place either by truck or by helicopter, he said.

In addition to New York, MCI will inaugurate service to Philadelphia, Cleveland, Pittsburgh, Toledo, Detroit and Akron by the middle of 1973, according to Carl Voder Bruegge, senior vice-president.

By the end of the year service will be added in Baltimore, Washington, Minneapolis, Milwaukee, Dallas and Fort Worth, he said. And West Coast cities including Los Angeles and San Francisco will have MCI facilities in the first quarter of 1974, Vorder Bruegge estin

In 1975, MCI plans to beg
service, DiGregorio said. The
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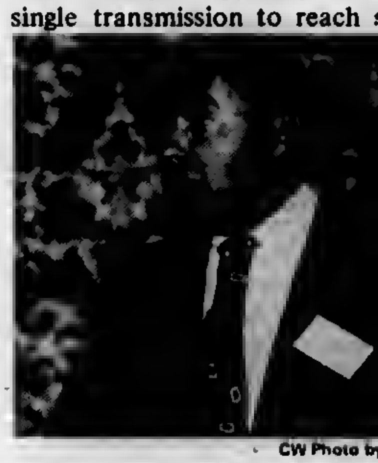


CW Photo b

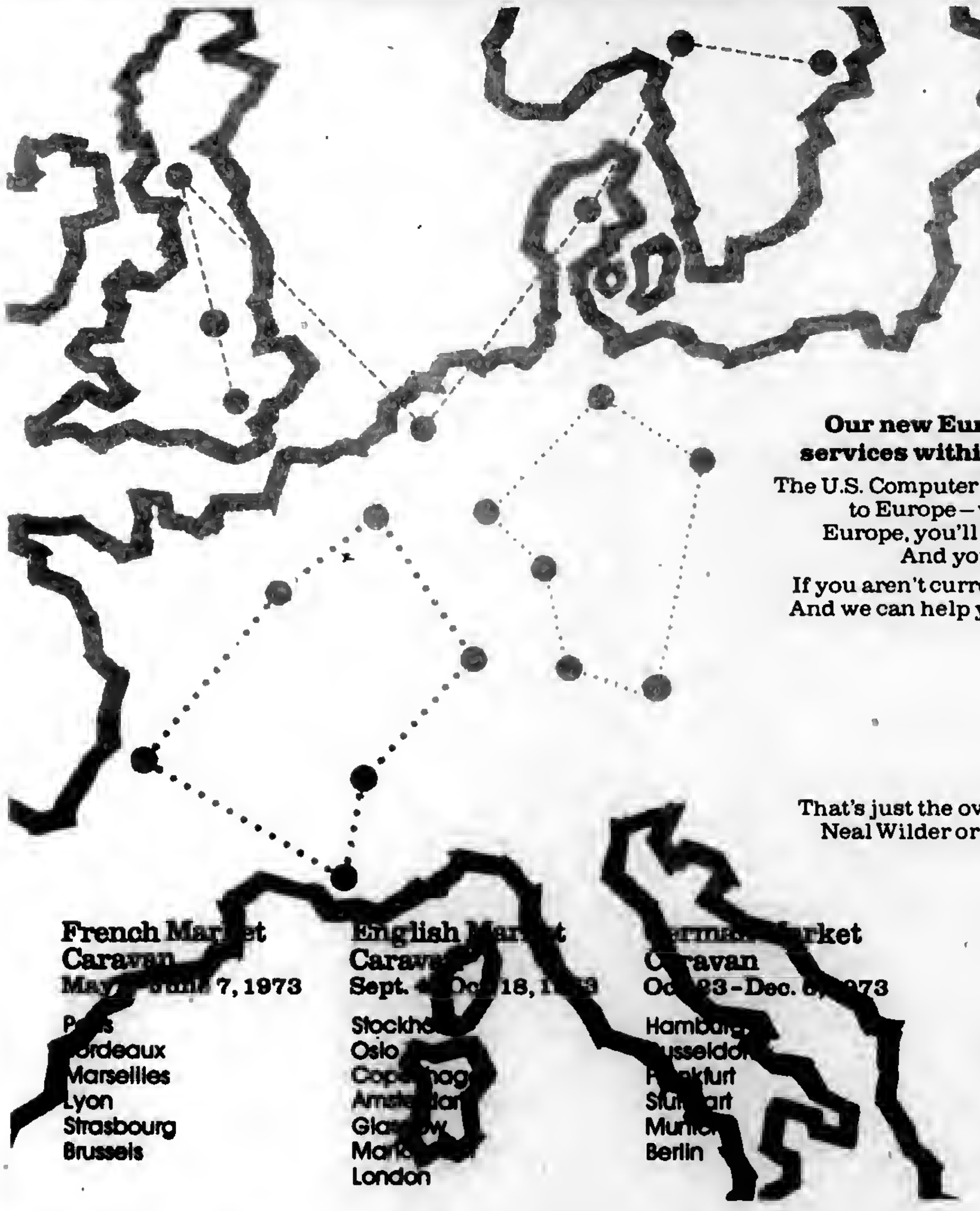
John Goeken, MCI presiden
users.

locations simultaneously. An
satellite service will not be
distance, he said.

Elaborating on the satellite
Buchan, president of MCI
Corp., said FCC approval
soon for a joint undertaking w
If approval is granted, a ne
called Spacecom may be forn

While satellite service will b
addition to terrestrial com
links, users will probably take
ties pretty much for grant
said. "The user is interested
his application. The end resu
tant regardless of how the in
transmitted," he said.

An MCI user group formed
try lines may be one result o
meeting, according to an MCI
Although the company is
advocating such a group, it w
support if initiated by users, h



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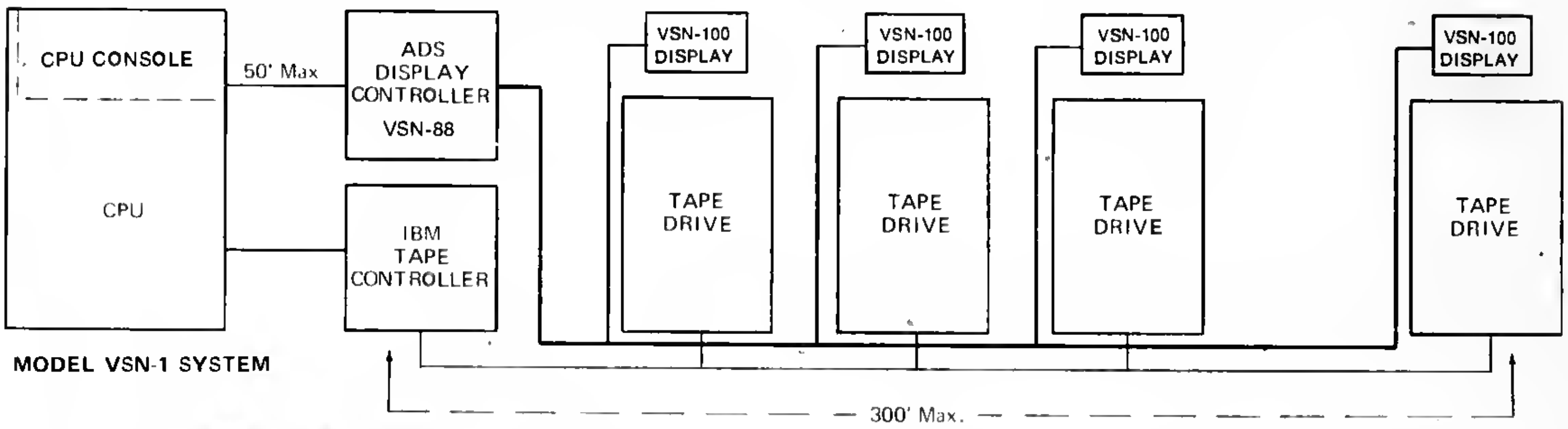
When a Mount Message occurs, a push-button indicator on the VSN Display flashes to attract the operator's attention. Simultaneously, the Volume Serial Number of the tape reel to be mounted on that drive is indicated by the display. The indicator will flash until the operator depresses the push-button light.

As illustrated, all displays are connected to an ADS-supplied controller, which in turn is directly hard-wired to the IBM Computer Console channel bus.



MODEL VSN-1 SYSTEM

INSTALLATION AND MAINTENANCE

The VSN displays and controller can be installed in one day, by factory-trained personnel. Cable is routed under the raised floor from the VSN system controller to the tape drive and externally up the back of the drive along the hinged side of the swing-out access door. A separate hardware maintenance contract is available from ADS on a time and material basis.

ADVANTAGES

- Reduces human error by providing a more positive identification of the tapes to be mounted.
- Eliminates the need for a console printer or equivalent in the tape drive area just for displaying Mount Messages.
- Eliminates voice communications between the CPU console operator and the tape drive area.
- Improves operator response time to tape mounts.
- Allows the operator to carry more tapes for faster servicing of tape drives.
- Reduces computer room noise and confusion.

DISPLAY CHARACTER SIZE

Model	Description	Character Height
VSN-100	6 Character Numeric	0.75"
VSN-300	6 Character Alphanumeric	0.75"
VSN-400	16 Character Alphanumeric	0.4"
VSN-88	Display Controller (includes console connection capable of driving up to 64 displays)	

NOTE: 6, 16 and 32 alphanumeric character displays are also available for interfacing with other CPU main frames and minicomputers.

The flashing light will extinguish automatically when the tape mount is satisfied, provided a communication interface controller Model VSN-99 is used.

A typical VSN system serving 8 tape drives, consisting of 8 VSN-100 displays and one (1) VSN-88 Controller, is presently priced at $166 per month or a purchase value of $4.960.

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Access Bank Data Bases

Portable Terminals Replace TTYs

NEWTON, Mass. – The use of portable terminals for data retrieval is growing within the banking industry. Many banks are acquiring portable units as replacements for the more bulky, less flexible teletypewriter.

The portable terminals used by banks fall into two categories: those that remain in-house and are useful from the standpoint of mobility and those taken outside by bank personnel. The latter type provides remote access to the bank's mainframe system wherever a phone can be acoustically coupled to a portable terminal.

The Chemical Bank in New York has established transatlantic data links with portable terminals accessing data bases in Cleveland on the GE time-sharing system. The bank uses Execuport terminals from Computer Transceiver Systems Inc. They are connected to U.S. CPUs from various sites in Western Europe including the UK, France and Germany, according to Ruth Wallestad, a senior consultant for financial studies at Chemical Bank.

The bank has developed corporate forecasting packages which are maintained on the GE system. The packages are designed to complement local accounting practices used by corporations in Europe. The data models on which the forecasts are based are stored on the GE CPUs in Cleveland.

With the portable terminal, a Chemical Bank representative can produce projected income statements, balance sheets and other financial reports for a prospective client in Europe.

Own Data Base

The bank has developed the software for the corporate forecasts and GE provides the line facilities and the CPU power to generate the results. "To make your assumptions to derive your financial reports you have to create your own data base," Wallestad said. The use of the data models for forecasting purposes is leased to corporations by the bank, she explained.

The Execuport terminal has been used for financial demonstrations both in this country and abroad and the only problems have occurred in the U.S. in areas served by independent phone companies, she said. The portable terminal originally was not set up to handle non-Western Electric telephones, but this problem has now been solved with an adapter, she added.

"With some customers, the immediate financial printout generated with the portable terminal is "the selling point," Wallestad said. "They want to see it in action."

Another bank which utilizes portable terminals, but for a different purpose is the Beverly Bancorporation in Chicago. The bank currently has about 60 terminals connected to an IBM 370/145 which is used to retrieve loan account data and similar day-to-day operations within the bank, according to Dino Kapadia, manager of research and planning.

Less Connect Time

A recent survey by Kapadia's department showed the Texas Instrument portable 720 terminals had about 36% less CPU connect time per month than another bank which was using teletypewriters.

The main reason for the increased efficiency, according to Kapadia, was the faster 30 char./sec transmissions on the TI portable terminals compared with the 10 char./sec on the Model 33 TTYs. Two banks with similar operating procedures were compared for the survey, he said.

From a practical standpoint, Beverly Bancorporation likes the portable units because they are easy to shift around among workers as needed.

IDCMA Approves AT&T Protection Proposal

WASHINGTON, D.C. – AT&T's plan for protection of private lines [CW, Nov. 22] using non-carrier equipment has drawn a "conditional" approval from the Independent Data Communications Manufacturers Association (IDCMA).

In a letter to the FCC, Arthur Carr, IDCMA vice-president, said the association would not oppose the proposal with the understanding that "protective devices are an interim approach that will not prejudice" any future certification program.

The only proper approach for a final solution to the interconnection question is one in which the user may utilize "either carrier or customer-provided equipment with the same line service," Carr said.

IDCMA is approving the AT&T plan with the understanding that the carrier will not "engineer" private lines with the proposed protective measures in such a way that they make it more difficult for the installation of independent data equipment, the letter said.

Private line protection is "an interim solution" pending settlement of interconnection issues before the FCC, Carr said.

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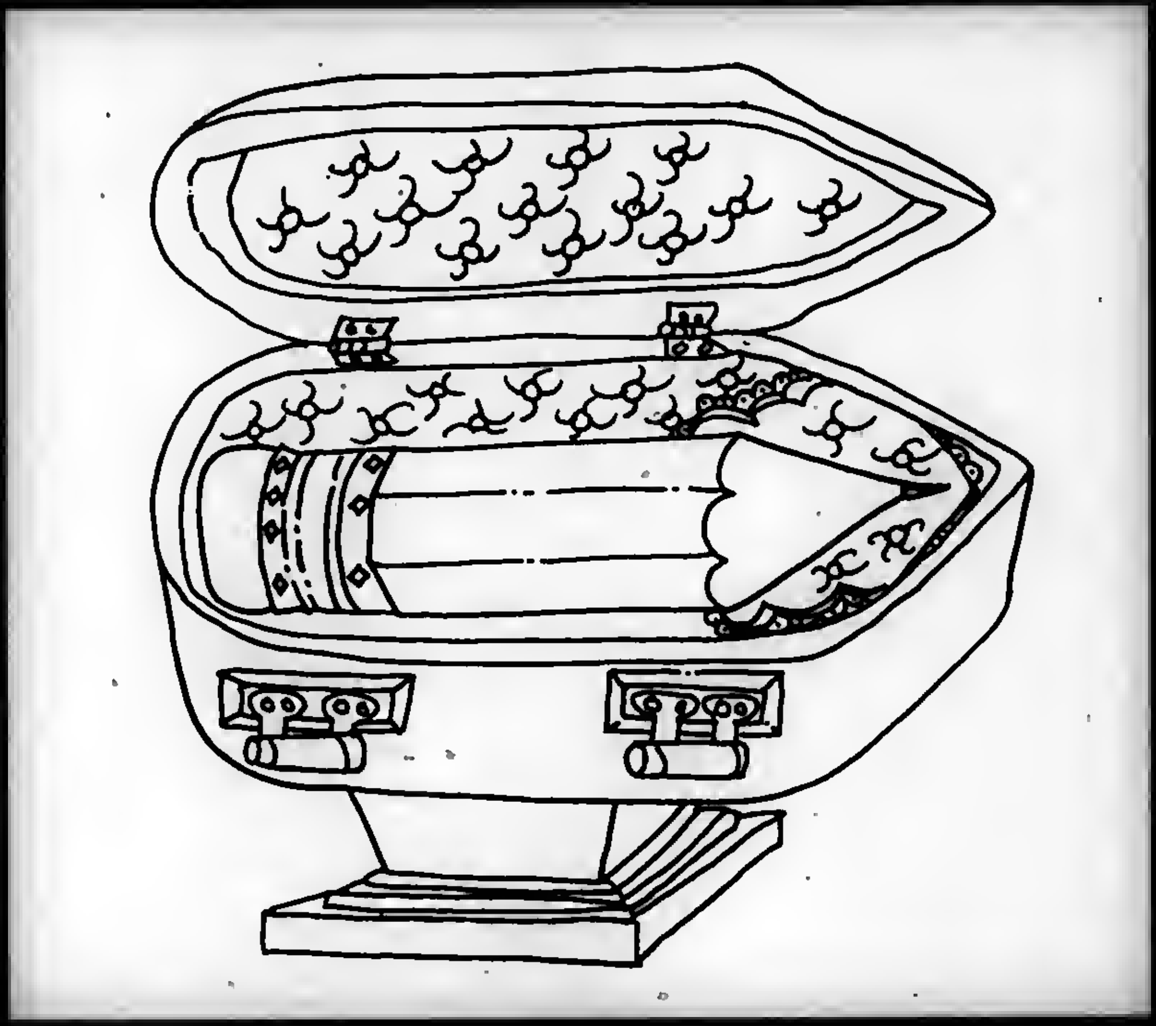

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SYSTEMS & PERIPHERALS

Bits & Pieces

IBM Users Offered Add-On Memories for Large 360s

WAPPINGER FALLS, N.Y. – IBM System 360/65, 360/75 and 360/67 users now have new add-on or replacement memory, according to the developer, Intermem Corp.

The Series 70 memory system provides 256K to 1,024K bytes of 750-nsec memory and up to 4M bytes attachable to an IBM 360/65 the firm stated.

The system features a built-in off-line test unit and an all-modular construction including plug-in boards for both memory and logic.

Successful installation of the Series 70 has already been accomplished, a spokesman noted.

Prices for add-on start at $84,000 for the 256K unit and increase to $198,000 for the 1M-byte unit.

A lease plan is available and service is through Comma Corp. Delivery is within 60 days from Market St., 12590.

Camera Captures CRT Images

MAHWAH, N.J. – For users who need to take high-resolution photographs of terminal-display images Celco offers the COF/FIC Camera Display System.

The camera system – with a basic price of $7,500 – is self-contained and attaches directly to the front of the CRT. The camera is electronically controlled and includes a through-the-lens light-metering system. Light transmitted through a film negative can also be detected by the optical-scanning back.

Standard models I, II and III – 16mm, 1,000 TV lines; 35mm, 2,000 TV lines; 70mm, 4000 TV lines – are available. Custom systems require six months for delivery from 70 Constantine Dr., 07430.

Sprinkler Turns Off After Fire

PROVIDENCE, R.I. – A sprinkler head is designed to automatically shut off after extinguishing a fire, according to a spokesman for Grinnell Fire Protection Systems.

The Aquamatic operates by means of a heat-sensitive disk in the sprinkler with each head operating independently so water is directed only at the point of the fire, the spokesman stated.

Typical computer room installation of the Aquamatic system costs about $1 per square foot, from 10 Dorrance St., 02903.

Unit Aids Headline Writers

MIDLAND PARK, N.J. – A computerized character counter which will provide a readout of character units to 1/100th of a pica is available for headline writers from Terminal Equipment Corp. The Kara-Kount consists of an IBM Selectric equipped with a Holmes-Tycom transmit-only applique and a digital computer, and costs $2,960 from 214 Franklin Ave. 07432.

Links PDP-11, PDP-15

DEC Offers Dual-Processor System

By Michael Weinstein
Of the CW Staff

MAYNARD, Mass. – Digital Equipment Corp. has taken its medium-size PDP-15, connected it to a PDP-11 through a multiplexer and the Unibus and come up with the PDP-15/76 dual-processing system.

The design objective of this system is to have the larger PDP-15 perform the large processing tasks while the PDP-11 handles administrative and peripheral tasks, a DEC spokesman stated.

A further advantage to DEC users, he stated, is that the PDP-11 has more compatible peripheral devices so the 15/76 system can be configured in more user-oriented versions.

Also unveiled with the new system is the RK15 disk cartridge system enabling present PDP-15 users to upgrade to the 15/76.

Second Processor

The heart of the new system is the Unibus – part of the basic PDP-11 configuration – which provides the PDP-15 with a second general-purpose processor and a second high-speed I/O data transfer bus.

The standard unibus is an 18-bit data pathway permitting transfer of 18-bit PDP-15 words, the spokesman stated, in addition to 16-bit PDP-11 words or two 8-bit bytes.

With the Unibus is a memory multiplexer, designed to emulate byte operation in the PDP-15 memory so memory is usable for PDP-11 programs, and to enable byte-oriented devices to make data transfers directly to the common memory in the PDP-15.

The RK15 consists of the Unichannel-15 peripheral processor – a PDP-11/05 with 4K 16-bit words of core memory, a memory multiplexer enabling the PDP-11 and PDP-15 to share the 18-bit core memory of the 15 and an interrupt link for interprocessor communications – a disk memory controller and 12M-word disk drive.

PDP-15/76 performs full parallel processing.

The PDP-15 portion of the system includes paper tape reader, 16K words of core memory and magnetic tape unit.

Three Operating Systems

Three software operating systems are offered with the PDP-15/76 including DOS-15 – a disk-operating system; BOS-15 – a batch-operating system; and RSX-plus – a real-time resource-sharing executive.

Prices for the 15/76 start at $64,300 with the RK15 costing $18,900. First deliveries are set for March.

Lower-Cost Units Added to Line Of Tape and Cassette Equipment

WALTHAM, Mass. – Kybe Corp. has beefed up the low end of its line of cassette tape products and management systems with a tape-management system, a cassette reader and separate writer and a line of cassette tape.

The TMS-77 is the third and lowest-priced of Kybe's tape management systems combining the functions of computer magnetic tape testing, cleaning and precision winding, a firm spokesman said.

TMS-77 is designed for the small- to medium-sized user with simple testing requirements.

Innovations include an electronic motion control that eliminates "cinching" in the tape reel and a digital printout device for presenting test results, the spokesman stated.

The Ky-reader and Ky-writer are additions to the firm's line of cassette tape systems, operationally acting like a paper tape reader or paper tape punch, respectively.

Industrial Applications

These units are especially designed for users in the areas of numerical control, data logging and industrial applications, the spokesman said.

Kysette Red Label is called a lower-priced cassette tape for the user who does not need the superior performance of premium lines.

Unit cost of the TMS-77 ranges from $6,200 to $6,800. Prices for the Ky-reader and Ky-writer range from $2,200 to $2,600 in single units. Cost of the Kysette Red Label is $4.75 in 100-unit quantities.

The firm is at 132 Calvary St., 02154.

PGI Interfaces 844 Disk System With HIS Units

CHERRY HILL, N.J. – Users of Honeywell models 400, 600 and 6000 processors can now interface with the PGI 844 Disk System through a new model of the 844 Universal Controller from Peripherals General Inc.(PGI).

The 844-1 Controller connects directly to the CPU operating as a replacement for GE DSS 160 or 180 Series removable storage subsystems, the firm stated.

Standard and Double Density

Two disk drive models are offered: a standard density unit with storage capacity of 31.2M char./spindle; and a double-density unit.

A nine spindle 741 system has a capacity around 250M char. The same configuration using 742 drives stores near 500M char., a spokesman stated.

Access time is seven msec track to track, with an average random-access time of 29 msec.

A typical five-spindle system with Honeywell interface leases for $2,500/mo on a two-year lease. This compares with $3,300/mo for the standard Honeywell units, the spokesman said.

Delivery is 60 days from Cherry Hill Industrial Park, 08003.

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TSM has been under development at COMRESS for several months to overcome a major technical/economic problem facing the hardware monitoring industry: the reliance on the electronic hardware counter as the basic method of data capture.

THE PROBLEM: In the traditional approach, a high-speed hardware counter is connected to the host system for each function to be measured.
If, for example, you wanted to measure "device (disk) busy", you would attach a small electronic sensing device called a "probe" to the disk unit itself, and the device busy signals would be physically read into the hardware counter.
The number of direct, simultaneous measurements you would be able to take would be limited to the number of hardware counters in the monitor—generally 16 to 32.

To get some idea of the severity of this limitation, take a typical 360/50 installation: to measure all concurrent

1000 measurements simultaneously.

CPU, channel and device activity—*by program*—you would need somewhere between 400 and 500 hardware counters. Or an investment approaching one-half million dollars in measurement equipment. For larger systems, the counter requirement could easily exceed 1000. Obviously, this investment is not feasible. There had to be a better way.

THE SOLUTION: The TSM Process captures all measurement data at the central processor—including device and channel identification—time-stamps it, and sends it through a high-speed buffer to the D-8011 Mini-Computer. The mini keeps track of what's going on and calculates all activity with nanosecond precision. This makes it possible to measure thousands of system functions simultaneously. It also eliminates all but one *standard* set of sensor probe attachments—an enormous simplification over the earlier method.

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Utility Augments Disk System With COM

HOUSTON – The Houston Lighting & Power Co. is using a microfilm retrieval system to replace nine million pages of computer printout, save space, provide better customer service and reduce costs by two thirds, according to O. C. Hennessy, manager of operational research.

The need for something better became evident when customers would call and ask for information on previous bills. "It took an uncomfortably long time to put the customer on hold, call another department, wait for them to locate records in binders along 140 feet of counters, write down the information and then relay it back to the customer waiting on the phone," he continued.

To illustrate the scope of the problem, Hennessy said the company receives about 100,000 calls a month from customers wanting to know specific information on their utility bills. Of these, about 10,000 cannot be answered using on-line terminals connected to the firm's two IBM 370/165s.

'Horrendous' Amount

The amount of 3330 disk space required to keep a minimal amount of information about customers is "horrendous," he continued.

"We keep on-line information on the last two months of power usage, bill and previous balance by customer, but most inquiries are of a special nature, such as those concerning a customer who moved."

With Varian Microfiche Retrieval/Display units, "we are able to visually display a complete history of any customer within 15 seconds of his call,' he stated.

Besides providing better customer service, the microfiche system has ended the paper flood and is about "one-third as expensive as the paper record-keeping method – each Varian microfiche reader costs about $2,500."

Another advantage cited is that it previously took seven hours for an employee to burst, sort and file the paper output while the microfiche now is available every day at 9 a.m.

Also four printers were kept busy 24 hours a day just producing the paper records. With microfilm the need for impact printers is reduced by more than one-half, Hennessy stated.

$245 Camera Unit Yields Hard Copy From CRT Images

SAN DIEGO – Users with an occasional need to produce hard copy from the screens of video display terminals are offered a $245 unit from Integrated Controls.

Built around a Polaroid camera and light-screening hood, the Scope-Mate is designed for users not able to justify paying $3,000 to $4,000 for a facsimile device, the firm's spokesman stated.

The hood fits over the display screen with the hand-held camera to produce 3-1/4 in. by 4-1/4 in. black-and-white or color photos in about 15 seconds, the spokesman said.

One camera-hood unit can be used with several terminals – moving from one to the other as the need arises – without additional equipment costs, the spokesman said.

The Scope-Mate has the same operating specifications as Polaroid's CU5, the spokesman commented, but costs $100 less.

The purchase price of the camera unit comes to about one month's rental fee for the typical facsimile unit, he said.

The firm is at 3045 Moore St., 92110.

Scope-Mate camera can be moved from terminal to terminal.

Textile Dyeing Lives

FOXBORO, Mass. – A computer-directed system to control textile dyeing operations has been introduced by Foxboro Co.

The Dye Control System simultaneously controls any combination of up to 30 dye machines. Machines controlled can be atomospheric pressure, jet, beam, package and package or beam with flow control.

Depending on applications, the system will justify itself economically with as few as eight machines, according to the firm.

Foxboro provides documentation, startup assistance, maintenance and service support with a typical system costing about $150,000.

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Backup System Provides Non-Stop Power

MAHWAH, N.J. – Abex Corp. wanted to operate its IBM System 7 for an application that required continuous operation – day and night, seven days a week; but it first had to solve some costly and unforeseen power problems by installing its own power back-up system.

When the project was first started, it was felt that if electrical power was lost four times a year, the company could tolerate it, said Tim Flanagan, engineer of tests at Abex's research center.

When operation began, line problems were causing the machine to crash not four times a year, but several times a week.

Each time the System 7 crashed, memory was totally lost. Lengthy programs were lost in execution.

Armed with the records of frequent outages, Flanagan and Herb Lloyd, research center manager, paid a visit to the local utility company to compare records.

Lloyd asked for records on local power outages over the previous year and asked what the utility expected for the future.

He was surprised to find that the utility company only counted outages when systems were 'down' 15 minutes or more, Lloyd explained.

"At this point," Flanagan said, "we decided to invest in our own power supply system – something we could install at a cost of less than 1/10th that of the computer and yet have as its primary responsibility the maintenance and continuous power support to the system, regardless of transients, spikes or out-and-out power failures on the line."

A no-break-up uninterruptable power supply (UPS) system from Gould Inc. was recommended and installed. Heart of the installation is a static inverter – used as one component in an overall standby power system consisting of a charger, a battery bank and the inverter.

The inverter carries the computer's electrical load at all times, regardless of whether problems exist or not. Under normal circumstances, the charger provides the input current to the inverter plus floating the battery bank or recharging it as necessary. The charger in turn is run from the standard AC line.

In the event of failure to the commercial AC line, the inverter continues to run on the battery for a 20 minute emergency operation time. This is adequate to allow for an orderly shutdown of the system with no memory loss, Flanagan stated.

In this mode of operation, as long as the charger is functioning properly, there is no drain on the batteries. Input current for the inverter is derived from the charger and does not flow through the battery.

Within the inverter, the oscillator provides the basic frequency (60 Hz ± 0.5%) adjustable by a variable resistance control.

Standard invert-a-stat frequency is 60 Hz (50 Hz units can be supplied). By synchronizing the oscillator to an external signal or to those of other units, line synchronization can be obtained.

Inverters of the same rating may be added by utilizing a paralleling logic circuit, Flanagan said.

The SCR unit operates as a switching circuit with the silicon-controlled rectifiers triggered alternatively by the oscillator square wave output. Output of the inverter is another square wave with amplitude directly proportional to the input DC voltage.

This is a standard circuit to which modifications have been made to provide more reliable commutation and important protective features for elimination of high transients and component burnout.

The regulating filter is a ferroresonant device which converts the square wave into a sine wave of low harmonic content (normally 5%) and regulates the voltage output (normally ± 3%), and also provides overload and short-circuit protection.

"With the turnkey UPS system we're now using," Flanagan concluded, "we have more failsafe performance. And transient protection – something we were never able to identify as a problem simply because we didn't have the monitoring equipment – is a solid bonus."

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PL/I Made More Useful Teaching Tool; 'Pluto' Speeds Compilation Process

J. Daniel Couger On Education

As supplied by the manufacturer, PL/I is not economical for the university environment, due to lengthy compilation times. A teaching-oriented compiler must emphasize compilation speed, at the expense of execution speed. The University of Toronto has designed Pluto, a fast in-core PL/I compiler with a highly diagnostic interpreter for teaching most of the programming techniques possible with PL/I.

Tests comparing Pluto with PL/C showed they compile at similar rates, even though Pluto supports full PL/I while PL/C supports only a subset.

The Pluto compiler is a single pass (i.e. statement-at-a-time) high-speed compiler which translates from the PL/I source language to a pseudo-machine language. It consists of a number of reentrant modules.

The pseudo-machine instruction set is large and includes some very powerful instructions. It provides not only for the computations required by Pluto, but also includes instructions which manipulate and control program flow and status information to allow extensive run-time diagnostic reporting.

The instructions are in three basic formats – single word, double word and multiple word. Most computational instructions have two operands – source and target/source, while I/O and other multiple-word instructions reference a variable number of operands (with an extremely large upper limit).

Performance of Pluto

The Pluto system (version 1) is now installed at the University of Toronto Computer Center and has been in use since September 1971.

The experience with the first-year course demonstrated the advantages of the Pluto system and provided an opportunity to make a number of realistic performance measurements. The existence of formal BNF grammars for the syntax has been welcomed by the lecturers, either as a vehicle for original teaching of the language syntax or as backup to resolve syntactic details if a more conventional descriptive approach is taken in the lectures.

A main advantage is the diagnostic capability provided by the compiler/interpreter approach. The error messages are produced in-line wherever possible, and explicitly refer to context of the error, giving hints as to possible causes for this error where appropriate. Even more impressive is the information provided for execution time errors.

All possible information is given as to what variable is unassigned, whether there are other variables of different scope with the same name (namesakes), how the variable was originally declared and how control reached the statement where the error occurred.

Pluto execution speed is slow. However, it is quite acceptable for a student environment, and far exceeds the speeds normally associated with fully interpretive systems.

With the compiler and interpreter operating in an overlay mode, 150K of core provides adequate object space for student programs (Pluto object code is typically 1.5 times the size of code generated by PL/1-F for the same program).

A detailed description of Pluto was prepared for the June 1972, issue of *Infor* by P.I.P. Boulton and D.L. Jeanes of the University of Toronto. The publication is available from P.O. Box 2225, Station D, Ottawa, Ontario.

Couger is professor of computer and management science at the University of Colorado.

ASM Film Catalog Aids User Training

CLEVELAND, Ohio – *The Systems Film Catalog*, published by the Association for Systems Management (ASM), lists nearly 150 films, from many sources, that could be used in conjunction with a user's training program.

The 60-page booklet divides the 16mm films into technical areas including basic DP concepts, flowcharting, systems applications and forms design. More general topics, ranging from "communications" and human relations, through management and work measurement and improvement, are also covered, ASM noted.

The catalog describes the contents of each film, its running time and whether it is in color or black-and-white. The sources and rental fees are also given, but a foreword warns users that the fees may not be current by the time they want to use a particular film.

The $2 booklet is available from ASM headquarters, 24587 Bagley Road, 44138.

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CI Notes

Scan-Data, Inforex Kill Merger Plans

NORRISTOWN, Pa. – Scan-Data and Inforex have canceled their previously announced plans to merge in order to form a data-entry company.

Scan-Data said the agreement was ended because "certain previously expected advantages of our combination now don't appear attainable."

The firms said they intend to resume discussions regarding possible OEM product purchase arrangements which had begun prior to the agreement in principle reached in December.

Unicomp Shakeout Victim

EL MONTE, Calif. – The shakeout in the mini business has claimed the Unicomp subsidiary of Hoffman Electronics Corp.

The subsidiary, founded in mid-1969, has never been profitable, according to Dr. Wendell B. Sell, Hoffman president. Originally Hoffman was a 31% investor in the firm, but took over 100% control two years ago.

"The competitive environment in the minicomputer field is so intense that we see no point in making the substantial investment required to penetrate that market," Sell said.

Ampex Lands IBM Pact

MARINA DEL REY, Calif. Ampex will supply ATM-13 tape drives to IBM under a contract valued at over $600,000 initially, but which may go as high as $3 million.

IBM will use the units in the Data Processing Subsystem it is building for the U.S. Air Force Airborne Warning and Control System (Awacs) under a contract from the Boeing Co.

Supershorts

Informatics has gained exclusive U.S. and Canadian marketing rights to Quick-Draw, a proprietary software package developed by National Computer Analysts, Inc.

Turnkey Systems Inc. has appointed Hoskyns Systems Ltd. as distributor of its Task/Master telecommunications monitor in the UK. Tecsi-Software will serve the same role in France.

Four-Phase Systems Inc. has appointed Parvac Corp. Ltd. as exclusive Canadian sales representative

Applied Data Research Inc. has registered the 2,500th sale of a proprietary package. There are 1,759 Autoflow systems in the field; 611 Librarian systems; and 102 Metacobol packages with the rest distributed among the remainder of the firm's line.

Computer Hardware Consultants & Services has received a Federal Supply Schedule contract that includes field service and core memory for upgrading 360/30s to 256K.

Inland Associates will sell the Computer Memories' (a division of Applied Magnetics) line of head-per-track disk memories to OEMs in the Midwest.

I/O Devices has signed a memorandum of understanding with Ricoh Co. of Tokyo, allowing Ricoh to purchase a 25% equity position in I/O. Ricoh will also have manufacturing rights to the I/O Model 100 printer on a world-wide basis under the agreement.

2 More Good Years Seen

'72 Mainframe Shipments Top $9 Billion

By a CW Staff Writer

NEWTON, Mass. – "There's no doubt about it" – 1972 was one of the best years ever for mainframe computer shipments, according to International Data Corp., a computer industry research firm here.

Shipments by the mainframe computer makers during the year moved off the $7 billion plus plateau and jumped to over $9 million, according to *EDP Industry Report*, a publication of the firm.

The total increase in worldwide shipments by the U.S. mainframe makers was up around 25%, the firm reported after an analysis of the preliminary figures.

The firm also reported that all evidence available "indicates that at least two more healthy, if not booming, years are in store for the computer industry," predicting a 15% yearly increase in the installed computer base for 1973 and 1974.

Like the Good Old Days

IBM, as expected, paced the growth among U.S. computer manufacturers during 1972, a year that "will stack up as one of those growth years reminiscent of earlier times in the computer industry," the firm declared.

It noted, however, that "this is the first real growth year for computer shipments since 1968."

According to the firm's preliminary figures, which are subject to revision "as additional inputs are analyzed," IBM shipped equipment valued at $6.11 billion during 1972, a 34% increase over the shipments in 1971.

The only single company in the top eight showing a higher percentage increase was mini-maker Digital Equipment Corp., whose shipments were up 45% over the 1971 figure at $185 million.

Big Loser

The only big loser of the year was the RCA computer operation, with shipments of $60 million, or 50% off the shipments registered the previous year. This was expected, of course, since Univac took over the RCA base early in the year and began trying to shift customers to Univac machines.

Honeywell was third behind IBM and DEC in terms of shipment growth during the year, registering a 29% growth in 1972 over the 1971 figures. In all, Honeywell's shipments amounted to $750 million.

Univac was close behind with shipments of $420 million, a 26% increase over the previous year. Xerox managed a 17% increase in computer shipments, for a total value of $50 million.

Control Data increased its shipments 12% during the year for a total of $210 million. Burroughs and NCR were the only firms still in the mainframe business with less than a 10% gain in shipments. Burroughs, with shipments of $405 million, was only 6% ahead of its shipment rate for 1971, while NCR was 5% ahead with shipments of $195 million.

In the non-mainframe area, the manufacturers of IBM plug-compatible peripherals showed only a 1% increase in shipments during 1972 over the 1971 figure. The total 1972 shipments for this group were estimated at $440 million, IDC said.

IBM's share of the 1972 shipments was put at 66.9% of the total, IDC indicated, easily allowing it to maintain its lead in the installed equipment base.

Trying Harder?

In the number two spot was Honeywell with 8.2% of the 1972 computer shipments, followed by Univac with 5.3% of the shipments during the year, when the shipments of RCA systems are accounted with the rest of the Univac shipments.

The independent IBM-compatible peripherals makers accounted for 4.8% of the shipments during the year, while Burroughs accounted for 4.4% of the dollar volume of shipments.

Following the leaders were Control Data with 2.3% of the 1972 shipment action; NCR with 2.1%; DEC with 2% of the total value; and Xerox with .5% of the total shipments.

"The bubble of oversell generated in the mid-to-late 1960s in the U.S. has finally been cleared from the pipeline," according to the firm, which indicated the "heavy wave of retirements has finally slowed as users begin to implement new and well-planned applications."

In addition, IDC indicated the importance of the overseas market to domestic computer producers will hold steady in the next few years compared to the past two, when it was a major contributor to corporate profits.

Guzy Plan: IBM Should Spread Its Wealth Around to Users

NEW YORK – IBM's excess capital should be made available to users so they can finance computer purchases, whether or not those computer purchases are from IBM or other manufacturers, according to James Guzy, executive vice-president of Memorex.

Speaking here recently, Guzy claimed the "availability of IBM credit to all users of computers would open up a new source of capital to finance the acquisition of data processing equipment.

"Perhaps an analogy could be drawn to the operation of the General Motors Acceptance Corp. or to the General Electric Credit Corp.," he added.

Pointing out that the industry has reached a position of considerable importance in the national economy, as well as the U.S. balance of payments status, Guzy noted the issue of whether the industry can prove itself viable by free enterprise or face government-imposed controls is a critical one.

"The problem of financing, not technology, retards the development of the DP industry," he stated.

"It is time that we cast aside the myth that a company's expansion is limited only by its ability to perform and get its product accepted in the marketplace," he said.

"Access to capital on reasonable terms is antecedent to these acts. We should recognize that our industry has come into a phase of its development when the concentration of capital and initiative within a small number of companies is working not only to impede the even growth of the industry at large but also contributes to an unhealthy public feeling that the economic life of the nation is after all dominated by a few," he noted.

"IBM has the only true capital surplus in the business. The balance of the industry operates with a capital deficit. On this exceptionally critical point, the often cited figures of total market size and comparative market shares mean very little," Guzy continued.

"While IBM can make a yearly half billion dollar distribution of funds to its shareholders, its competition is dependent on a continued flow of outside capital contributions for the growth of their operations," he said.

"The capital imbalance in our industry beggars the imagination. IBM pays out more in yearly dividends to its shareholders than the total capital which all its competitors are able to raise in a year," Guzy emphasized.

"Moreover, IBM retains an even greater amount in cash and liquid items because it cannot invest these excess funds to earn the same high rate of return that it has in the past," he said.

"I think it is a fundamental point that the result of adequate capital for our industry would be predictable savings to all computer users," Guzy asserted.

"Unquestionably, the many innovations outside IBM could, if properly financed, supply significant additional growth to the industry and great utility to the user," he continued.

Reinvest 'Excess' Lease Payments

Guzy proposes that "the so-called 'excess' lease payments – those beyond recovery of costs and after a contribution to profit – be reinvested in the industry to produce tangible benefits to the user community."

"The 'IBM credit window' . . . would be a major step in placing the burden of financing user acquisition of equipment where it more rightly belongs – that is, with the user and not with the manufacturer," he stressed.

But, he noted, "for a number of reasons it will likely require strong outside pressure to move IBM to activate these vast funds in a manner which is not prejudicial to competition."

IBM Wins One

Judge to Screen 'Private' Papers

NEW YORK – IBM recently won a battle with the government in its antitrust suit when a federal Court of Appeals struck down a pretrial order of Judge David Edelstein which would have allowed the Justice Department to use documents that IBM claimed were private.

The Court of appeals in a 2-to-1 decision ordered that "a judicial determination" of whether the documents were privileged would have to be made. So now a special judge will have to rule on each of the disputed 1,200 documents to determine whether Justice will be able to use them in its case.

In contention was the privacy of certain IBM records that had been turned over to Control Data and to the Justice Department in the pretrial proceedings in the two cases.

Under the early order calling on IBM to produce the documents, the firm was given the right to retain those it felt were private or proprietary for one reason or another.

In the rush to produce the over 25 million documents that have so far been turned over in the case – documents said to weigh over 87 tons – IBM said it inadvertently let 1,200 of these documents slip through its censors.

The documents could be potentially embarrassing to the company and include the so-called Faw memorandum which discusses the reasons for IBM's price control in the market [CW Dec. 27/Jan. 3].

Edelstein had agreed with the Justice Department that these documents should be part of the case, claiming that since IBM had released them they were part of the public record.

Suppliers May Be Inhibited

Trade Secrets, Tax Issues Confuse Software Sector

This is the second in a series of articles dealing with the effect of the recent Supreme Court decision in the Benson-Tabbot patent case. In the first article [CW, Dec. 27/Jan. 3] attorney Roy N. Freed discussed the impact on users. Here, excerpted from a copyrighted paper, he discusses the effect on the software industry.

By Roy N. Freed, Esq.
Special to Computerworld

One would hope that the misconception of the Supreme Court will not be misapplied in the trade-secret area to diminish that mode of protection. That result would be truly serious for the country by jeopardizing the viability of software suppliers.

We have not yet begun to utilize digital computers to any significant portion of their potential. Programs make that utilization possible.

The software business promises to have potential of almost unimaginable proportions and should not be inhibited by the threat of commercial piracy and the resulting inability to capitalize fully on the large investments in the engineering effort represented by program design.

Just when programs are characterized as merely ideas or mathematical formulae, efforts are being made to tax their owners substantially, particularly on the basis that they are tangible personal property.

Unfair Taxing?

Ironically, there is a great danger that taxing authorities will misconceive their true nature in ways opposite to the Supreme Court and consequently tax their owners unfairly by attributing greater value to the tapes and other new media than is proper, based on long-standing principles of valuation.

It is essential to recognize for taxation purposes also that program creation is engineering effort resulting initially in design specifications for information-processing processes. Thereafter, products, such as magnetic tapes, are made utilizing those specifications in order to carry out the processes so devised.

Those products must be valued carefully in light of the purposes of the engineering investment and by applying traditional principles to the actual facts. There are two key factors in valuation of magnetic tapes and related items.

First, it is necessary to recognize that the bulk of the engineering design expenditure is for the creation of a licensable or usable process rather than physical goods of the type that are marketable. Then, there is the new phenomenon that more than one copy of a magnetic tape is needed to make only a single use of the program process.

Not Equal

Hence, each tape "copy" should not be valued equally. Instead, it should be recognized that there is a primary tape for the use of a program process and also a number of satellite or supporting tapes to facilitate that use of the primary tape.

These approaches can be the key to sound and fair valuation, taken in conjunction with the fundamental distinction already suggested between the cost of the design engineering effort and the values of the resulting primary tapes created and marketed or used.

The cost of that effort attributable to the marketable tapes should be allocated among the total quantity of primary tapes expected to be produced.

Common Factors

Thus, there are important factors common to both the design of measures to protect proprietary programs and the application of sales and use taxes and tangible personal property taxes to the new types of property. The proper handling of the protection task might automatically achieve the fairest tax treatment for program marketers and users.

Since, as indicated, the marketing of programs properly involves both licensing of trade-secret processes and the distribution of tangible items (e.g., magnetic tapes) for performing those processes by means of digital computers, it is advisable to characterize those two components expressly in the business transactions in just those ways and to price each of them separately in the correct relationship that reflects their relative values, usually allocating the larger charge to the process license fee.

Grisanti Named Pertec 'Acting' President

LOS ANGELES – Frank A. Grisanti has been appointed "acting president" and chief executive officer of Pertec Corp., replacing Harold A. Kurth, as part of a compromise settlement of a proxy contest. The annual meeting will resume Jan. 30.

Kurth and Stuart Mabon, former director, remain employees of the company.

A new board of directors was selected, and the number of directors reduced from six to five. Reelected were Donald F. Eldridge and Robert A. Kleist.

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Microdata Unveils Tape 6000 Transport

New OEM Products

IRVINE, Calif. – The Microdata Tape 6000 transport offers file search and rewind speeds of 200 in./sec with instantaneous and long term tape speed variations of ± 1/2%.

The maximum data transfer rate is 72K char./sec (1,600 bit/in. at 45 in./sec). A dual gap read/write head and an erase head are standard with the drive.

The Microdata Tape 6000 operates under any set of diagnostics, the firm said.

The unit uses 10 1/2 in. reels with direct drive motors and offers either 7 or 9 track systems. Price in OEM quantities is under $3,000, from 17481 Red Hill Ave.

Tycom Unit Replaces IBM 735 I/O Writer

POMPTON LAKES, N.J. – Tycom Systems Corp. has unveiled the Model 73, a plug-for-plug replacement for the IBM 735 I/O writer which utilizes the Holmes Tycom baseplate and converts any standard IBM Selectric I or Selectric II into an I/O printer.

The Tycom system requires very little or no modification of the interface electronics already in use with the 24- volt correspondence-coded Model 735, the firm said.

Price of the Tycom Model 73 for OEM quantities is $835 with delivery 45 to 60 days from 750 Hamburg Turnpike.

Infomag Positions Heads

GOLETA, Calif. – The Model 35 head positioning system for rotating disk drives with performance characteristics similar to the IBM 3330 has been announced by Information Magnetics Corp. (Infomag), 5743 Thornwood Drive.

The system produces a stroke length of 2.14 in. (constant force), with a total stroke of 3.80 in. Access times to within .0002 in. of final position are 3.5 msec for .005 in. stroke, 22 msec for one-third stroke and 40 msec for full stroke.

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A "pancake" keyboard designed for use with personal, portable electronic machines, from hand-held computers to educational toys and teaching machines, has been introduced by Mohawk Data Sciences Corp., Herkimer, N.Y.

The thickness of new keyboard assembly is less than 1/10-in. Typical per station cost to the high volume user is 14 cents per station exclusive of cap. Delivery is 10 to 12 weeks.

Microdata Tape 6000

– – –

An MOS/LSI Asynchronous Receiver/Transmitter, capable of half- or full duplex operation from Western Digital Corp., Newport Beach, Calif., can be programmed to transmit 1.5 stop bits.

MDS Pancake Keyboard

Orders & Installations

General Electric Co.'s Re-Entry and Environmental Systems Division has ordered a multiprocessor System 86 from Systems Engineering Laboratories, Inc. The unit will be linked with 12 environmental test chambers to acquire, process and display test data for aerospace hardware development programs.

Region IV Education Service Center, Houston, Texas, has purchased and installed a Control Data 6600 system to expand its administrative services and student instruction capabilities.

Irving Bank and Trust Co., Irving, Texas, has installed a Burroughs B3500 to handle check processing and internal applications as well as outside services.

The Times Publishing Co., St. Petersburg, Fla., has ordered two Honeywell 2000 and two Datanet/2000 front-end processors for both business and production tasks.

Castletons, Inc., a Salt Lake City retail chain, is installing Model 726 point of sale terminals made by the Sweda International Division of Litton Industries.

United Services Life Insurance Co. has leased an AU 100 Data Entry System from C3, Inc.

Northrup Corp.'s Aircraft Division, Hawthorne, Calif., has ordered a multi-mode interactive CRT display from Information Displays, Inc. The system will be used with Northrup's Large Amplitude Flight Simulator.

The U.S. Trust Co. of New York has purchased the Automated Tape Library Accounting System from GTE Data Services Inc.

The Sarasota County Board of County Commissioners (Fla.) is installing an NCR Century 200 which will be used by the sheriff, the board of tax assessors and for utility billing.

Some IBM 360 users have chosen to upgrade their existing systems rather than jump into a 370. Many others still face this important decision. And if you're in that position, our January 31st Supplement will be a big help.

Supplement Editor Ron Frank has talked to users who have upgraded, and he'll report on their experiences and problems. Cost factors will be analyzed, and there will be a survey of the various tools now available for upgrading a 360, including:

- Independent main memories
- Faster peripherals
- D.A.T. Boxes
- Independent software

If you're a 360-user, you'll find a lot to think about in this supplement. And if you have a product or service which can up a 360, you should be advertising in this special supplement. Your Computerworld representative can give you all the details. Or call Judy Milford at (617) 332-5606

On January 31st, Computerworld shows "How to upgrade your 360."

Univac Pronounces '72 'One of the Best'

BLUE BELL, Pa. – For Univac, 1972 was "one of the best fiscal years in the division's history," according to Gerald G. Probst, president of the Sperry Rand Corp. division.

"Revenues are better than 30% higher for the first 11 months of 1972 over the comparable period last year," he noted, adding: "Our bookings for commercial products are also running about 30% higher for the same period."

The good showings, he said, were primarily "due to the renewed strength of the U.S. economy which continues to recover from the recession.

"We are finding that the economy's increasing strength is instilling greater confidence in users with the result that they are accelerating computer acquisitions and implementing decisions that were postponed during the recession," he added.

Growth Abroad

In addition, he said, the continuing market growth in Europe and Japan is "encouraging," but he warned that "it is impossible to forecast" the possible effects of European discussions relating to a combined computer operation between the UK, France and West Germany.

"Naturally we would be concerned if any proposals for trade barriers limiting U.S. exports of computers should be erected," he stated.

"Conversely," he added, "we believe that our own domestic market should be open to non-U.S. manufacturers in the spirit of free, competitive trading."

In the past year, Probst said the acquisition of the RCA customer base has "continued to be highly successful. The rate of retention of this customer base is over 90%," he noted.

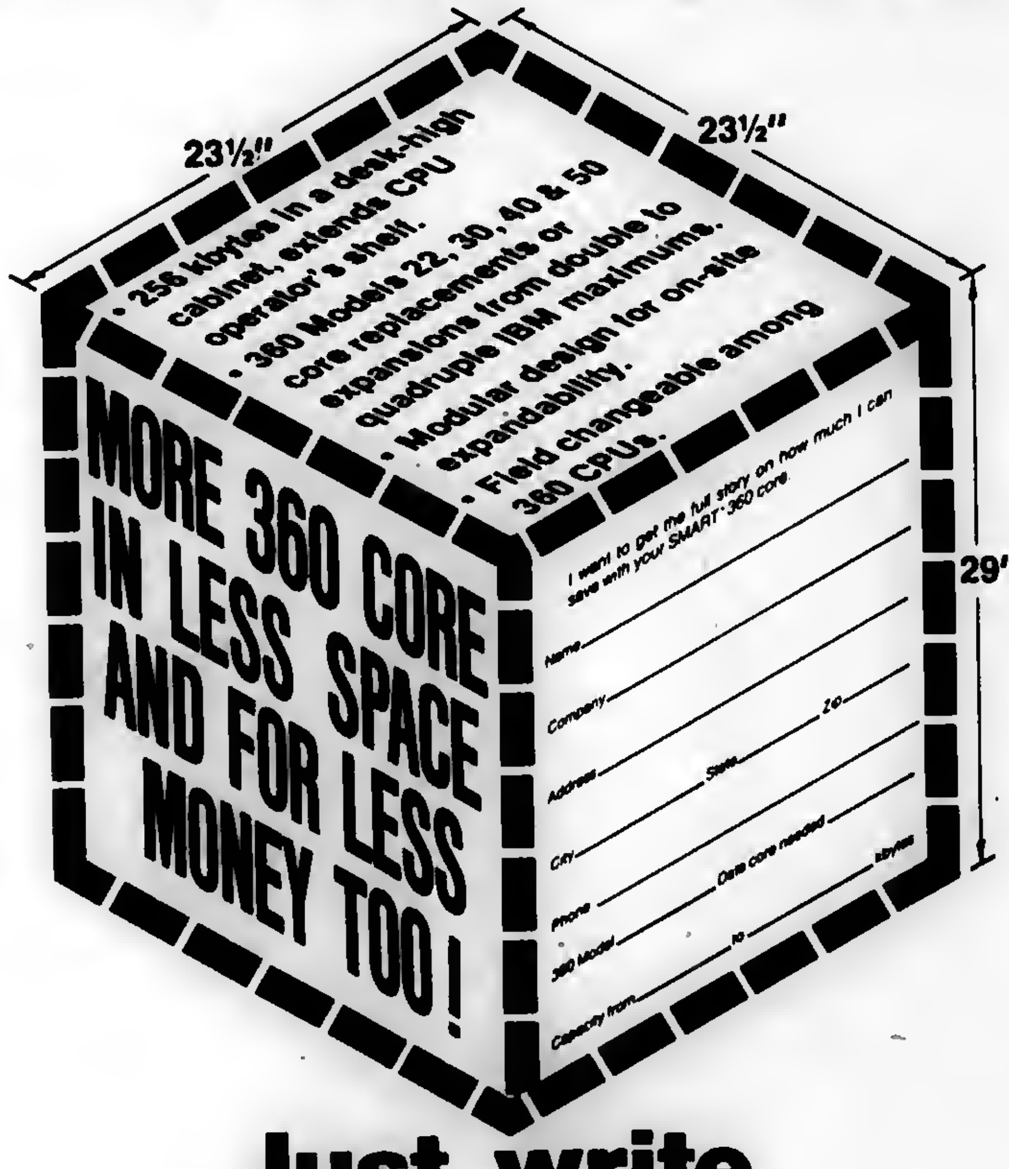
In the future, he said, with the U.S. shifting its resources away from the defense area toward "coping with domestic social-economic needs, we expect to see a strong demand for our computer systems in the state and local government area.

"At the same time we look forward to controlled growth in the defense sector as the Armed Forces, faced with the high costs of an all-volunteer force, seek to utilize more automation as a way of reducing expenses."

Probst also predicted increased business in the areas of special technology systems, such as those used in air traffic control operations.

Executive Corner

- Walter R. Oreamuno, chairman of the board, has been named chief executive officer and chairman of the Management Assistance Inc. (MAI) executive committee, succeeding Jorge M. Gonzalez.
- Richard J. Elkus has been elected chairman of the board of directors of Ampex Corp.
- W.F. Goodyear has been appointed vice-president, Nasdaq system at Bunker Ramo Corp.'s Information Products Division. He will be responsible for planning and implementation of new enhancements to the automated stock quotation system.
- William Rennie and Harold Proctor have been appointed Eastern and Western vice-president, respectively, of Potter Data Products Service, Inc.
- Martin L. Cohen has been appointed vice-president and general manager of International Teleprinter Corp., a subsidiary of The Singer Co.
- Robert G. Clark and George A. Reed have been elected to the board of directors of Data 100 Corp.
- E.W. Green has been named president of Intercon Systems. James M. Shrode becomes chairman of the board.
- Roger L. Buiten has rejoined Ann Arbor Computer Corp. as vice-president and marketing manager.
- Burroughs Corp. named three new vice-presidents: Edward W. Schening, manufacturing, corporate staff; Fitz R. Caudle, field marketing, International Group; and William TenBrink, marketing, Western region, Business Machines Group.
- Wesley J. Hennessy and Bernard D. Loughlin are new members of Hazeltine Corp.'s board of directors.
- George Toor has been elected vice president, marketing, by Wangco Inc.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SIMULATION — Experience in the analysis, design and implementation of large digital simulations are required for the development of simulations of BMD systems. Systems to be analyzed include the requirements and design of Real Time Operating Systems, and BMD Applications Programs. Three to five years experience in large scale, real-time digital simulation is preferred.

OPERATING SYSTEMS — System programmers/designers/analysts with experience in CDC 6000/7000 hardware/software (or other comparable systems) and/or large scale operating systems are required to perform operating system analyses to include the review of requirements, design concepts, and testing utilizing software tools, e.g., simulations, where applicable.

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○ the automated construction of large real-time (non-real-time) software packages
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	6960, 7520, 7915			9053, 9558	
1	1051-N1	No. 55972	1	2401-2 (9 Tr.)	No. 27913
	3130, 4409, 4410			9063, 9558	
	4411, 9708, 9884		1	2803-1	No. 11300
1	1052-8	No. 67264	1	2311-1	No. 34643
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1	1403-N1	No. 37208	1	2311-1	No. 34644
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MDS Six-Month Earnings Decline, Reflect Rental Program Expenses

HERKIMER, N.Y. – Substantially lower six-month earnings at Mohawk Data Sciences, Corp. (MDS) continued to reflect the expenses of the firm's rental program with the System 2400 and KDS systems. Revenue, however, rose to a record $68.5 million, of which $39.1 million came from rentals and service income.

"While the staggering costs of expanding a worldwide systems sales and field service force continued to be expensed as incurred, the impact on current earnings is beginning to lessen now that a viable base of systems has been placed by our marketing organization," observed President R.P. Rifenburgh.

"As a result of special marketing programs designed to enhance the order rates of our other rental equipment and systems," he added, "we are seeing additions to the installed base of these earlier lines and our total backlog reaching near-record levels.

"Furthermore, we have accelerated our efforts for the outright sale of equipment and systems. These efforts have begun to bear fruit as evidenced in the recently announced Burroughs Corp. and AEC contracts valued at approximately $5 million and $4.3 million respectively," he added.

"We are completing the transitional phase of our development as a systems supplier which began more than two years ago. Our progress has not been without its setbacks nor has it always been evident in our financial results," Rifenburgh stated.

Earnings for the six months ended Oct. 31 totaled $301,000 or 5 cents a share compared with $1 million or 18 cents a share in the same period a year ago.

Revenues rose to $68.5 million from $54.7 million in the same 1971 period, and included $5.1 million from the sale of rental equipment to Randolph Computer Corp. under a previously announced agreement.

MDS has agreed in principle to acquire Elastolabs, a manufacturer of ink reservoir rolls, Rifenburgh said.

Nickels & Dimes

Burroughs has declared a quarterly dividend of 16 cents a share payable Jan. 20 to shareholders of record Dec. 22.

$$$

Dataflux, developer of a fixed read/write head for disk drives, has obtained $200,000 from local private investors and completed an internal financial reorganization, which will enable it to begin immediate production of the units.

$$$

Spectronics' total backlog reached $1.8 million the end of September, up 139% from last year. The firm makes optoelectronic products and functional assemblies for peripheral gear. Earnings turned around to $47,000 in the half, from a loss of $60,000 in the same 1971 period.

2260 DUCS 3270

We are pleased to announce the availability of DUCS-V (Display Unit Control System - Version 5). DUCS-V will concurrently support both the IBM 2260 Display Unit as well as the IBM 3270 Display Station in a local environment. The 3270 Display Stations are simulated in 2260 mode with no alteration necessary to the user's programs. The basic DUCS-V Program (2260 support only) is a licensed program product available from C F S, INC. for a monthly lease fee of $25.00. The DUCS-V 3270 simulator feature is also a licensed program product available for an additional $15.00 per month. The 3270 Simulator may be added to any DUCS-V System subsequent to the initial installation of DUCS-V without user reassembly or linkage editing.

DUCS-VI will be available during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goren.

CFS

Potter 1st Period Earnings Rise

PLAINVIEW, N.Y. – Potter Instrument Co., Inc. has started off its new year with earnings of $141,000 or 5 cents a share in the first quarter ended Sept. 30.

This compares with a loss of $49,000 or 2 cents a share in the comparable period of 1971, which has been restated to reflect various charges totaling about $15 million taken for the year ended June 30.

Revenues grew to $10.7 million from $7.1 million in the year-ago period.

Orders from original equipment manufacturers continue to increase totaling almost $11 million in the quarter, up 140% from the year-ago period, the firm said. This figure represents a 56% improvement over the immediately preceding quarter.

OEM sales for the period were almost $6 million, 50% more than in the year-ago period.

In the year ended June 30, Potter decided to write down about $9.7 million in deferred expenses on rental and service of equipment and also on R&D expenses.

Potter also reduced the book value of rental equipment by about $3.4 million, and made provision to write off certain obsolete and excess inventory, for about $1.9 million before taxes.

As restated, the loss for the previous year totaled $13.1 million or $4.76 a share.

Datapoint Expects Quarter Turnaround

SAN ANTONIO, Texas – Datapoint Corp., formerly Computer Terminal Corp., expects earnings of about $156,000 or 4 cents a share for the first quarter of fiscal 1973 compared with a loss of $607,000 or 18 cents a share for the restated period of 1972.

Revenues skyrocketed to $2.8 million from $720,000 in the year-ago quarter ended Oct. 31.

Shipments of the Datapoint 2200 Intelligent Data Handling System have continued to increase, and accounted for 77% of shipments in the quarter, the firm said.

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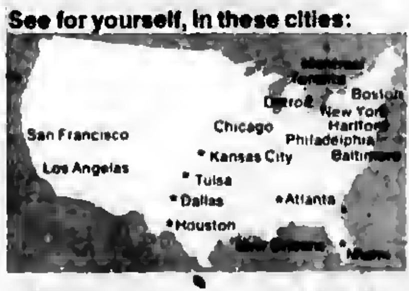

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TRADE·QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, JANUARY 4, 1973

SOFTWARE & EDP SERVICES

EXCH		1972 RANGE (1)	CLOSE JAN 4 1973	2-WEEK NET CHNGE	2-WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 3	2 1/8	+ 1/4	+13.3
A	APPLIED DATA RES.	3- 7	3 7/8	+ 1/2	+14.8
O	APPLIED LOGIC	1- 4	2 3/4	- 1/4	-8.3
N	AUTOMATIC DATA PROC	72- 99	90 5/8	+ 1/8	+0.1
O	BRANDON APPLIED SYST	1- 2	7/8	- 1/8	-12.5
O	COMPUTER DIMENSIONS	4- 14	4	+ 1/4	+6.6
O	COMPUTER DYNAMICS	1- 4	1	0	0.0
O	COMPUTER NETWORK	3- 7	3 1/2	- 1/4	-6.6
N	COMPUTER SCIENCES	4- 10	5 1/4	+ 1/2	+10.5
O	COMPUTER TASK GROUP	1- 2	1 1/4	0	0.0
O	COMPUTER TECHNOLOGY	3- 8	2 7/8	- 1/4	-8.0
O	COMPUTER USAGE	7- 14	8 7/8	- 1/2	-5.3
N	COMPUTING & SOFTWARE	14- 28	14 1/2	+ 1/4	+1.7
O	COMRESS	1- 3	1 3/8	+ 1/4	+22.2
O	COMSHARE	5- 10	7 3/4	- 1/8	-1.5
O	DATATAB	4- 9	4 1/8	+ 1/8	+3.1
O	EDP RESOURCES	2- 8	2 3/4	0	0.0
A	ELECT COMP PROG	1- 5	2	+ 1/4	+14.2
N	ELECTRONIC DATA SYS.	43- 65	55 3/4	+1 1/4	+2.2
O	INFORMATICS	5- 11	5 3/4	+ 3/4	+15.0
O	I.D.A. DATA CORP	1- 3	5/8	+ 1/4	+66.6
O	KEANE ASSOCIATES	4- 7	3 3/4	+ 1/4	+7.1
O	KEYDATA CORP	7- 13	10 3/4	0	0.0
O	LOGICON	4- 9	4 5/8	+ 1/8	+2.7
A	MANAGEMENT DATA	4- 10	4 3/4	0	0.0
O	NATIONAL CSS INC	8- 31	29 3/8	+2 7/8	+10.8
O	NATIONAL INFO SRVCS	1- 5	1 3/8	0	0.0
P	ON LINE SYSTEMS INC	8- 28	24 5/8	+ 3/8	+1.5
N	PLANNING RESEARCH	6- 17	6 1/8	0	0.0
O	PROGRAMMING METHODS	20- 25	24	- 1/2	-2.0
O	PROGRAMMING & SYS	1- 2	1 1/8	0	0.0
O	RAPIDATA INC	5- 27	23 3/4	- 1/4	-1.0
O	SCIENTIFIC COMPUTERS	2- 4	1 5/8	0	0.0
O	SIMPLICITY COMPUTER	1- 5	3 5/8	- 7/8	-19.4
O	TBS COMPUTER CENTERS	3- 6	3 7/8	+ 3/4	+24.0
O	TCC INC	1- 3	5/8	+ 1/8	+25.0
O	TYMSHARE INC	7- 11	9 5/8	+ 3/8	+4.0
O	UNITED DATA CENTER	5- 8	5 3/4	- 1/2	-8.0
N	UNIVERSITY COMPUTING	9- 26	9 5/8	-1 1/8	-10.4
A	URS SYSTEMS	6- 10	8 1/4	+ 3/4	+10.0

PERIPHERALS & SUBSYSTEMS

EXCH		1972 RANGE (1)	CLOSE JAN 4 1973	2-WEEK NET CHNGE	2-WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	32- 49	33 1/2	+1 3/8	+4.2
O	ADVANCED MEMORY SYS	12- 23	16 1/2	+2	+13.7
N	AMPEX CORP	5- 15	6 3/4	+ 3/4	+12.5
O	ANDERSON JACOBSON	4- 8	4 1/4	0	0.0
O	BEEHIVE MEDICAL ELEC	1- 8	6 1/2	+ 1/8	+1.9
A	BOLT,BERANEK & NEW	5- 21	12	+ 3/4	+6.6
N	BUNKER-RAMO	9- 14	9 7/8	+ 5/8	+6.7
A	CALCOMP	9- 25	12	+1 1/4	+11.6
O	CAMBRIDGE MEMORIES	9- 15	13 1/2	+1 1/4	+10.2
O	CENTRONICS DATA COMP	6- 28	22 1/2	+3	+15.3
O	CODEX CORP	6- 25	19	+ 5/8	+3.4
O	COGNITRONICS	2- 5	2 5/8	+ 1/8	+5.0
O	COMPUTER COMMUN.	1- 7	3 1/8	+ 3/8	+13.6
A	COMPUTER EQUIPMENT	2- 4	2 5/8	+ 3/8	+16.6
O	COMPUTER MACHINERY	7- 13	10 3/8	+1 1/4	+13.6
O	COMPUTER TRANSCEIVER	2- 9	5 1/4	- 1/8	-2.3
A	COMPUTEST	3- 9	4	0	0.0
N	CONRAC CORP	24- 39	31 7/8	+1 3/8	+4.5
A	DATA PRODUCTS CORP	3- 7	4	+ 1/4	+6.6
O	DATA RECOGNITION	1- 5	1 1/4	0	0.0
O	DATA TECHNOLOGY	2- 5	2 1/2	+ 1/4	+11.1
O	DI/AN CONTROLS	0- 8	4 1/4	+ 1/8	+3.0
N	ELECTRONIC M & M	3- 8	5 3/8	+ 1/2	+10.2
O	FABRI-TEK	2- 5	3 3/4	- 1/4	-6.2
O	GENERAL COMPUTER SYS	6- 16	5 3/4	-1	-14.8
N	GENERAL ELECTRIC	59- 74	72 7/8	+4 1/2	+6.5
N	HAZELTINE CORP	7- 13	8	- 1/4	-3.0
O	INFOREX INC	20- 36	22 1/2	+2 1/4	+11.1
O	INFORMATION DISPLAYS	1- 5	1 3/8	- 1/8	-8.3
O	INFORMATION INTL INC	8- 25	14 3/4	+2	+15.6
A	LUNDY ELECTRONICS	8- 14	8 5/8	+ 1/2	+6.1
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	24 7/8	+ 5/8	+2.6
N	MOHAWK DATA SCI	12- 27	12 7/8	+1 1/4	+10.7
O	ODEC COMPUTER SYST.	6- 12	5	- 1/2	-9.0
O	OPTICAL SCANNING	6- 16	6 1/4	+ 3/4	+13.6
O	PERTEC CORP	7- 17	8	- 1/8	-1.5
O	PHOTON	6- 15	6 3/8	+ 1/8	+2.0
A	POTTER INSTRUMENT	7- 21	8 1/4	- 3/8	-4.3
O	PRECISION INST.	3- 13	3 1/4	- 1/4	-7.1
O	RECOGNITION EQUIP	5- 15	7 3/8	0	0.0
N	SANDERS ASSOCIATES	13- 21	17 1/4	- 1/4	-1.4
O	SCAN DATA	5- 13	4 7/8	- 3/4	-13.3
O	STORAGE TECHNOLOGY	17- 39	33 3/4	+6 1/8	+22.1
O	SYCOR INC	7- 11	9 1/4	+ 1/4	+2.7
O	TALLY CORP.	8- 15	11 1/8	+1 1/8	+11.2
N	TEKTRONIX INC	34- 64	49 7/8	+ 7/8	+1.7
N	TELEX	6- 15	5 3/4	0	0.0
O	WILTEK INC	10- 26	17 1/2	+ 3/4	+4.4

SUPPLIES & ACCESSORIES

EXCH		1972 RANGE (1)	CLOSE JAN 4 1973	2-WEEK NET CHNGE	2-WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	7 1/2	+1 1/2	+25.0
A	BARRY WRIGHT	9- 14	12 3/8	+ 5/8	+5.3
A	DATA DOCUMENTS	17- 26	21 3/4	+ 3/4	+3.5
O	DUPLEX PRODUCTS INC	8- 16	9 1/2	- 1/4	-2.5
N	ENNIS BUS. FORMS	6- 10	8 3/8	+1 1/4	+17.5
O	GRAHAM MAGNETICS	15- 27	19	+4 1/2	+31.0
O	GRAPHIC CONTROLS	11- 15	12 1/4	- 3/8	-2.9
N	3M COMPANY	76- 86	85 1/2	+3 1/2	+4.2
O	MOORE CORP LTD	42- 57	56 1/2	+ 1/8	+0.2
N	NASHUA CORP	48- 62	56 3/4	- 1/2	-0.8
O	REYNOLDS & REYNOLDS	37- 77	48 1/4	+2 1/2	+5.4
O	STANDARD REGISTER	14- 20	18 1/2	+ 3/8	+2.0
O	TAB PRODUCTS CO	14- 23	22 1/2	0	0.0
N	UARCO	21- 28	21 5/8	- 7/8	-3.8
A	WABASH MAGNETICS	6- 11	7 1/8	+ 3/8	+5.5
N	WALLACE BUS FORMS	21- 26	24 5/8	0	0.0

COMPUTER SYSTEMS

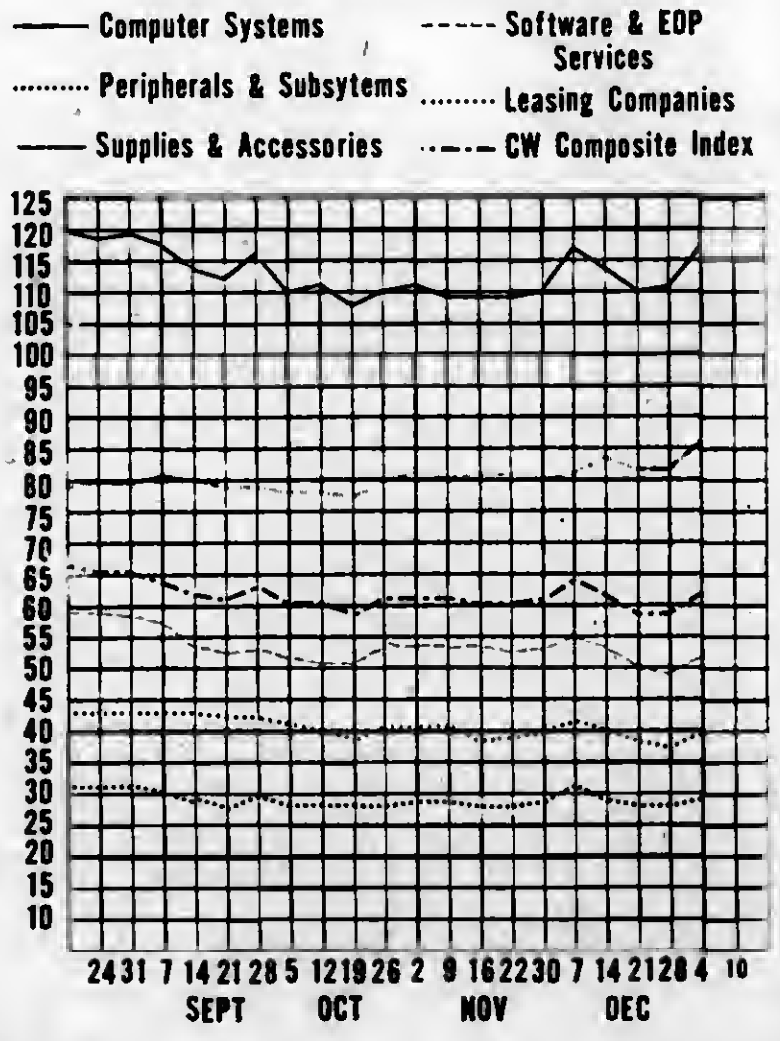
EXCH		1972 RANGE (1)	CLOSE JAN 4 1973	2-WEEK NET CHNGE	2-WEEK PCT CHNGE
N	BURROUGHS CORP	147-229	224 1/4	+8 3/8	+3.8
N	COLLINS RADIO	14- 27	25	+1 7/8	+8.1
N	CONTROL DATA CORP	43- 78	60 3/4	+2	+3.4
O	DATA GENERAL CORP	56-115	112	+2	+1.8
O	DIGITAL COMP CONTROL	5- 25	5 3/4	+ 3/4	+15.0
N	DIGITAL EQUIPMENT	72-101	93 1/2	+3 1/4	+3.6
N	ELECTRONIC ASSOC.	6- 13	8 1/4	+ 3/8	+4.7
A	ELECTRONIC ENGINEER.	6- 14	8 1/8	- 1/8	-1.5
N	FOXBORO	23- 41	31 3/8	+2 7/8	+10.0
O	GENERAL AUTOMATION	13- 49	48 3/4	+5 1/4	+12.0
O	GRI COMPUTER CORP	2- 5	2 1/2	0	0.0
N	HEWLETT-PACKARD CO	46- 88	87 3/4	+6 1/2	+8.0
N	HONEYWELL INC	118-170	135	+4 5/8	+3.5
N	IBM	333-426	411 3/4	+26 1/4	+6.8
O	INTERDATA INC	8- 16	11 1/4	+1 5/8	+16.8
N	MEMOREX	15- 38	17 1/2	+ 3/8	+2.1
O	MICRODATA CORP	5- 10	8 3/4	+ 1/2	+6.0
N	NCR	29- 38	31 7/8	+1 3/4	+5.8
N	RAYTHEON CO	27- 47	33 5/8	0	0.0
N	SPERRY RAND	30- 50	49	+ 7/8	+1.8
A	SYSTEMS ENG. LABS	7- 16	7 3/4	+ 1/2	+6.8
N	VARIAN ASSOCIATES	14- 22	18 1/2	+1	+5.7
N	WANG LABS.	23- 61	32	+4 1/8	+14.7
N	XEROX CORP	121-172	152	+6 5/8	+4.5

LEASING COMPANIES

EXCH		1972 RANGE (1)	CLOSE JAN 4 1973	2-WEEK NET CHNGE	2-WEEK PCT CHNGE
A	BOOTHE COMPUTER	3- 18	3 1/8	0	0.0
O	BRESNAHAN COMP.	1- 3	1 1/2	0	0.0
O	COMDISCO INC	3- 18	16 1/2	+3	+22.2
U	COMMERCE GROUP CORP	5- 11	6 1/8	- 1/8	-2.0
O	COMPUTER EXCHANGE	1- 3	3/4	- 1/8	-14.2
A	COMPUTER INVSTRS GRP	7- 14	7 1/2	+ 3/4	+11.1
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	5 3/4	+ 1/8	+2.2
M	DATRONIC RENTAL	2- 4	2	- 1/8	-5.8
A	DCL INC	2- 10	2 7/8	+ 1/2	+21.0
A	DEARBORN-STORM	16- 26	22 1/4	+3 1/4	+17.1
A	DPA, INC.	5- 8	7 1/8	+ 1/8	+1.7
A	GRANITE MGT	5- 11	6 1/4	+ 3/8	+6.3
A	GREYHOUND COMPUTER	6- 11	6 1/8	+ 1/8	+2.0
A	ITEL	7- 12	11 1/4	+ 3/8	+3.4
N	LEASCO CORP	17- 24	18	+ 3/4	+4.3
O	LEASPAC CORP	6- 15	6 3/4	- 1/8	-1.8
O	LECTRO MGT INC	1- 4	2 1/4	+ 1/4	+12.5
A	ROCKWOOD COMPUTER	2- 7	2 7/8	+ 5/8	+27.7
O	SYSTEMS CAPITAL	3- 20	11 3/4	+1 3/4	+17.5
N	U.S. LEASING	19- 34	33 5/8	+3 3/8	+11.1

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

BRADFORD COMPUTER & SYSTEMS
Three Months Ended Sept. 30

	a1972	a1971
Shr Ernd	$.13	$.09
Revenue	8,878,077	3,165,115
Spec Item	c7,168	d(93,407)
Earnings	491,434	277,352
9 Mo Shr	.41	.23
Revenue	23,253,374	9,526,703
Spec Item	c69,311	d(485,528)
Earnings	1,416,557	736,242

a-Includes accounts of Bradford Shareholder Services in which the company held 82% of the common stock since Jan. 4, 1972, and accounts of BT Bradford Stock Services in which the company acquired a 75% interest in common stock April 4, 1972. b-Restated. c-Credit; tax credit less charge for conversion costs. d-Debit; charge for conversion costs less tax credit.

OPTICAL SCANNING
Three Months Ended Sept. 30

	1972	a1971
Revenue	$3,464,190	$2,204,993
Loss	49,961	501,895

a-Restated to include results of Infoton Inc., acquired in August 1971 on a pooling-of-interests basis.

ELECTRONIC DATA SYSTEMS
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.27	$.23
Revenue	26,077,885	20,471,251
Earnings	3,179,454	2,748,630

LOGIC
Nine Months Ended Sept. 29

	1972	1971
Shr Ernd	......	$.30
Revenue	$2,370,678	2,511,792
Spec Cred	......	a157,500
Earnings	(81,096)	366,771

a-Tax loss carryforward.

SYCOR
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.12	......
Revenue	3,835,000	1,785,600
Tax Cred	140,000	......
Earnings	275,100	(557,400)
9 Mo Shr	.17	......
Revenue	9,912,000	5,415,700
Tax Cred	220,000	......
Earnings	434,300	(1,454,600)

SYSTEMS ENGINEERING LABORATORIES
Three Months Ended Sept. 29

	1972	1971
Shr Ernd	$.14	$.11
Revenue	3,448,000	3,421,000
Spec Cred	a322,000	b95,000
Earnings	362,000	271,000

a-Gain from sale of building and land and tax credit. b-Tax credit.

APPLIED DATA RESEARCH
Nine Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.03	.....
bRevenue	6,420,286	$4,562,360
Disc Op	(12,969)	(107,465)
cSpec Cred	31,720	66,000
Earnings	27,517	(286,629)

a-Restated to conform to 1972 presentation. b-From continuing operations. c-From partial redemption of convertible debentures.

COMPUTER INSTRUMENTS
10 Months Ended Oct. 6

	1972	1971
Revenue	$3,353,097	$2,894,091
Earnings	55,781	(166,328)

GRAHAM MAGNETICS
Three Months Ended Sept. 30

	a1972	1971
Shr Ernd	$.24	$.42
Revenue	2,400,000	2,100,000
Spec Cred	......	133,480
Earnings	220,403	284,207

a-Revised.

STERLING COMPUTER SYSTEMS
Three Months Ended Sept. 30

	1972	a1971
bShr Ernd	$.07	$.13
Revenue	675,418	697,593
Tax Cred	......	7,329
Earnings	51,564	89,807
b6 Mo Shr	.16	.22
Revenue	1,349,746	1,349,238
Spec Chg	......	d4,450
Earnings	112,755	155,679

a-Restated. b-Adjusted to reflect a one-for-three reverse stock split effective Oct. 6, 1972. d-Loss from sale of subsidiary less tax credit.

VARIAN ASSOCIATES
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.62	.....
Revenue	203,757,000	$187,220,000
Spec Item	a258,000	b2,486,000
Earnings	3,790,000	(6,733,000)
3 Mo Shr	.23	.09
Revenue	53,349,000	49,177,000
Earnings	1,685,000	603,000

a-Credit. b-Debit.

SANDERS ASSOCIATES
Three Months Ended Oct. 27

	1972	1971
Shr Ernd	$.22	$.10
Revenue	38,694,000	29,556,000
Tax Cred	299,000	104,000
Earnings	1,019,000	460,000

GE's new Mark III gives you real control of time-sharing costs

If you think time-sharing is a good thing gone wild, we have a way to tame it. It's General Electric's Mark III.

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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

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January 17, 1973

Vol. VII, No. 3

NEWSPAPER

370 Lease Plans Promise Bonanza

By a CW Staff Writer

HARTSDALE, N.Y. – Users who wish to keep all-IBM installations can now save as much as 60% on 370 leases from DPF Inc. here.

The savings can go higher, the firm said, if the user wants to take a mixed system made up of an IBM CPU and independent peripherals.

The new plan, which includes operating (short term) as well as full payout leases, features leases that run from three years to 10 years, the firm said. Options to drop a three-year lease can be made after one year, the firm said.

Previously, most leases for 370 equipment that offered the user substantial savings required firms to take a package of IBM and independent equipment, but DPF said it will lease all IBM systems at a savings also.

On an eight-year lease, the savings on an all-IBM configuration could run to almost 60%, the firm said, adding the savings on a five-year lease could be between 35% and 45% and the savings on a three-year deal would be around 25%.

At the same time, the firm promised to "be very competitive on packaged lease deals," where the user gets an IBM CPU and independent peripherals.

The savings with this type of plan could add approximately 5% to 10% to the savings available on the all-IBM deal, depending on the configuration and length of the lease, DPF said.

The firm said it had working arrangements with several of the independent peripherals makers to sell their equipment in these mixed configurations and so was not tied to any one independent producer.

On a 370/158 CPU the firm indicated users could save as much as 53% off the IBM price with an eight-year lease.

The figures show the savings would be almost $17,000 off the normal IBM price of $39,000. But when a two-shift overtime charge is added to the IBM figures the total price

(Continued on Page 4)

Spotlight on User's Lib

NEWS IN BRIEF

Itel Gets Injunction Against IBM Abroad

SAN FRANCISCO – IBM has been prohibited by a court in Germany from refusing to service and maintain its System 360/30 computers with Itel add-on memory attached.

In addition, the court held that IBM had unfairly tried to restrict competition by attempting to withhold service on the system.

A U.S. District Court in San Francisco in 1972 ruled on this same question and also issued a similar injunction against IBM's refusal to maintain its equipment in the U.S.

In granting its preliminary injunction, the German court said: "... The court has been convinced that the defendant has no valid reason to refuse the further maintenance of its equipment because the publishing house has installed the add-on memory of the plaintiff.

"In particular, the court is convinced that there are no unacceptable technical or economic obstacles servicing and maintaining the system caused by the add-on memory of the defendant.

"Finally it has been shown to the satisfaction of the court that the defendant is a company dominating the market of EDP systems within the meaning of section 26 of the act against restrictions of competition."

3,145 Applications Filed For CDP Exam, Most Since '65

PARK RIDGE, Ill. The number of applications received for the 1973 Certificate in Data Processing (CDP) examination was the largest since 1965, according to the Data Processing Management Association (DPMA), sponsor of the examination.

A total of 3,145 applications were filed by the Dec. 1 deadline. This compares with 2,944 for the 1972 examination. The 1973 examination will be given Feb. 17 in 100 test centers at colleges and universities in the U.S. and in Canada.

On the Inside This Week

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Common Interface Vetoed, NBS Asks Some Standards

"We are convinced that interface standards confined to selected computer system functions of limited applicability are technically feasible."

By E. Drake Lundell Jr.
Of the CW Staff

GAITHERSBURG, Md. No single interface standard should be developed for all peripheral equipment, but the government should begin working on developing selected standards particulary in the tape and disk area, a National Bureau of Standards draft report indicates.

At present, "neither the engineering information nor the engineering capability now exists to produce an interface specification broad enough to achieve universal applicability for all peripherals and all CPUs," according to the draft report on "Means of Achieving Interchangeability of Computer Peripherals."

"As a result, the development of a single interface standard would be too costly and of too amorphous a nature to justify," the report by the Center for Computer Sciences and Technology of NBS added.

But while rejecting the idea of a universal interface, the report, by recommending specific standards and a federal center to test equipment against those specific standards, held out hope for users wanting to achieve cost savings through the greater interchangeability of peripherals.

"We are convinced that interface standards confined to selected computer system functions of limited applicability are technically feasible," according to the report.

"Examples would be standards for selected tape unit and disk unit interfaces. From a functional viewpoint, the number of standards for such selected interfaces would be substantially less than the number of existing interface types," it added.

The establishment of such standards should be "of significant benefit" to the Federal Government and other computer users, in addition to the independent peripherals industry, the report noted.

"We find frequently today the situation where, for instance, the interfaces between a given tape unit and the CPUs of two different manufacturers differ un-

(Continued on Page 2)

Xerox Says No To Independent Add-On Memory

By Ronald A. Frank
Of the CW Staff

VAN NUYS, Calif. – Xerox Corp. has told one of its Sigma CPU users that it will no longer provide maintenance if an independent memory is installed.

For the West Coast user a savings of more than $50,000 is involved in the choice of a Xerox memory or the Signal Galaxies Inc. add-on. "We have gone to our legal staff for an opinion on this," the user said, adding that Xerox had sent him a letter stating it would not provide maintenance if the Signal Galaxies memory is attached to the mainframe.

The letter, sent last November, said Xerox does not permit add-on memories to its leased systems and it does not offer

(Continued on Page 2)

Board Challenged

DP Selection Stirs Town

By Michael Weinstein
Of the CW Staff

FRAMINGHAM, Mass. – A computer advisory committee which recommended that this town lease a $180,000/yr IBM 370/135 has been accused of being biased toward IBM by many critics who feel the town's needs could be best met by a minicomputer in the PDP-8 range.

The selection committee was made up of a pro-IBM user, an IBM employee, a former IBM employee, a data processing teacher and a Honeywell employee.

The ad hoc advisory committee was initially formed two years ago with the stated purpose of helping the town department of education choose hardware for its planned Regional Vocational Technical School.

This school will open its doors this year to a student population aimed at reaching 1,000 by 1976. Of these students about 100 are expected to take data processing classes.

If the town follows the committee's recommendation, it will pay $315,727 for the first year of operation of the computer hardware even though J. Gordon of the city's finance committee noted only 15 students would receive training as future data processors the first year.

This meant, Gordon said, that the committee was recommending the town pay over $20,000/yr/student.

Started more than two years ago the committee was directed by IBM user Philip Frank and was to be open to all local citizens with any DP background. The initial membership was 12, but many local citizens claimed they were never informed of the committee's existence.

After two years of meetings, the membership dwindled to five and the committee then consisted of Frank as chairman, the IBM employee, the former IBM employee and two others.

This smaller committee ruled out other vendors' bids as "being unresponsive," according to outside sources and worked to justify the leasing of the 370/135.

Finally, last December the committee decided to vote on equipment selection with the IBM employee and the Honeywell employee maintaining it would not be fair for them to vote.

Of the three voting members left the former IBM employee voted for the 135 along with a local teacher. With the vote now 2 to 0 for IBM, Frank chose not to vote.

From this vote an intent agreement was profferred to accept the IBM machine.

Shortly after the meeting, several local

(Continued on Page 2)

Town Upset by DP Selection, Challenges Committee on Vote

(Continued from Page 1)

residents publicly objected to the committee recommendation.

The vocational school offices issued the first official description of the courses to the guidance departments of the towns, for distribution to potential students.

The course of study shown, on examination, was not as Frank had listed in the computer specification requirements – to produce "systems programmers in a multiprogram operating system environment," or "systems designers in utilizing multiprogrammed equipment effectively in a batch or time-shared mode as well as the use of on-line inquiry or data-collection systems."

The leaflet simply said the student who progressed through the three-year program would qualify as a trained computer console operator and perhaps a computer programmer.

The leaflet also listed training equipment to be used as including unit record items – sorters, collators and accounting machines (which were not in the budget request).

Frank, now under pressure to justify his committee's choice of IBM, likened the procurement of computer equipment to buying other material: "When a vocational school buys a lathe," he said, "they get the best one available. Then, next year they start training a new set of boys, and a new lathe comes on the market with some fancier buttons – they go and get that."

"A computer," he explained, "is just like a lathe – but it attracts more attention."

The local teacher who had voted for the procurement of the IBM equipment then said he wished to retract his vote, maintaining that the IBM employee and others had given him false information concerning the system and school needs.

When he made public his request for another vote, he was told it was too late.

Valid Vote?

But when Frank was asked to justify his recommendation, he said the intent order was not final and not binding, implying the vote didn't carry much force.

The latest equipment, he noted, was needed to assure that the vocational students would be able to compete successfully for jobs in 1976 when they would graduate.

He pointed to his own experience – working on 360/40s – and indicated that students would have an edge in the competition if they could say they had worked on the latest system.

He was supported in this contention by the former IBM employee, who stated he was not going to permit students to be trained upon "old" equipment.

When this explanation brought only renewed public criticism, another justification was presented – the 370/135 provided a "multidimensional atmosphere" and could be used for other tasks in nearby towns that would justify the cost.

This argument lost some of its force when the treasurers of the nearby towns stated they did not want to spend so much money on the vocational school.

Again several local citizens questioned who would do the programming for the "service bureau-type" operations. Further, they asked whether the committee had initially intended the 370 to be used in this manner and whether it had investigated hiring programmers, analysts, etc.

After explaining that the computer could be programmed by two teachers and the students, the committee said it did not want to hire professionals immediately to develop programs, and then get the equipment to support them since it would be years before any actual training could be handled.

Finally, a special open meeting was held in which the committee agreed to stop procurement of the IBM machine for the present and to go back into session for further consideration of the matter.

Down to the Sea in DP

PROVIDENCE, R.I. – A submarine on patrol in the Atlantic reels under the buffeting of an underwater explosion. Water floods her compartments and she dives, out of control, her hull crumpling under the intense pressure.

Catastrophic as it may be, this event does not receive news coverage, because it is simulated at Brown University's computer center under the direction of a visiting associate professor of engineering, Dr. Robert E. Nickell.

Nickell commits his theoretical mayhem by constructing mathematical models of various structures to study the effect of catastrophic conditions on design.

One of the problems Nickell has been working on is the stress factors involved with increasing the size of U.S. Navy submarines. "When you are trying to design a bigger sub, you just can't scale up the dimensions of existing submarines. If you did," he explained, "what was formerly a safe feature of the structure might fail."

Brown University is not designing submarines, he said, but is developing guidelines and techniques for industry to follow in various design processes.

For example, the guidelines developed by Nickell and his associates are used to design safety factors which enable a submarine to survive depth charges or other unforeseen attacks.

"There are several forces working together or against one another," Nickell noted. "All these variables are considered in the models we feed into the computer," an IBM 360/67.

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Xerox Says No to Independent Add-On Memory

(Continued from Page 1

maintenance on purchased systems which include independent memories.

The letter added that these were the terms of its "standard maintenance agreements." Asked whether a non-standard maintenance agreement might cover systems with independent add-ons, a Xerox spokesman said the company had no further comment.

But the exclusion of maintenance support would probably apply to other independently enhanced systems now covered by Xerox support, he indicated.

While the user ponders his dilemma, Signal Galaxies has written a letter to the XDS user group pointing out the Xerox position "is sufficiently in contrast with the current industry-wide practice for the addition of both plug-compatible memories and peripherals."

The Signal Galaxies letter spells out the interfacing used to attach the add-on memory and adds that all connections and cables meet XDS specifications, while some of the cables and connectors were supplied by Xerox.

The memory attaches to the Sigma 5 and 7 CPUs using AT-11 boards and they are no different from many existing foreign peripherals now attached and supported by Xerox, according to Mark B. Lyon, Signal Galaxies director of marketing, who wrote the letter.

The independent supplier "has gone to great lengths to provide a totally compatible cost-effective memory unit," Lyon said. The letter added that the Sigma systems are "well conceived and well designed" and said that Xerox's present position is based on a "misunderstanding of our technical approach . . ."

The XDS User Group has not yet formally considered the Signal Galaxies letter, according to Dr. Walter Dietiker, president of the organization. The matter came up briefly at the December meeting of the group but few of the 1,000 members have yet been affected, Dietiker said.

If the group becomes concerned about the situation, a formal position might be issued, the president said. A survey to poll members on the matter might be taken after an executive board meeting in March, he added.

Meanwhile, Signal Galaxies is considering further legal action including a restraint-of-trade claim with the Federal Trade Commission. While the West Coast user is apparently the first to be threatened with revocation of his maintenance, several others are adopting a wait-and-see attitude, according to Lyon. About five add-on memory customers have indicated they would sign up if Xerox modified its position, he said.

There may be another reason why few Xerox users have complained. Many perform their own maintenance in-house and therefore are unaffected by Xerox maintenance pronouncements, Dietiker said.

While the potential savings with the independent memory is significant to users, Xerox does not have the same operating constraints imposed on it that affect IBM and its Justice Department consent decree. Therefore it may be on firm legal ground in refusing maintenance. But Signal Galaxies appears determined to bring the matter to a showdown implying that the Xerox stand has hurt both its own product and potential users.

Universal Interface Vetoed, Standards Favored

(Continued from Page 1)

necessarily in small detail.

"The differences, although electronically trivial, still prevent the computer customer from achieving the benefits associated with interchangeability of tape units.

"Similarly, this unnecessary engineering variation in interfaces requires peripheral manufacturers to alter functionally equivalent peripheral units for each CPU to which they are to be connected. This drives up peripheral prices or decreases competition, or both," the report stated.

Creativity Stifled?

Although some mainframe makers have indicated that standardized peripherals might hold back innovation, "the threat of the supposedly harmful effect of standards on creativity . . . may be overstated as a means of market control by CPU manufacturers," the NBS group found.

"Federal interface standards of limited functional applicability, taking into account the interests of the federal customer, will be in the public interest and will not hinder innovation in computer architecture," the study stated.

In order to develop guidelines for peripheral equipment and to test it with the interfaces, the report suggested the establishment of a new federal facility:

- "To develop appropriate performance criteria for evaluating and selecting components [peripherals] at defined system interfaces.
- "To evaluate and test interchangeable peripherals against stated minimum performance parameters.
- "To provide assistance to federal agencies in achieving increased component [peripherals] interchangeability."

Such a federal test center is needed, the report said, because users need "to insure that there is no loss of useful system processing capabilities," when buying independent peripherals "and that the selected peripheral components are comparable or better in performance than existing components.

"It appears that, to date, the integration of multiple-source peripherals into computer systems has proceeded without degradation to systems performance. In fact, in some instances, there have been reported increases in system performance, particularly magnetic tape subsystems replacements or additions," the report said.

In addition, the report urged the government to take a more active stand in promoting national and international interface standards for peripheral equipment.

Routine NCIC Check Nabs Murder Suspect

WEST MEMPHIS, Ark. – Two policemen and a computer terminal here teamed up recently to nab a murder suspect.

The suspect was stopped on suspicion of drunkenness, but the patrolmen made a routine National Crime Information Center check using the computer terminal recently installed at local police headquarters. The check revealed the suspect (or someone with the same name) was wanted for murder in Chicago.

A subsequent exchange of fingerprints and pictures between the two police departments confirmed the suspect was the wanted man.

The suspect was then formally charged and taken to Illinois where he will stand trial for murder.

Optical Systems Eye-Openers

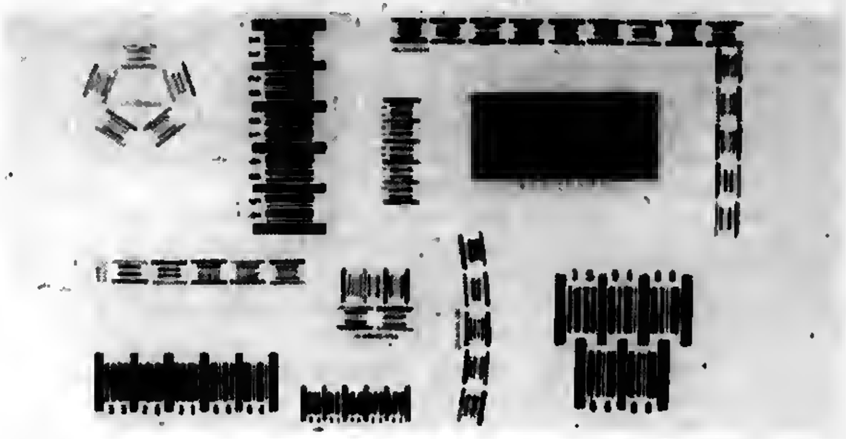
NEWTON, Mass. – Optical technology is providing state-of-the-art solutions in both the point-of-sale and data communications fields.

The grocery industry has been working to speed the checkout of items in a supermarket by developing an optical marking system that can be scanned for identification and price by the register clerk.

Several prototype tests of optical scanner and coded marking systems are now being held. Among these systems is the Pitney Bowes-Alpex Supermarket Electronic Scanning for Automatic Merchandise Entry (Sesame) which is installed at the end of a checkout counter and reads a linear bar code in several densities.

In addition to speeding the checkout process for customers, the scanned data is processed by a minicomputer or other processor to give grocers closer control over inventories.

The American Stock Exchange is transmitting stock transaction data in downtown New York using an infrared communications system called Optran. Located on the roof of the exchange, the optical system makes it unnecessary for the exchange to depend on underground cables provided by the phone company. The Optran system from Computer Transmission Corp. operates at 5,400 char./sec to transmit data to a pair of 360/40s two blocks away.



These are some of the formats possible with Codabar from Pitney Bowes-Alpex.

Stock transactions are transmitted to a nearby CPU using Computer Transmission Corp. Optran infrared system.

Pitney Bowes-Alpex Sesame point-of-sale system is shown at an "operating prototype" installation.

Registrar Says 'No Charge'

HANOVER, N.H. – The operation of colleges, like governments, always seems to become more expensive, but Dartmouth College administrators have found a way to provide for less than a nickel a service that once cost the student $5.

Registrar Douglas M. Bowen reported the $5 fee students traditionally paid in order to add, drop or switch courses within the five-day "grace period" following registration is being eliminated for the winter term under an experimental program.

By using a specially designed computerized registration program stored in the college's Kiewit Computation Center, however, changes by students can now be accomplished in a fraction of a second and for less than a nickel. The small charge for computer time will be absorbed by the college and the $5 savings passed on to the students.

The $5 charge will be applied, Bowen noted, if students decide to make changes in their schedule after the "grace period."

As each student enrolls in a course, the information is fed into the program and stored.

College officials using a terminal connected to the Kiewit Computer can ask the system which courses or sections are open or closed, which courses can accept additional students without overburdening the facilities or the professors, and what courses are available as alternatives for student selection.

Holiday Planning Gets Quick Sendoff

LONDON – Holiday travel plans can be made in about three minutes with an on-line reservations system recently inaugurated by Clarksons here.

Caspar (Clarksons Automatic System for Passenger and Agent Reservations) has been developed over the past four years by Constructive Management Services, a Clarksons subsidiary.

The heart of the system is two Univac 9400s which can answer an individual inquiry in .8 seconds and completes an average booking in about three minutes.

Inquiries are handled by 120 visual display unit operators who receive 24,000 telephone calls per hour, mostly from travel agents. The computer displays what reservations have been booked, offering alternatives if the customer's exact requirements are not available.

Colleges Look to Sharing

LOS ANGELES – Three universities here are expanding their joint studies of potential benefits available to them through cooperative sharing of facilities and programs.

The University of Southern California, Caltech and UCLA are exploring the sharing of resources such as computing centers and libraries, in light of the financial squeeze facing the nation's colleges.

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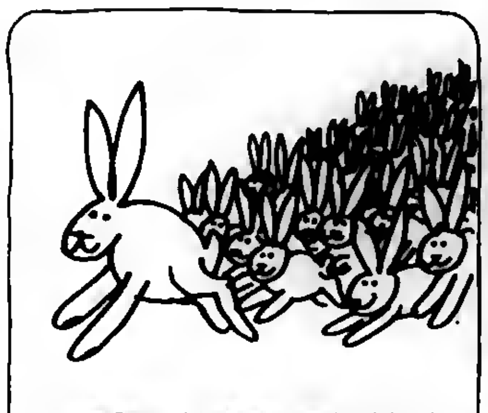
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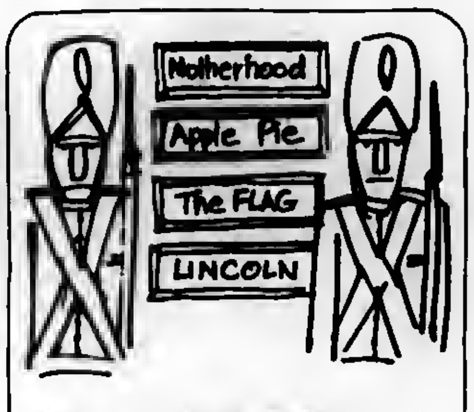
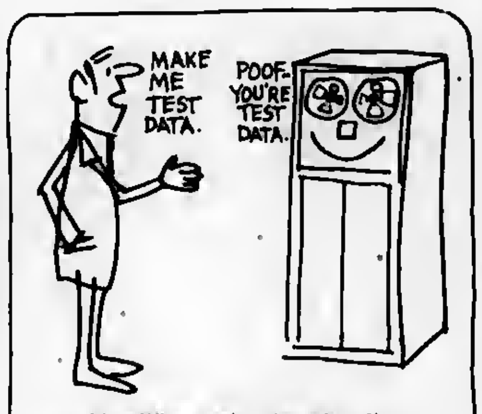


Allows installations to enforce their own COBOL standards.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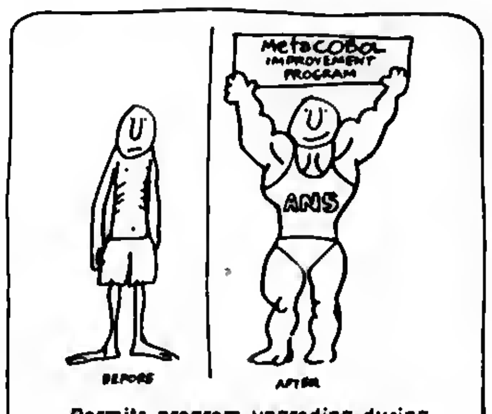

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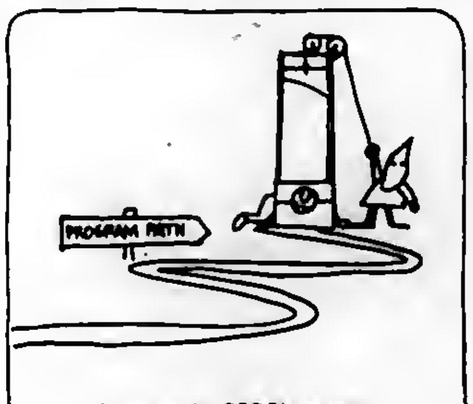

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Are You Getting Your $1.84 Worth?

ROCKVILLE, Md. – Cities and counties in the U.S. spend an average of $1.84 on data processing for each resident of their jurisdictions, according to a firm here which is developing nationwide figures on DP expenditures in city and county governments.

Of the 257 responses to Keston Associates' first survey, the median expenditure of $1.84 per resident was equal to .9% of the total budget for the county or city surveyed.

The upper limit on expenditures was $2.50 per person in the jurisdiction or 1.5% of the overall budget. The lower limit was 75 cents per resident or .5% of the overall local budget.

By population it was found that in cities or counties with a population of between 14,000 and 50,000, 30% owned their own computer, 24% used a service bureau and 16% had some sort of cooperative or sharing arrangement with other jurisdictions.

However, as cities get larger, the portion that uses strictly in-house computers rises. In jurisdictions with between 50,000 and 100,000 population, 65% have in-house systems; of those with a population between 100,000 and 750,000, 84% are in-house; and 100% of the cities with over 750,000 have in-house systems, the study showed.

Guess Who?

The most prevalent manufacturer represented in the local governments is IBM with 79 installations; Honeywell follows with 15 installations; and NCR is third with 11, followed by Univac, Burroughs and RCA, the survey found.

"The small computer systems are particularly prevalent (under $2,000/mo)," the report indicated, "with more than 40 in this category.

"Only 26 of the respondents use on-line terminals, with a total of 732 devices in these installations," the study said.

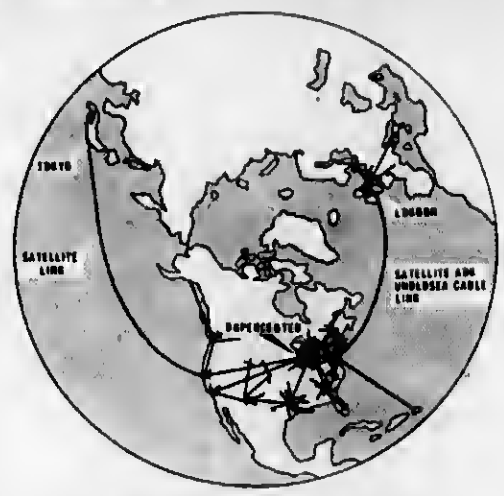
Expenditures for data processing were somewhat related to population size, according to the study, and ranged from $17,000 to $10,324,000 in the cities studied.

However, the study also noted "an interesting aspect of this trend is that expenditures appear to increase more rapidly than population."

Keston also found the "pattern of DP staffing closely parallels that of DP expenditures," with the range of staff size varying from a low of one to a maximum of 623 in the areas studied.

The major application areas for the local governments were financial management followed by public services. Next in order of applications in use were the public safety area, social services and management-planning applications, the report said.

The report is part of a continuing local government DP self-audit service available from the firm. With the service, Keston collected statistics on various expenditures by local governments so that participating cities and counties can measure their performances against national averages.



Global Net

GE plans to extend its Mark III remote-computing network [CW, Oct. 25] to Japan and Western Europe. The trans-Pacific link, expected to be in place by the end of March, will provide multinational corporations with access to common data bases from locations spanning two-thirds of the globe. Initially U.S.-Japanese transmission rates will be 2,400 bit/sec, GE spokesmen said.

DP Aids 'Revolutionary' Study

LOS ANGELES – Using "barebones" records of the Massachusetts Legislature from 1744 to 1776, historian Dr. John A. Schutz of the University of Southern California is hoping computer analysis will shed new light on the American Revolution.

While a vast body of material, such as books, manuscripts, genealogical data, census material, biographical material and legislative records exists to provide input data, the problem lies in the absence of minutes and records of deliberations such as the present-day's *U.S. Congressional Records*, Shutz said.

"We hope, first of all, that the study will provide an explanation of the legislature as an institution.

Rising Revolution

"We also hope for probable explanations of the rise of the Revolution in Massachusetts, the nature of the colony's political elite and the rise of the Tories and Whigs," Schutz said.

"For example, by looking at the age, education level, region of constituency and frequency of chairmanship of committees, the computer can come up with information about leadership as it developed among certain legislators," he said. Input is being classified on three levels, beginning with a study of the 1,300 men who were in the legislature, their careers as they pertain to the town they lived in and their birth and death dates.

The second level includes problems of the constituency of each legislator, and its various kinds of characteristics.

Thirdly, Shutz is looking at the legislative record of the period.

Work is proceeding under a grant from the National Endowment for the Humanities.

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DPF price/mo††	$22,327	$19,698	$7,668
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†For a CPU and memory alone, without peripherals.

††The DPF prices exclude maintenance which is free for the first year.

Comparison of IBM, DPF Monthly Rentals

Lease Plan Promises Bonanza

(Continued from Page 1)

from IBM would be $47,032, DPF said.

The DPF price is almost $25,000/mo less than that IBM figure, and that amounts to over $2.3 million over the eight-year period of the lease.

Mixed-Bag Savings

In the mixed-system area, DPF said it could save the user 35% by supplying a 370/145 CPU with independent peripherals over a five-year period, as compared to the full IBM price for the equivalent system. The DPF leased system with the IBM CPU and the independent equipment will cost the user $10,000/mo less than the all-IBM system rented from IBM.

Over the five-year term of the lease the savings would therefore amount to $600,000.

Even on a short-term lease, the firm promises savings, stressing the user could save 25% off the monthly rental of a 370/135 CPU. That amounts to $2,557/mo or $92,000 over the three-year term of the lease.

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Roger MacGowan is professor of Computer Science with the Dept. of Defense Computer Institute in Washington, D.C. and is a frequent contributor to professional journals.

Reid Henderson is President of Compudemics, Inc., and is both a CPA and CDP. He also lectures at George Washington University and the Industrial College of the Armed Forces.

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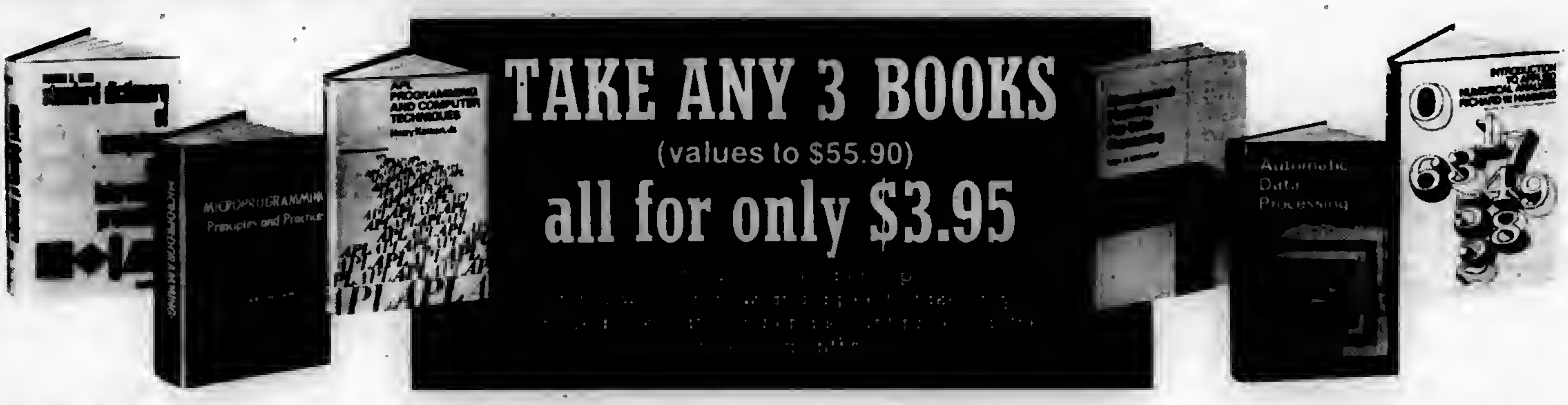

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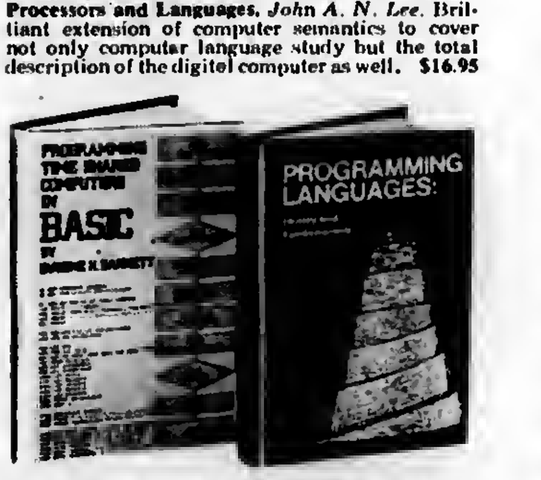

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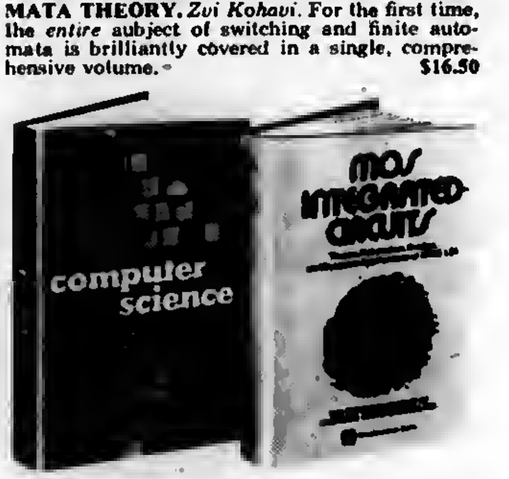

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Australia Net Users to Benefit

Special to Computerworld

CANBERRA, Australia – More than $6 million will be spent over the next three years on advanced computing equipment and buildings for Commonwealth Scientific and Industrial Research's Division of Computing Research, according to the Minister for Education and Science, John M. Fraser.

Negotiations are proceeding for the delivery of a Control Data Cyber 76 computer which would be coupled with the installed Control Data 3600 to increase the capacity of the Csiro network for large-scale scientific and technical computations.

The high-speed link would be carried out with minimum disruption to network users. Installation of the Cyber 76 would enable the organization to discontinue part-time usage of a Control Data 6600.

Together with the installation of the Cyber 76 at least 20 more communication nodes would be installed for Csiro divisions in metropolitan areas, away from actual city centers or in country towns.

Scientists and research workers in Canberra, Sydney, Melbourne, Adelaide, Brisbane, Perth, Townsville, Rockhampton and Griffith with access to Australian Post Office Datel services would use the network.

They would be able to draw not only on a computing system with the ability to execute an average of 15 million instruction/sec, but also on a set of technical data bases of massive proportions.

The Division of Computing Research has scientists engaged in systems development, simulation and modeling, data-base management studies, artificial intelligence investigations and statistical computation, together with services groups which support the network.

Technical and scientific computing services are also available to government departments, the largest such users being the Department of National Development and the Department of Primary Industry.

Gabriel's DP Band in the Sky

MACUNGIE, Pa. – If one assumes there is a heaven and that computer people have any chance of gaining entrance, there is a good possibility they will be met by musical strains of a Digital Computer Organ produced by Allen Organ Co.

The Allen organ is reportedly the first musical instrument to be awarded the Industrial Research 100 award given to the best 100 products introduced each year and is the first organ to use complete computer technology to produce musical tones.

The computer used is a time-division multiplexed parallel processor, which is similar to standard digital computers because it contains memory sections, performs arithmetic functions and uses conventional computer logic.

Internally more than 150 shift registers are used in conjunction with five random-access memories and several read-only memories to develop a trillion-trillion-billion note capability.

Circuitry is designed using large-scale integrated (LSI) technology so that more than 2,000 conventional integrated circuits, or about 50,000 transistors, would have to be used to equal the 22 LSI boards used.

Functionally, using the computer makes it mathematically impossible for notes to be off speech or out-of-regulation with note-to-note scaling throughout the entire range of the instrument flawless.

Options for the basic model allow the user to select from hundreds of additional voices by using punched cards with the card reader built into the console keyboard of the organ.

A transposer is included in all models to allow dynamic adjustment of keys and pedals either up or down a half step at a time.

Prices for Digital Computer Organs start at about $5,500 for a self-contained instrument of 36 straight stops.

Just Food for Thought

ATLANTA – A 4K PDP-8/L computer has been used in an experiment which conditions up to 256 rats to accept water in accordance with the condition of a light in their cages, before they are killed and their brains fed to a new group.

Training is accomplished by electrically shocking the animals if they attempt to drink water at an undesignated time.

The experimenters at the Georgia Institute of Technology first train a group of control rats to perform the drinking task, then extract portions of brain tissue from the trained rats to be fed to a new group of animals to determine if they learn in less time.

Caged Like Animals

Rats are caged in glass houses with a water fountain continually running next to an electric light. When the light is not on, an electric current is passed through the water so if the rat tries to drink he receives a shock.

The minicomputer is used to determine the ratio of "good attempts" against the "total attempts."

When this ratio nears unity, the rat is qualified as trained; he is then sacrificed and his brain tissue is fed to a new recruit.

With the system in operation more than a year, the university has been able to reduce the time needed to train rats from about eight days for normal rats to five days for brain-fed rats.

Paint Company Has 'Class'

Special to Computerworld

SYDNEY, Australia – Punctual delivery of special paints to automobile makers and industrial customers has always been an important objective of Dulux Australia Ltd. management.

Now several computer programs called Class (Capacity Loading and Scheduling System) help Dulux plant managers in Sydney and Melbourne set more realistic targets for special batch paints. The programs are run on Dulux IBM 360/30s.

Class programs also help managers achieve delivery targets by highlighting possible delays in production.

Many Finishes

The Dulux paint factory in Melbourne uses about 1,000 different raw materials and produces more than 6,000 different stock finishes. Over 400 batches of paint can be in the scheduling process at Dulux at any one time.

Scheduling is especially difficult because some processes take a lot longer than others. Tinting still requires a high degree of skill and patience and can take a long time depending on conditions in the plant.

Class was designed by IBM in Germany for metal-working job shops.

Big advantages

Checks for Backsliders

'Frat' Aids Methadone Program

SAN JOSE, Calif. – Santa Clara County has turned to a computer based system to check for backsliding among narcotics addicts registered in its methadone maintenance program.

The automated system capable of chemically analyzing more than 35,000 urine samples yearly pinpoints which addicts in the program have been using hard drugs – and does it approximately six times faster than the previous manual methods, according to Russ Stark, program coordinator.

The speed of the system means the county will be able to expand its methadone maintenance program "to keep pace with the urgent need with no increase in the number of lab technicians and no increase in laboratory space," he said.

The Free Radical Assay Technique (Frat) is used to check every sample from every patient. Samples that show a positive reaction (indicating the presence of hard drugs) are further analyzed.

The typical patient is required to give a urine sample about once every seven days, using a computer-generated random selection of the addicts in the program.

Results of each day's urinanalyses are returned to the clinic within 24 hours for use by the psychiatric nurses, addiction specialists and others operating the treatment process.

Frat Faster

Using older method (called thin-layer chromatography) to check for backsliders, each lab technician could perform approximately 75 test/day. But with the new technique the technician can perform around 420 tests daily.

The only major drawback is that each test with the Frat system costs 50 cents, while the tests under the older system cost only 25 cents in materials.

Frat can detect as little as one billionth of a gram of hard drugs or drug metabolites in the human body, according to its developer, Syva Co., a joint venture of subsidiaries of Syntex Corp. and Varian Associates.

Lab technician Mick Guerrero inserts a urine sample in Santa Clara County's automated drug screening system. Results are displayed on the plotter in foreground.

The Santa Clara program presently has approximately 700 active patients with a waiting list of 200 additional addicts.

Computer Increases Aussie Tax Revenue By Over $24 Million

By William Scholes

Special to Computerworld

CANBERRA, Australia – Not many businesses in the world can show a direct increase of over $24 million in net profit for the year just by installing a computer. But very few businesses have the advantages of the Australian Department of Taxation.

In the 1971-72 fiscal year, the Taxation Department brought to full operational level a new system for computer-assisted assessment of salary and wages throughout Australia.

The computer was programmed to make adjustments or take other appropriate action where the amount of a claim exceeded what had previously been proven reasonable.

In the annual report of the Commissioner for Taxation, Sir Edward Cain, commissioner, stated: "While the computer-assisted assessing system generally uses the same guidelines as the manual system it replaces, it has brought a degree of precision and consistency to assessing which could never be achieved under the former system."

Cain also cited the development of a highly specialized experimental data entry system designed for taxation processing and he called significant the completion of the first year of full operation of a pilot integrated data processing system.

The system, which has been installed in Adelaide as a model for the national taxation office system, is expected to come into operation by stages commencing in 1973-74 when a central computer complex for the taxation office will be installed in Canberra.

With more than seven million income-tax returns to be processed annually, an enormous volume of information must be fed into the system to make assessments, issuing refund checks and accounting for tax-installment deduction and payments by taxpayers.

Under the present data entry system, the information required is punched on paper tape, which is subsequently verified by a second punch operator and transcribed on to magnetic tape.

The information can then be fed into the computer system, which applies a complex series of edit checks designed to identify incorrect information and tape-punching errors.

IRS Publication Lists Groups for Deductions

WASHINGTON, D.C. – The Internal Revenue Service has announced publication of its first computer-produced list of organizations eligible to receive tax-deductible contributions.

The 843-page "Tentative Cumulative List of Organizations" described in Section 170(c) of the Internal Revenue Code is now available in most IRS offices.

The Tentative Cumulative List employs a coding system to identify each of the 131,000 organizations' foundation status as well as any limitations on contributions' deductibility.

The tentative Publication 78 is a product of the IRS computerized Exempt Organizations Master File as compared to the manually assembled Cumulative List of Dec. 31, 1970. Because of the nature of the initial computer-produced list, it is being published in tentative form to enable interested persons to inform IRS about omissions, misspellings, coding errors, alphabetical misplacements and other items believed to be incorrect.

Comments on the tentative list should be addressed to the Internal Revenue Service Center, 11601 Roosevelt Blvd., Philadelphia, Pa. 19155, Attention: EOR Branch, by Jan. 31.

in small packages!

This new low-priced NCR Century 101 system offers small and medium size businesses the big kind of computer power they need to grow.

The newly released peripherals for the NCR Century 101 processor require a minimum of space, yet they provide the power and versatility of units twice their size.

The basic system, including processor, card or paper tape reader, line printer, and one dual platter disc unit covers no more space than 2½ feet by 10 feet! It can be placed in rooms where larger computers just won't fit. And, because it generates little heat, air conditioning requirements are minimal.

Big advantages in small packeges include free standing add-on dual platter disc units, each having a storage capacity of 10 million bytes. A line printer that turns out 300 lines of crisp printing per minute. And an optionel 30-character per second I/O Writer.

The 101 processor, heart of the system, includes features like a high-speed memory that can expand in practical increments from 16K to 64K. An optional multiplexor that provides control for 10 communications lines, with no increase in cabinetry. Seven-wey to nine-way simultaneity. And many other features just as significant.

Later, as your business grows, you can expand this modular system to meet increased information requirements. Larger cepecity disc units end higher speed printers can be added if end when you need them.

For the price, this new system from NCR offers big performance for businesses on the grow. Average systems range from just $1820 to $3800 per month!

Call your local NCR office for the specific advantages your business can expect from this newest member of the NCR Century family.

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Editorials

Dropping the Prefix

A decada ago the phrase "IBM maneger" was still prevalent, evan though the edvent of computer systems from many computer manufacturers had broken the grip of IBM on data processing departments. Now the IBM prefix has vanished.

Ona development recently reported – tha CHCS Accelerator for tha 360/30 computer – presents the possibility of the dropping of a nearly universal prefix. The accelerator uses the microprogrammed facilities always present in the Model 30 to improve the system. It is still a Model 30, albeit an improved ona. But it will no longer be an "IBM" machine.

Tha hardware design of the Model 30 has been the most successful yet. But users ara entitled to the full capabilities of any machina. If IBM does not provide for tha follow-on development of its systems, its choice should not be allowed to totally hold back effective system davelopment as it appears that development of the Model 30 system has been held back. CHCS is appreciatad – as will be any other developers of other cruelly abandoned computers.

. . . Even at the cost of having to again drop that "IBM" prefix from our machine names.

Christmas Always Comes

Christmas '73 may seem a long time away now, and not worth bothering about in our busy world – a time to remember our relaxations, but hardly a time to prepare for.

Yet it will come – and just when we are most at ease the time may come to show that preparation was most important. Such a time came in Sacramanto last Christmas, when fire ravaged computer rooms in the National Guard and Department of Motor Vehicles headquarters.

The Callfornians had taken time to prapare. They had spent $1,200 on plastic covers, which prevanted water damage to $15 million worth of equipment. There was no need after the holiday for those in authority to lament their lack of preparation.

Next Christmas, when you are relaxing, will you be able to feel as securely protected? It may not seem important now, but Christmas – and a general relaxation of precautions – always comes. So why not prepare today?

Innovation Would Be Aided

Protect Consumer, Break Up IBM

By Eric S. Fisher

Special to Computerworld

David E. Ferguson's article, "U.S. Needs IBM to Compete Overseas" [CW, Nov. 8], has many arguable opinions. Among them are:

- The small systems market was virtually nonexistent prior to the System/3.
- Univac would have little chance of competing with the six companies resulting from an IBM breakup.
- Peripheral manufacturers are going to continue to be profitable under a unified IBM.
- Unbundling is here to stay.
- Innovative products come from IBM.

To consider the above points:

- IBM's development of the S/3 was a response to the already rapidly growing small systems market. It was *not* the creator of that market. The fact that this market has grown even faster since its introduction is simply a reflection of the impact of IBM's marketing force once it is "unleashed" on a market.
- Why should IBM be broken into six parts? Why not seven or eight? And what is Ferguson's basis for assuming that Univac would not have much chance to compete against the resulting companies?
- As long as IBM has such a dominant position in the mainframe market, there is little chance that manufacturers of such high-profit items as disk drives and memories can long survive. In the past two years the industry has witnessed the following occurrences:
  - IBM has raised the prices of its CPUs (in which there is little competition) while lowering the price of its disk and tape drives, in which the competition is keen. In this way IBM's total revenue was largely unchanged while peripheral manufacturers have been driven up against the wall.
  - IBM has increasingly integrated peripheral controllers into the CPU, effectively lowering their cost and making it more difficult for peripheral makers to design compatible peripherals.
  - IBM has increasingly integrated main memory into the CPU, also making it more difficult for competitors to manufacture replacements.

While it is certainly not a crime to lower prices in the face of competition, IBM's policy to selectively raise and lower prices of system components to make the total substantially the same while making other companies suffer is not competition but monopoly.

Viewpoint

- I challenge Ferguson to come up with an estimate of how long it will take IBM to rebundle once the competition is smashed.

My own estimate is five years at the most.

- I think the whole tone of IBM's attitude to technological innovation was set in the early fifties when it lifted Univac's patents on basic computer logic circuits. Since then, I think it can be said that relatively little innovation in computer software or hardware has been initiated by IBM.

To imply that breaking up IBM would hamper technological innovation is to completely ignore the facts.

To say that IBM does not have effective competition for mainframes because there are no large competitors is to indulge in circular logic.

Certainly the U.S. will experience increased competition from computer manufacturers abroad. If the U.S. companies wished to form consortia for marketing U.S. computer technology abroad, I'm sure the Justice Department would have no objection.

In short, I think the breakup of IBM can be accomplished equitably and skillfully. It would stimulate rather than hamper innovation and even further improve our trading position. Thus, the best way to protect the consumer is to break up IBM!

Fisher is director of data processing for a small agency of the Michigan Department of Mental Health.

Letters to the Editor

Esperanto Not English? Good Luck to You

The letter by James J. Pottmyer favoring Esperanto over English as a documentation language [CW, Dec. 13] is certainly a much larger project and involves more people than advocating a change in emphasis of computer programming languages (from Cobol to –). I admire him for his enterprise. I agree with his analysis of English and wish him luck in his endeavor.

If he is as persistent as are a great number of professionals in their demands in computer programming language development (scrapping Cobol), who knows? After all, look what metrics has done to feet and pounds!

Thomas H. Politowski
Director of Systems and
Computer Services
Resource Control, Inc.
Lansing, Mich.

Be Broad-Minded!

Re: Dec. 20 issue, Giff Babcock's letter.

Isn't it just amazing how people can get their mental exercise by jumping to the wrong conclusions? Equally amazing is how the same people want others to join them in their jumping.

Is Babcock a real person? Is he really concerned about professional attitudes of all DP managers or just his own uncertainties? What is his definition of professional? Perhaps a definition might provide a better balance between his opinions and reality.

Or is Babcock really attacking IBM? IBM undoubtedly has many sound business principles; they have made and have sustained themselves as a leading company. However, there are innumerable individuals and personalities who make day-to-day customer contacts who make impressions their own way.

Also, the interactions of customer personalities are equally innumerable. Combining the entire IBM organization into a very, very narrow description as Babcock attempts to do is transparently fallacious.

Robert R. Hamilton
Past President
Boston Chapter, DPMA
Boston, Mass.

Friends up North

Re: stalled satellite editorial, CW, Dec. 13.

Yes, there is a Canadian communications satellite which can be used by our neighbors to the south for a price. Yes, it was launched in Florida and I am sure that American expertise was at least a basis to build on.

But, rather than an "I am first" or a "me too" approach, why not a "use what we have available and when more or better is required or available, enlarge or upgrade"?

Your editorial reeks of the "American Chauvinistic Attitude" – that there is none better on earth than we. The third paragraph of you editorial – "The absurdity of the current situation is clear: we may have to pay foreigners to use a satellite that was launched by our own expertise in Florida" – only strengthens your image.

Yes, I am a non-American, but there is definitely a better grade 4 word than foreigner – try friend, associate, comrade, Canadian, etc.

B.L. Nicholas,
Systems/Analyst
Toronto, Canada

You overlook the fact that *Computerworld* also cited the "commendable display of cooperation with our neighbors to the north." Rather than downgrade the Canadian effort, we intended to applaud it and instead call attention to the folly of our slow governmental procedures. Ed.

Billing Controversy Brings Out Choice for Computer Community

The Taylor Report

By Alan Taylor, CDP

Computerworld is written for the computer community and says so on the front page of every issue. When letters are received for publication, therefore, whether they go to the editor, or are sent to me as a columnist, it is expected that the writers are interested in communicating some information they think is important to the community.

Personally, I find these letters very interesting, particularly the ones that take issue with the column. Almost all help me, by either reminding me that not everyone regards computers as the center of the universe, or they bring out a distinction which I had not made in the column. (Even in a column it is impossible to cover every aspect and distinction of an issue without losing the reader's attention).

The letters help me understand a little more about the computer community – and I welcome them accordingly.

Occasionally, however, the letters leave me at a loss. This loss occurs when two readers have well thought out philosophies regarding community interests that are mutually incompatible, yet both are able to cite facts and arguments in their own favor.

Sometimes the disagreement can be solved by analysis – but sometimes the answer can be found only by putting the question to the community itself.

Such a case occurred when Mel Tolhurst's philosophy on computer billing was published in this column on Dec. 6, and Otto Almasy responded on Dec. 20 with an equally self-consistent philosophy.

The Two Philosophies

Tolhurst believes the billing dates printed upon computerized bills should be accurate – at least before the computer system proceeds to sock him with finance charges of 1-1/2% on the current month's outstanding balance.

Almasy, however, believes the accuracy of these dates is unimportant, as they are simply internal controls and not of any concern to the recipient. Moreover, he feels the potential cost of adopting the Tolhurst-type of computer billing could be too high to give it serious consideration.

Almasy has a point which should be heeded. Relieving Tolhurst of those finance charges when the billing date is inaccurately recorded by the computer system could be costly.

The Tolhurst system is based upon the assumption that bills which have 25 days between the accurate billing date and the time finance charges are imposed can be handled by paying all bills at least every 16 days. (Tolhurst pays his on the first and the 15th of every month.) Theoretically, this leaves nine days for two-way mailing when the bills are mailed on the billing date.

When the computerized billing system mails the bills a week or so later, however, the payment system can break down. Payment is then made about three or four days after the deadline, resulting in finance charges.

The cost Almasy is referring to is presumably the cost to the firm of accepting the responsibility of keeping the billing dates accurate, or else of extending the finance charge deadlines accordingly. This could be costly for them, for it could cause them to lose some extraordinarily profitable transactions in cases like Tolhurst's.

Currently, Tolhurst is paying a real interest rate of 80% on a finance charge that is nominally described as being 18% annual interest in conformance with the truth in lending laws. This is because the 1-1/2% finance charge is levied for under one week's extension of credit.

(Only time after the deadline is involved. Other charges are used to pay for the credit up to that point – and you can be sure that the charges are not calculated to leave the vendor losing money if the customer pays on the deadline!)

The 18% rate is accurate if and only if the customer does not pay up for another four weeks.

You can quickly see that being assessed charges equivalent to 80% annual interest on any appreciable balance will be a very profitable business indeed.

Whether or not this is a general occurrence I do not know.

Almasy's letter seems to indicate that there is a significant amount of potential loss in eliminating this billing practice. He is in a better position to know the figures than I am, as he is the director of services and systems at Transamerica Insurance Group, so let us assume the potential loss is significant.

There are in fact high costs involved in seriously considering Tolhurst's complaints. But even though Almasy's facts may be straight, the facts do not necessarily support his conclusion. His conclusion is that because of the cost serious consideration should not be given to clients' habits.

Now does that really follow? The fact that the accurately dated billing application is not quite as profitable as one with inaccurate billing dates may be true, but is that important to the computer community?

Computer Community Involved

The computer community could lose by going along with the Tolhurst philosophy. Indeed, if the incidence of computer applications which need to use inaccurate billing dates to be economically justified is at all high, the community could lose out by giving serious consideration to the problems – for the evidence that would be unearthed by such serious consideration would effectively force these applications to close down.

The community could lose some jobs. The hardware manufacturers might lose some sales – and they and their employees are also a part of the computer community.

But again is this important to the computer community?

This philosophy has some very strong supporters. The ethical codes of some of our professional societies are very explicit about the "professional" requirement of loyalty to the employers' interests, but remain wishy-washy about any professional loyalty to the accuracy of information.

The same "professional societies" have shown a pattern of not getting involved in matters of data accuracy that could offend computer owners. Good cases for this philosophy can be made.

Yet, before we agree with such a philosophy and sweep our clients' complaints under the rug, let us ask whether we have completed the computer community balance sheet.

Certainly we have provided for reasons why we should not listen to the clients' complaints, and why they would be costly in jobs and profits – but there are equivalent costs involved in ignoring them, namely suggesting – as Almasy did – that Tolhurst should shop elsewhere.

We have tried evading clients' complaints for a decade and now we find that the public has lost confidence in our integrity.

This loss of confidence is the price the computer community has had to pay, in order to obtain the dubious benefits of keeping a few, marginal applications afloat. This loss of confidence must be weighed in the balance – before what I see as the Almasy philosophy is accepted.

As I mentioned in the beginning, the Almasy rebuttal of the Tolhurst philosophy gave me a problem – because they suggest to me two basically consistent philosophies, either of which the computer community could espouse. Yet these two philosophies are incompatible, with one providing for accurate data to be the overriding goal of computers, while the other urges maximizing the continuation of today's job opportunities.

I know what my philosophy is but I do not know the philosophy of the computer community.

I would like to know and so would many others. To help you register your opinion there is a coupon for you to state your feelings.

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What Is Your Philosophy?

Where billing dates are used by computerized billing systems to assess finance charges:

They need not appear on the customer's bill as they are only internal controls. Yes No

They should appear on the customer's bill, and should be close to the date upon which the bill is mailed out. Yes No

Other Comments ____________________

The data processing profession is entitled to refuse to give serious consideration to allegations of abuses of the public (such as providing inaccurate information):

When ignoring the allegations allows DP users to make more money. Yes No

When ignoring the allegations allows DP practitioners to get more jobs. Yes No

Under what other circumstances do you feel the DP profession is entitled to refuse to give serious consideration to allegations of abuses relating to computerized systems? ____________________

When completed please return to Alan Taylor, Computerworld, 797 Washington St., Newton, Mass. 02160. If you wish to fully or partially complete the following personal details it will assist in evaluating your response.

Professional Position ____________ Society Memberships ____________

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Privacy – Common Ground Needed by All

By E.T. Dibble

Special to Computerworld

Viewpoint

In most discussions about privacy that I am aware of one point is obvious. Most people on both sides of the issue are sincere in their arguments. But there is one question which comes to mind. Why not work together to formulate legislation which will assure the privacy of the individual and also allow valid processing requirements to be met?

The issue of privacy (at best a nebulous term) seems to be centered around the issue of accountability. On one hand there is fear that a person's activities record, known at one location, will be compared or combined with the information available at another.

On the other hand, those responsible for accounting are concerned with the requirement to debit/credit information, from various sources, in a valid manner. In the final analysis both "hands" probably should work together.

Common business discipline requires an accounting system which will allow credits to equal debits. Over a period of years it has become common practice to assign a unique number to a specific account.

Within a company the practice is to use the same chart-of-accounts number for the same account, even though various offices of the company are involved. In this way "cash" is recognized as "cash" by the parent company although it may be in banks at many locations.

The people charged with processing data look for an easy method of assigning a unique identifier for the application being implemented, in order to properly process (debit/credit) the system's data.

The reasons for using a common number within the same organization have long been validated. Therefore, rather than reinventing the wheel, many system analysts have made use of the Social Security number for deriving the unique identification required. This has obvious advantages and disadvantages.

At this time there seems to be little cross-referencing of information based upon the Social Security number, except by agencies concerned with money transactions. An example is the recent situation in a large state in which fraudulent welfare payments were uncovered by comparing Social Security numbers on the welfare payment and employment withholding records of the state. When questioned about this apparent invasion of privacy, one person mentioned, "no one has the right to cheat."

From a realistic point of view there is more than one type of privacy. Therefore, one of the necessities is to define the meaning of privacy in specific rather than emotional terms.

Perhaps one answer to the dilemma is to develop industry standards or guidelines Rules could be formulated about the type of information to be gathered, who would collect it, use it and have access to it.

In conjunction with a recommendation

(Continued on Page 12)

Cobol Validation: What System Can Best Serve Users?

By Ned Chapin
Special to Computerworld

Viewpoint

At the last Fall Joint Computer Conference, George N. Baird reported on the Department of Defense (DOD) Cobol compiler validation system (CCVS). Those who heard him or read his report in the FJCC *Proceedings* were left with several impressions:

- The system is big. It consists of more than 50 programs composed of more than 120,000 lines of Cobol source code.
- To use the system to check a Cobol compiler for conformance with the Ansi Standard requires the person who sets up the job to have an extremely detailed knowledge of the Cobol standard.
- Adapting the CCVS to meet different object computers and different operating systems requires a lot of preparatory work.
- Repeatedly testing any specific Cobol compiler version and release made by a vendor will be redundant. Someone needs to check each compiler thoroughly once for each applicable object computer and operating system combination.

But the computer user does benefit from a CCVS in three ways:

First, program portability is improved. A source program compiled for different object computers should result in object programs that give the same results upon execution.

This is most critical for multi-installation users such as the Federal Government, and companies with branch offices. Even the single-installation computer user benefits when he has to use backup facilities.

Second, the availability of a CCVS should enable users to get Ansi Standard Cobol compilers that have fewer bugs. This saves trouble and builds confidence for the user, and saves the waste of programming around the known hugs.

Third, personnel efficiency rises. When the compiler can be relied upon to work the same way each time from computer installation to computer installation, personnel efficiency is helped in several ways.

The changes the programmer needs to be aware of are only changes in the standard itself, except for the presence or absence of specific features, such as the Report Writer.

Cobol expertise gained at one installation with one object computer can be transferred to other work with confidence. This transferability reduces start-up and training costs for the employer, and reduces training time for the employee.

One of my initial reactions to Baird's report was "I would like to play with the CCVS just for the fun of it to check out a compiler for my own shop." But as I reflected on the personnel and computer time needed, I concluded that no user should have to check Cobol compilers for conformance with the Ansi Standard.

The user should be able to rely on the vendor to deliver a standardized compiler. But for well-understood reasons of prudence, it is always desirable to have the vendor's claims checked by some disinterested user-oriented party.

Here are some choices for such a party:

Neither the American Federation of Information Processing Societies (Afips) nor the American National Standards Institute (Ansi) have the personnel or the computer resources or the knowledge of the standard, to operate a CCVS successfully.

The Computing and Business Equipment Manufacturers Association (Cbema) has access to the personnel, the facilities and the knowledge needed, but this would put validation into the hands of a vendor-oriented group rather than a user-oriented group.

The DOD – a major computer user – could do the validation through its Navy Programming Languages Section.

But it is unfair to expect any one user, however major, to bear the expense of operating a CCVS. To check all the compilers for all the major applicable computers and operating systems would take months.

Ideally, therefore, the party who operates the CCVS should be close to the standards effort, be user-oriented and be paid from the public purse, or by the equivalent of a tax or "validation fee" on the vendors.

The prime candidate for this role is the National Bureau of Standards' (NBS) Center for Computer Science and Technology. The Brooks Bill (PL89-306) would give the authority to select NBS, but provides no funds to support the effort.

If NBS should delegate the actual performance of the Cobol validation to DOD, and DOD to the Navy, this would leave the effort where it has been centered all along. And this chain of delegation seems likely to occur.

If it comes to pass, it leaves unanswered three questions significant for the Cobol user:

- Will DOD be able to tap the public purse to pay for a sufficient level of personnel and facilities to do the job well? The Navy is currently footing the bill. The temptation for DOD will be to ask the Navy to continue to pay, which would be unfair.

Even DOD itself should not have to pay by diverting funds from other efforts. How about asking the vendors to pay a service fee?

- Can NBS serve the Cobol users outside the Federal Government? It could, if it gets an adequate flow of validation results in timely and usable form, and then publicizes them.

Will NBS have the staff to do the job? Ruth Davis and others at NBS mean well and try hard, but since her staff is already loaded down with other tasks, what can we public users expect?

- What can users do to make our desires and needs known?

Ned Chapin is a data processing consultant, Infosci, Inc., Menlo Park, Calif.

Common Ground Needed by All

(Continued from Page 11)

for a national chart-of-account numbering system for welfare payments/services it was also recommended that legislation should be passed to assure the privacy of the individual.

This is particularly true since it is Congress and the taxpayer who ask for an accounting related to tax money spent. As a means of using the computer to assure the privacy of the individual it might be well for those advocating a particular position to work together as an ad hoc committee, under the auspices of a congressional group.

Without a common ground to work from, each side will expend a vast amount of energy and effort in the cause of "right," and may very well be no nearer a solution. Working together might bring out overlooked details which could lead to recommendations for congressional action.

Those willing to work or comment on this subject may contact me at 689 Longleaf Drive, N.E., Atlanta, Ga., 30342.

E.T. Dibble is a management system consultant.

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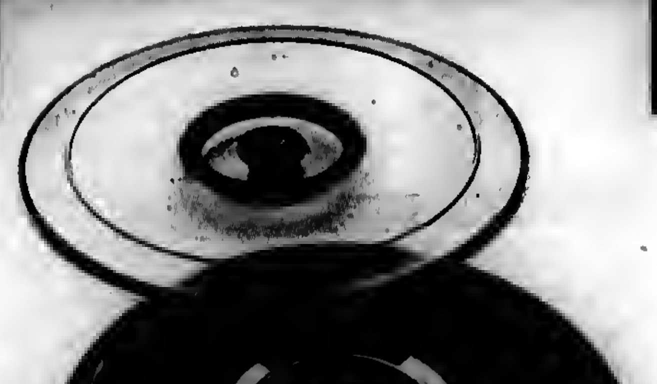

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Random Notes

IMI Offers Free 'Preview' Of Revised Cobol Impact

SAN FRANCISCO – IBM 360 ANS Cobol users can determine the impact of the proposed revised Cobol standard on their programs, through use of a free diagnostic package from Information Management Inc. (IMI), 447 Battery St., 94111.

The Preview package reads Cobol source programs and issues a diagnostic for each statement. The messages show whether the statement is in both the current and revised ANS Cobol, in the current but not the revised, not in the current but in the revised, or not in either standard.

Basic for Datacraft Units Includes Matrix Operators

FT. LAUDERDALE, Fla. – A reentrant version of the Basic interactive language is available from Datacraft Corp. for use on its 24-bit computers. The processor is supported by the company's Disk Monitor System, a spokesman noted.

This implementation of Basic includes several enhancements beyond the original Dartmouth language, including a range of matrix operators and a computed GO TO, triggered by an ON condition test available with several instructions. The Datacraft Basic may be purchased for $500 from P.O. Box 23550, 33307.

ITT Data Opens New Office

NEW YORK – ITT Data Services has opened a data center in the financial district to provide subscribers of the company's Statistical Analysis from Remote Terminals (Start) service with faster turnaround on long print runs.

The center, at 25 Broad St., includes a high-speed remote job entry terminal with line printer. Users can enter jobs from the center's terminal or from their own, with output directed to the high-speed printer. ITT Data Services is based in Paramus, N.J., at Route 17 and the Garden State Parkway, and can be contacted through P.O. Box 402, 07652.

Orders and Installations

ST. LOUIS – Rohm and Haas Co. of Philadelphia has ordered the Compaid system from Monsanto Enviro-Chem Systems Inc. The $80,000 system, to be installed on a 370/165, produces isometric drawings of piping systems, prepares order documents and bills of materials, and generates various management control reports.

– – –

PRINCETON, N.J. – National Airlines, Amtrak, Consolidated Edison of New York, Hertz Corp. and Western Airlines are planning to install the Star telephone administrative system from Applied Data Research Inc.

Guide Lists Possibilities

Planning Seen a Must for Effective MIS

By Don Leavitt
Of the CW Staff

PHILADELPHIA – Users are justified in their confusion over the diversity of software products all labeled "management information systems" (MIS), but many of these are valuable enough so that users should not despair without an orderly review of what is available, according to Prof. James C. Emery of the University of Pennsylvania's Wharton School of Finance.

In a preface to a catalog of offerings recently compiled by Time-Sharing Information Services, Inc., Emery noted that the relative ease of use and low entry cost of time-shared MIS packages permit an organization to experiment with several of these decision aids and gain experience in their use before making any major commitment.

But experimenting on a hit-or-miss basis, even with well-developed systems, is only part of a step-by-step process that should be followed to make sure an MIS implementation is a success and not a dismal failure such as that which marred the MIS image in the late 1960s. And experimental use of a system should not normally be the first step in the process, Emery warned.

What Does User Want?

Look inward first, he urged. The user should never implement a modeling tool with the idea that it is bound to prove something useful. The potential user should spell out in advance, as well as he can, the information he would like and its relative importance to him.

Only after that self-examination should the user determine what decision packages are available, and then examine the most likely candidates in depth, Emery said. The examination should include a close study of the vendor's documentation, benchmark or trial runs of the model and discussions with some users of the package.

On the basis of such an examination, the user can decide which packages, if any, meet his needs.

The interactive nature of many MIS is justified more because of the rapport between decision-maker and model, than for any critical need for working with absolutely current data, Emery noted.

Once the initial examination is completed, users should negotiate with the vendors to determine as closely as they can what the real costs of using each system will be. Only after that, Emery said, should the user install and test, and then fine-tune the system to his particular needs.

Emery's discussion of how to plan for using MIS packages is followed by quite detailed descriptions of some 56 separate MIS or MIS-related offerings from time-sharing and package vendors. The write-ups all follow essentially the same format, making cross-package comparisons easier.

In any case, the vendor contact and phone number are provided. Copies of this $28 "specialty volume" can be ordered from 3401 Science Center, 19104.

'Pride' Defines, Controls Work Of Analyst, End User in System

CLEVELAND – The Profitable Information by Design (Pride) package from M. Bryce & Associates Inc. (MBA) does exactly what a good systems analyst should do to plan a project. But that, according to one user, is exactly why it is so useful.

Pride is quite literally a package, consisting of several manuals, an initial supply of documentation forms and training programs for both the analyst and the end-user department. The company also provides consulting service and guidance in the use of Pride, and any updates to the manuals.

Pride is not software, MBA explained, but rather a methodology that leads to effective software programs that make up easily maintained systems.

The manuals, and related forms, impose a development pattern on the analyst and require the involvement of the end user, in defining needs, okaying proposed report layouts, etc., all along the way. Followed faithfully, the system prevents the user, and analyst, from leaving out anything significant, MBA claimed.

Under the Pride methodology, for example, the analyst is prevented from going on to a new phase of a project until the whole current phase has been completed and "signed off" by the end user. Documentation is generated while the project is in progress, not after completion.

Pride provides "maximum and understandable" communication between all system developers, MBA said, and users agree.

At first the volume of documentation required seemed overwhelming, a user with a year's experience said, but the amount of detail provided in that volume proved invaluable in program maintenance after the project originator was no longer available.

The approach is independent of machine on which the system is to be installed, or language in which it is to be written. It is concerned with the management of the project, the system and the data within the system, allowing technical personnel to concentrate on creative design rather than administrative details.

Pride is available on a "per systems group" basis, at $8,000 for the primary installation, and $5,000 for secondary sites. It is also available for unlimited use within a corporate structure for a one-time lease price of $40,000.

MBA can be reached through P.O. Box 15459, 45215.

Packages Watch Daily Cash Flow, Organize Monthly Consolidations

HUNTINGDON VALLEY, Pa. – Corporate officers using large-scale 360/370 CPUs can get a better grasp of their company's financial status with a pair of packages from Kidde Computer Services Co. (KCSC).

The new Cash Management System (CMS) enables users to watch their cash flow at multiple locations, and the updated Corporate Consolidation Program (CCS-IV) provides a consistent approach to summarizing multidivision or location financial statements.

CMS prepares, on a daily basis, cash flow reports, cash receipts and transfer registers. Weekly, it provides a cash projection for 10 weeks.

Each month, CMS prepares bank reconciliations, ranking of subsidiaries and divisions, and a statement of intercompany loans. A variance report shows actual cash compared to forecast position, for the corporate as a whole and for each subsidiary.

The consolidation package is tailored for each use by user-specified parameters. Its use for mandatory Security and Exchange Commission (SEC) "10K" reporting is also applicable to monthly consolidations and closings, the company said.

The system contains an editing function and provides comparative reports, matching actual experience to budget for the current reporting period, or for year-to-date, or matching this year's experience to last year's.

Both systems are OS oriented. CMS requires 110K bytes of core, two disks and eight tapes, the company said. It is available for a one-time charge of $20,000 or for $500/mo.

CCS-IV utilizes 120K bytes of memory, one disk and three tapes. It sells for $5,500 or $200/mo, KCSC said from Red Lion Road at Philmont Ave., 19006.

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DUCS-VI will be available during tha 3rd quarter of 1973. Varsion 6 will support both local and ramote IBM 3270 Display Systems providing users with a convaniant means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V ebstrects and othar details will be sent by return meil. Inquiries may be directed to Mr. Richerd K. Goran.

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360 Programs Shifted to PDP-11

CHICAGO – With help from Conversion Software Services Corp. (CSSC), users of DEC PDP-11 minicomputer systems may be able to install programs on their equipment that were originally written for IBM 360/370 CPUs.

A CSSC translation service accepts 360 Assembler source code and converts it to PDP-11 Assembler source code. Most versions of 360 Assembler are acceptable, although Assembler H macros cannot be handled effectively with the current implementation, a CSSC source said.

More User Opportunity

This service appears to open several doors to users. Installations with nothing but PDP-11s can now consider packaged software for the 360, from independent software houses, as a means of extending their application workload "immediately" and without heavy program development effort.

Shops with 360s near the saturation point can shift some of their load to the lower-priced DEC gear, at least delaying what might otherwise seem to be an unavoidable mainframe upgrade. In this case, the user also gains PDP-11 system features not available on the 360, the CSSC spokesman noted.

Apparently the only limitation on the use of 360-oriented software on the PDP-11 (assuming the original programs are in Assembler) would be the size of the user's DEC configuration. Since this can range from minimum core on the true mini 11/05, to a normal maximum of 128K with possible extensions to an absolute maximum of 256K on the medium-scale 11/45, this limitation may be more apparent than real.

The conversion process takes about a week, CSSC added, but turnaround time depends more on the complexity of the original program than on its size. Output can be punched on cards or paper tape as the user specifies, the spokesman noted.

While CSSC anticipates extending the conversion service to produce "target" source code for other hardware systems in addition to the PDP-11, the company's present plans do not include the use of anything but 360 Assembler source code as input.

The service is available for a dollar per source card, with no mimimum fee required. Comment cards are carried over into the PDP-11 Assembler source program without cost, the company added.

CSSC is at 333 N. Michigan Ave., 60601.

Trust Control Stretched To Include Reinvestment

NEW YORK – Banks with "75K or 80K" available under OS/360 may now extend their trust department operations substantially with the installation of the Dividend Reinvestment System (DRS) from Franklin Computer Associates Inc.

A batch-oriented system, DRS can be interfaced with a bank's normal dividend accounting system to handle the distribution of cash or stock dividends. The package is distributed in source and object code so either Franklin or the user can write the interface logic.

The prime purpose of DRS is the purchase of new shares as the cash dividends accumulate. Purchase orders and confirmations are generated as available funds reach predefined levels.

The system also supports the inputting of monthly cash contributions from outside the dividend system, allowing faster buildup of funds for investment than would be possible through accumulation of dividends alone, a Franklin source noted.

Custom Job

Accounts transcripts are produced on request by DRS and the system permits custom fee structuring by company. Tax data is calculated for preparation of year-end 1042 and 1087 forms and Internal Revenue Service magnetic tapes.

Made up of several programs, the largest of which is less than 80K bytes, DRS is written in BAL. The package costs $25,000, but purchase/lease plans are available.

Franklin is at 80 Pine St., 10005.

'Jasper' Shows Spool Use

NEW YORK – The Job Accounting Systems Programs for Evaluation and Reporting (Jasper) package from Datachron Corp. is designed to provide DOS/360 operations staffs with meaningful system use information on a daily and periodic basis.

An updated version, now available, works with "any of the popular spooling systems" and with CICS operations. Originally using the Job Accounting module built into DOS Release 25, Jasper has been extended to pick up utilization statistics from other sources as well, "even from Power, the IBM spooler," a spokesman added.

Historic View

In addition to accessing various sources of data, Jasper goes beyond accounting packages from other vendors, he said, by accumulating historic data on repetitive jobs. Current processing of a run is compared to its past average performance, and deviations are listed on an exception report for management review.

Schedule planning reports help to create effective job mixes for spooling and multiprogramming environments. At the other end of the operation, billing reports allocate the cost of each job in accordance with user-provided charging parameters.

Jasper is written in BAL and ANS Cobol and operates on both 360 and 370 CPUs. The basic system costs $4,000 and can be ordered from 174 Fifth Ave., 10010.

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COMMUNICATIONS

Data Briefs

Communications Managers' Salaries Seen Rising

NEW YORK – Communications managers with "heavy data communications experience are earning between $16,000 and $23,000 per year, according to a salary survey conducted by Personnel Resources International Inc.

Managers with "some data communications" average about $13,000 to $16,000 and lower level supervisors are in the $10,000 to $13,000 category, the survey said. Senior telecommunications programmers currently earn between $14,000 and $18,000, the report added.

There has been a sharp increase in the number of firms seeking communications managers at the "lower and middle levels" in the past six months, according to Personnel Resources. This area had been "dormant" during the recent recession, the company said. The report is available from 342 Madison Ave., 10017.

Interdata Offers 'Pals'

OCEANPORT, N.J. – Interdata Inc. has announced a programmable asynchronous line system (Pals) for use on its "new series" minis.

Using MOS-LSI technology, Pals provides an interface between Bell 102- and 202-type data sets and the mini's multiplexer. bus. The system can be used on both dial-up and leased lines and is priced "at less than $400/line" in a typical 16-line configuration, the company said.

Delivery is 60 days from 2 Crescent Place, 07757.

CSI Has Front-End

DALLAS – Communications Systems Inc. (CSI) has introduced a communications control unit which replaces both 270X and 3705 systems from IBM.

Called the Cope 4705 communications controller, the unit as a 1.1 µsec processor combined with a 250 nsec control memory that responds to 360/370 system addresses, commands and data sequences.

A 4705 system for supporting 20 asynchronous and two synchronous lines costs about $50,000 or $1,200/mo. Lease prices include maintenance. Deliveries are scheduled for the first quarter of 1973.

The company, a subsidiary of University Computing, is at 1500 UCC Tower, 75222.

Sanders 'Adds' Display

NASHUA, N.H. – Sanders Data Systems Inc. has introduced an interactive graphics display system called Adds/500.

The system includes a DEC PDP-11 with 8K of storage, a Model 33 TTY, utility software and a display generator.

First deliveries are scheduled for March 1973 from Daniel Webster Highway, 03060.

Avoids Access Methods

Hasp Helps Remote Job Entry Nets

By Ronald A. Frank
Of the CW Staff

NEWTON, Mass. – Users who need an efficient way to get into Remote Job Entry (RJE) operations can combine IBM's Hasp package with independent 2780-equivalent terminals.

One of the major advantages of Hasp is that it contains a communications module which gives the user a binary synchronous communications capability without having to resort to more sophisticated access methods such as Btam.

"The user often hesitates to get involved with access method programming but the Hasp system is much easier," one consultant said.

"If you emulate a 2780 using Hasp and add a mini to the terminal, you can make it do things that a 2780 can't do," another spokesman said. It is this addition of a mini to the 2780-equivalent terminal that has provided users with an RJE capability that is usually priced lower than the IBM 2780 and can be as low as $350/mo with a cassette capability.

The IBM 2780 costs about $800 to $1,000/mo while the average independent equivalent terminal usually costs between $500 and $600/mo, according to one industry spokesman. Most of the independent terminals have a 300 card/min reader and a 200 line/min printer with their RJE configuration.

One advantage of using Hasp for the RJE line discipline is that it improves throughput compared with other RJE operations.

Acknowledge Time Reduced

With Hasp, the acknowledge sequence time is reduced because instead of transmitting an acknowledge (Ack) signal, the central site responds to receiving a block of card data by immediately sending a block of printer data back to the remote site.

So instead of the 2780 user having to wait for the line to turn around when the Ack signal is transmitted by the central site, the Hasp user gets increased throughput which looks like simultaneous full-duplex transmissions, the consultant said. Even though the data is still being sent in half-duplex mode, the throughput is considerably increased with the Hasp capability, he said.

Most of the independent Hasp terminals require the user to initiate some minimal routines to condition the system. "You have to gen the RJE capability but the package is pretty clean in this respect," one user said.

"The most important feature is that we have a common Hasp interface to the mainframe so we don't have to bring up a separate package to do the RJE work," he said.

One vendor that has supplied a low-cost Hasp terminal to users is Sycor. By eliminating the card reader and substituting a cassette system, the firm offers an RJE capability for about $350/mo.

The system uses a 30 char./sec printer but this is fast enough for most low-volume Hasp RJE applications. The cassette system allows high-speed transmission of data to the terminal, with the tape storage acting as a local buffer to feed the data at a rate that can be accepted by the slower printer.

Most users with the independent 2780 terminals like the addition of some processing capability at the remote site.

"The intelligent terminal checks the data to make sure it is accurate before it is transmitted," one user said. Most of these terminals make sure there are no incorrect column punches or other errors in the card data, he said.

Another feature of the Hasp package is its "stability" according to one user. The package has been upgraded to system status with the new virtual operating systems, he said.

It is possible that IBM might introduce a new version of Hasp that would make it more difficult for independent terminals to operate in 2780 emulation mode. "But if it were simply a software change, we could probably give the user the necessary software to overcome any restriction," one vendor said.

System Reliability, Redundancy Held Vital for Communications

ANAHEIM, Calif. – Successful operation of computerized communications systems requires high reliability and redundancy to assure maximum uptime, according to speakers at a recent communications meeting.

Large-scale data communications networks such as the Integrated Telephone Customer Information System (ITCIS) in The Netherlands involve large batch runs with high-load real-time inquiries, according to Robert A. DiPalma, formerly with Pandata N.V., the software firm that designed the ITCIS system for the Dutch Post Telephone and Telegraph (PTT).

The Dutch system will be used through a nationwide computer/communications system to handle all PTT directory assistance inquiries, in addition to billing and collections, work order entry, customer services inquiries, cable and wire pair administration and management information, he said.

Fast Directory Assistance

The average response time for a directory assistance call is estimated at three to five seconds from anywhere in the country. The ITCIS will utilize PDP-11/20s as remote processors to poll terminals, edit input messages, smooth traffic peaks and provide error protection with minimal impact on the central CPU, DiPalma explained.

The system will utilize 15 high-speed private line links operating at 2,400 and 4,800 bit/sec in full-duplex mode. A segmented message transmission scheme will be used which will acknowledge the first, last and retransmitted segments of messages, he said.

The mainframe proposed for the ITCIS is a Univac 1110 with three 8440 disk subsystems. The communications interface will include two Univac communications terminal module controllers. Terminals supported by the system include 425 CRTs and 200 teletypewriters, he said.

Modular Unit Configures Lines

SOUTHBORO, Mass. – Data General Corp. has introduced a modular Multiline Asynchronous Controller that can be used to configure communications nets with up to 1,024 lines.

The controller can handle line speeds up to 9,600 bit/sec and interfaces for both dial-up and private lines are available. The controller operates with any Data General mini and can also be connected with the firm's existing synchronous interfaces and multiplexers.

To configure a data system, the user's communications lines are connected to line interface modules which in turn are tied to "bus drop/clock" modules through a printed circuit bus that is part of the controller's chassis.

The modules can also be directly connected to the data controller and modem control in the CPU, the company said.

Communications systems support is at the operating system level. In addition, the company provides software at the transmitted block of data level. But applications programs have to be developed in-house by the user, the spokesman said.

For front-end applications, programmable IBM 360/370 interfaces are available with as many as 15 Data General minis interconnected through a multiprocessor communications adapter. Synchronous and bisynchronous multiplexers are also available, the spokesman said.

A 192-line system with 128 lines with modem control and 64 lines for direct connection costs "under $60,000 or about $300/line," the company said.

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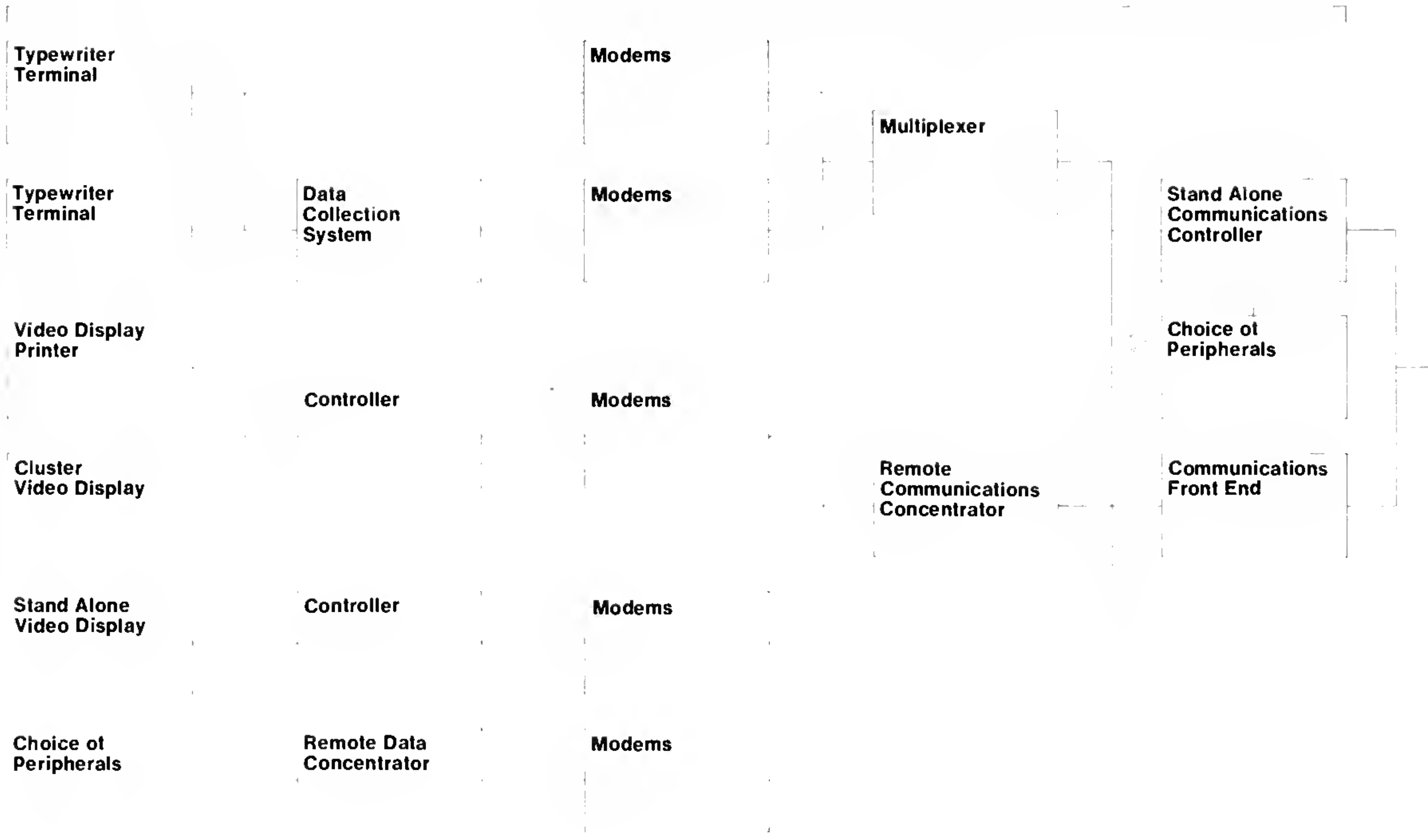
GTE INFORMATION SYSTEMS

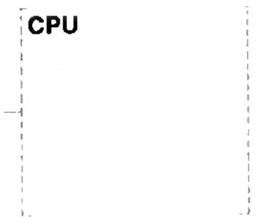
What happens between you and your computer is our business

Nationwide Service



Programming

We belong between you and your computer



Look at this chart. See what's happening in the computer business.

It used to be nothing but data processing.

But today, outside the computer room is an entirely new system. One that's just as complex and important as the one inside. A far-flung network of terminals, modems, multiplexers, satellite computers, software . . .

And people.

Everything has to interface with something else. (Including you.)

Then tie in with a transmission line.

Then interface again, once data reaches the computer.

Without distortion or error. And with the highest speed possible.

All in all, there's a whole new industry added to data processing.

We call it data communications . . .

Outside the computer room.

And it's here that the special systems expertise of GTE Information Systems can work for you.

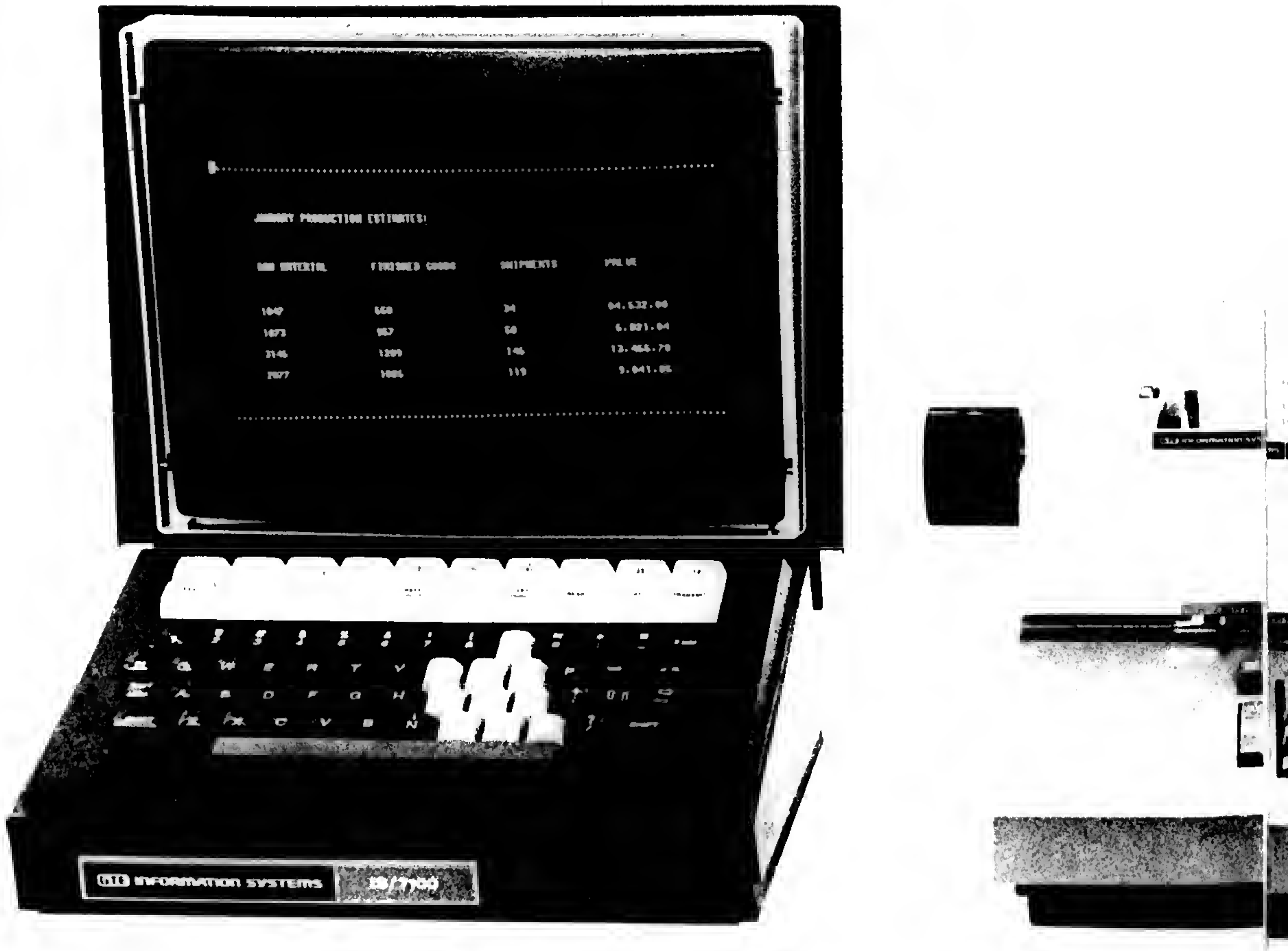
Since we manufacture virtually everything but the mainframe, we have no reason to recommend anything but what does your job best.

And, since we're nationwide, so is our service organization. You're never more than a few hours away from help if it's needed.

In the next pages, we'd like to guide you through data communications as it looks to us . . . outside the computer room.

To show you what happens when we really get between you and your computer.

GTE INFORMATION SYSTEMS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FINISHED GOODS
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GTE INFORMATION SYSTEMS
IS/7100

Seeing is believing, but maybe you want it in writing, too

To talk to your computer, you need a terminal. And the kind of terminal depends on how fast you want to talk. How fast you need your answer. And whether you want a permanent record of the communication.

From GTE Information Systems, your choice of terminals is as broad as your system's requirements.

For virtually instant response, look at our family of video terminals. The stand-alone terminal gives you a display of up to 1920 alphanumeric characters on 6, 12 or 24 lines, up to 80 characters wide . . . and transmission speed of 1200 or 2400 baud. For a cluster system, speeds up to 9600 baud are available and, depending on the number of terminals, the display can have as many as 1920 characters.

(In considering stand-alone vs. cluster systems, remember: the stand-alone unit gives direct computer access but requires its own control unit. A cluster arrangement can provide this access for a whole group of terminals using a common oontrol unit. Both types are available for either local or remote operations.)

A video display is a transient thing. If you want a permanent record along with the CRT's speed, we can give you either a desk-top thermal printer to make single copies at up to 30 characters per second; or an impact printer, for an original and up to 5 copies. Both are buffered.

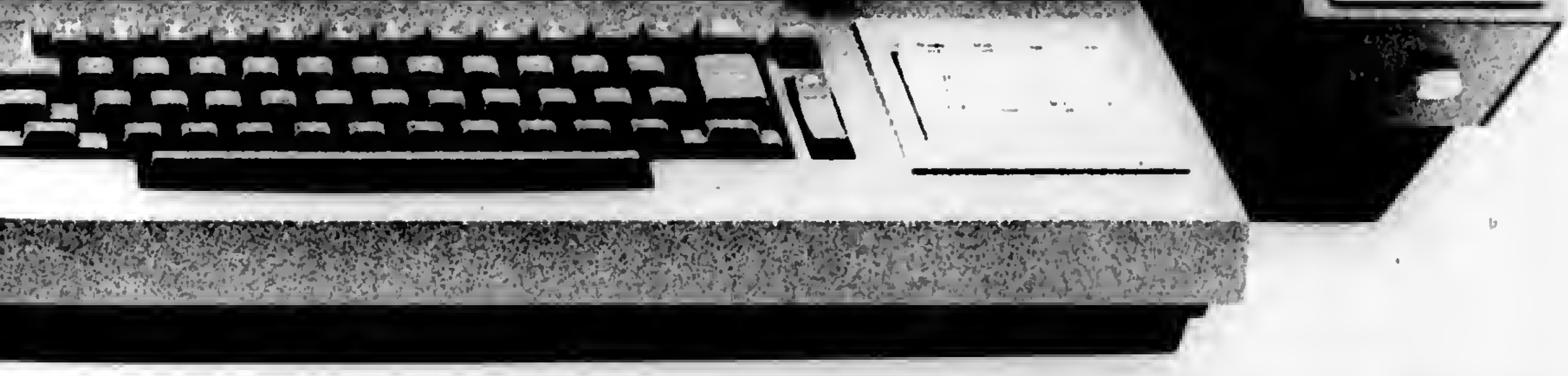
Then, there're our typewriter terminals. Here, too, we can furnish everything your data communications system needs.

These terminals include buffered storage capacity of up to 790 characters. This means that data entered at typist's speed can be transmitted later at 2400 baud. In the receiving mode, buffering now permits receipt of a 2400-baud message and delivery at 15 characters a second.

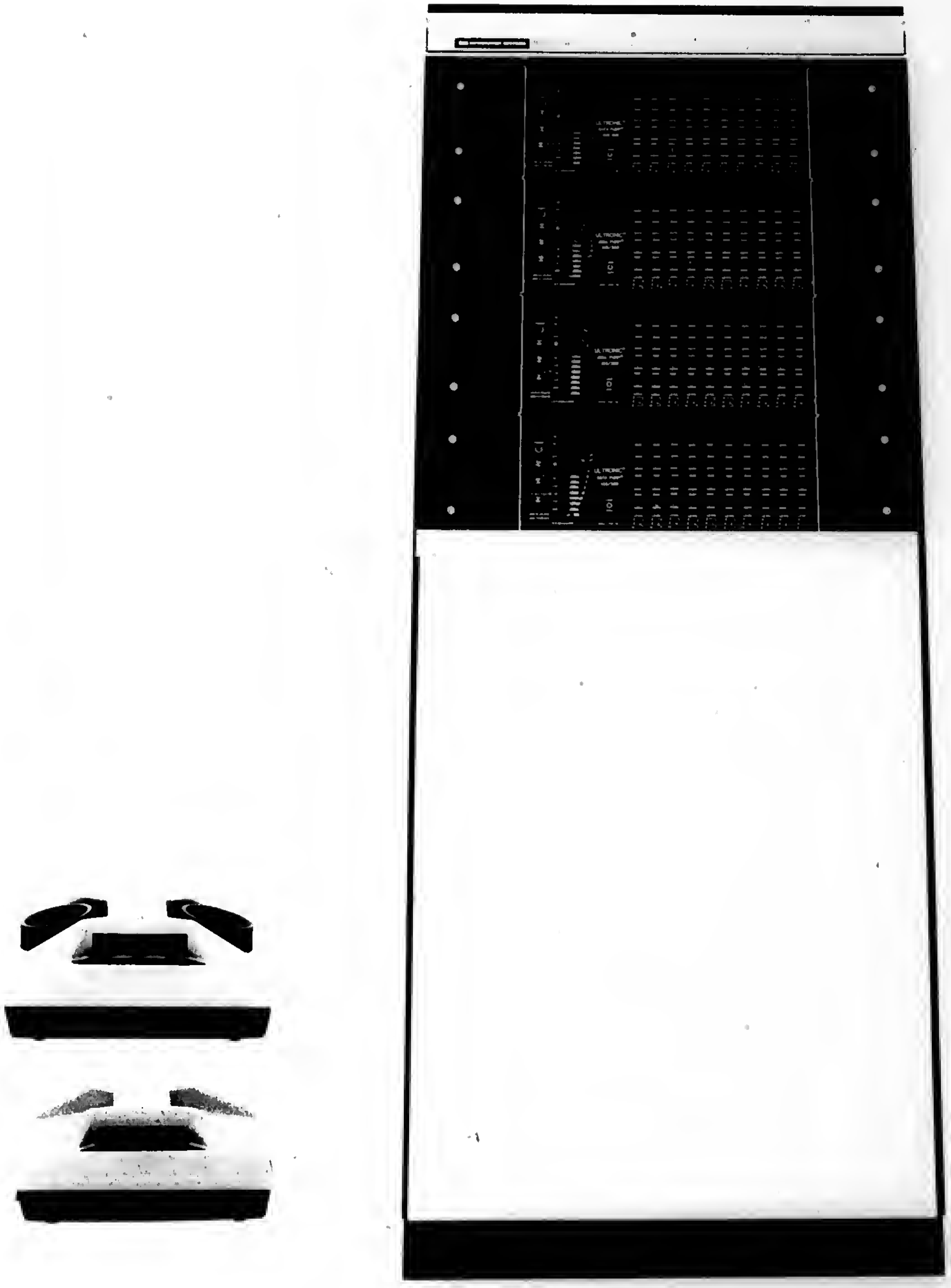
And, if you'd like to do better than that, our high-speed printer delivers data at 30 characters a second.

Finally, if you can afford to wait and transmit your data in a batch mode, the cassette recorder stores up to 73,000 characters, for high-speed transmission at a later time.

This first step between you and your computer may sound complicated, but it's really fairly simple. That's what we're here for.



TERMINALS/ GTE INFORMATION SYSTEMS


ULTRONIC
ULTRONIC
ULTRONIC
ULTRONIC

Pick the modem that's just your speed

Next step in the data communications chain—the modem.

You might be surprised at how much you can save by having the right modems married to the right terminals married to the . . . but you get the idea.

It really boils down to how fast the terminal talks. And, since there's such a variety in that, GTE Information Systems has put together a family of modems to handle just about any problem.

Our smallest model, a 300-baud modem, comes in five variations: acoustic-coupled or hard-wired originate-only; hard-wired answer-only; and data-card file answer-only in two file-card storage capacities.

Our 1200 and 2400-baud modems have a change-over feature that lets you switch from your dedicated line to the dial-up network at the press of a button.

For high-speed transmission, there's our 4800-baud unit. Using duo-binary coding, it eliminates the dc component in the signal, allowing you to transmit more error-free data over standard Series 3002 lines with C2 conditioning.

All our modems are economical, and telephone company-compatible. And all have pushbutton trouble-spotting, so problems can be isolated in minutes.

In most cases, you'll find our modems cost less than comparable units. And they're all available from stock.

When our modems get between you and your computer, you get top efficiency. And save money, too.

MODEMS/ GTE INFORMATION SYSTEMS

TDM or FDM? The wrong decision can cost you money

You've got the terminals and the modems. Now for the multiplexers.

The question is, when do you need them, and what kind do you need?

From the systems viewpoint, the answer comes from your total requirements.

Everybody knows that multiplexers literally multiply the effectiveness of your leased lines. Either by time division or frequency division, they combine many channels into a single high-speed output for your leased lines. We make both kinds.

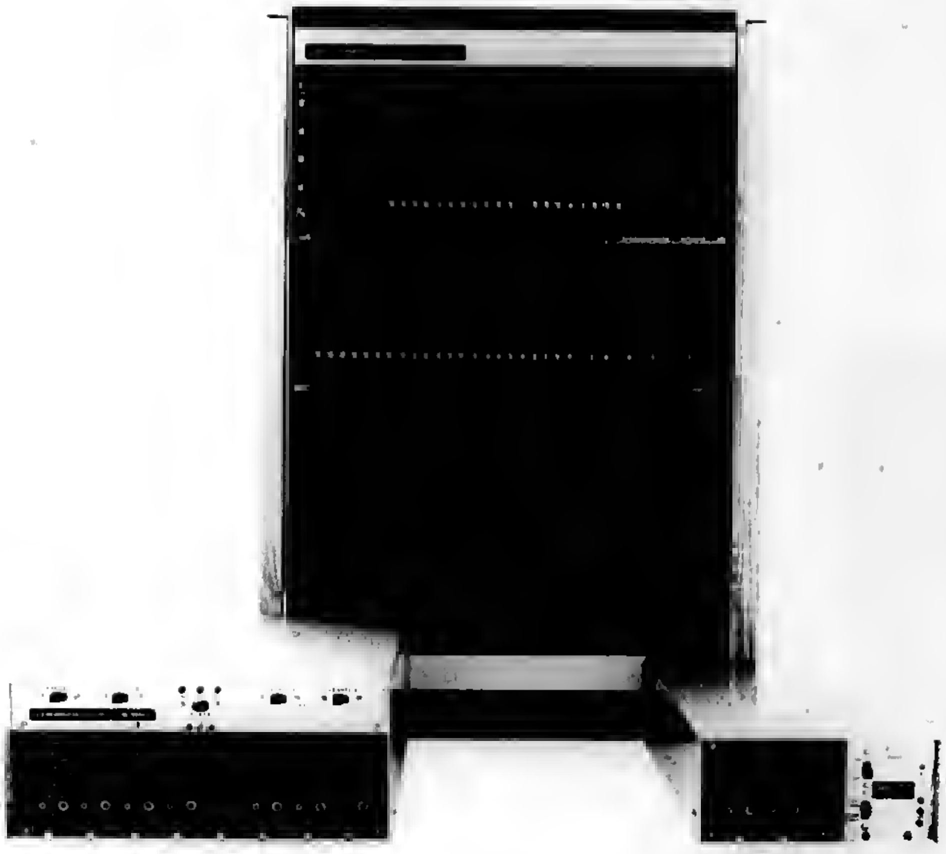
When you operate only a few channels, chances are, you ought to aim for FDM, frequency division multiplexing. Roughly speaking, each FDM channel will cost you about $600.

GTE Information Systems has FDM units that will handle up to 23 channels on voice-grade line and 25 channels on a conditioned line.

If your bottom channel requirement is around 13, you probably ought to consider time division. The first channel costs a lot—around $4,000. But the cost per channel drops rapidly. At 16 channels, the cost is about $8,000.

We have TDM's that can handle up to 54 channels.

How do you know what you need? Guidelines like these help. It's even more helpful, we think, to talk to the people who make everything for total data communications. Everything that stands between you and your computer.



A little concentration can solve your data flow problems

Until now, we've talked about how complex and interrelated the parts of data communications systems are.

Now, here's a problem that arises because systems like these exist.

It's simply the vastness of the systems.

There's an incredible number of repetitive functions called for in today's state-of-the-art operations: jobs like polling, queuing, reformatting, addressing.

The kind of things any computer can do.

But your mainframe's main job is processing information. And every microsecond away from that is a loss of time and money.

Solution? Give your computer a computer. One that can handle these "housekeeping" chores of a widespread system.

GTE Information Systems makes a line of small computers for such jobs. For use as front ends; or as stand-alone message switches, controllers, data concentrators and intelligent terminals.

These are real computers . . . with memories up to 131K . . . programmable. They can handle codes and formats that haven't been invented yet.

It's a very efficient way to take some load off the main computer.

Because we were between you and your computer in the first place.

MULTIPLEXERS/COMMUNICATIONS PROCESSORS

GTE INFORMATION SYSTEMS

A program that treats your computer right can be a treat to your pocketbook, too

Software. It's what makes your system work.

Since it's the part of the system that tells the central computer what to do, you might even think software is the most important part of all.

At GTE Information Systems, we have developed software programs for many computer system needs. We are one of the country's leading creators of tailored programs.

We have also developed a state-of-the-art system, FCF (Front-end Communications Facility) that handles all network control, message processing and assembly, switching and data collection. It's one of the first marriages of software and hardware for the front-end part of the computer.

Programs? Intercomm™, for one. It allows you to move from batch to on-line without replacing your computer.

Minicomm™. For smaller systems, it can put you on-line with as little as 24K memory—without adding core.

Score. It converts ordinary language into a Cobol program.

. . . to say nothing of special programs for industries from banking to publishing . . . from credit card to parking ticket record handling.

The wrong program can waste time for your whole system. Our programs, between you and your computer, can keep things running smoothly.

How to get the same service in New Mexico as you get in New York

As you've seen, we provide all the essential pieces for your data communications system.

Plus service. The vital ingredient.

GTE Information Systems includes a complete systems service, from installation and maintenance of equipment to helping you get your software integrated into your operations.

Nine out of every ten data communications installations in the country are within an hour's drive of one of our servicemen. The rest aren't much farther.

Specifically, our service organization includes more than 600 men in 85 cities around the U.S. and Canada. Trained in our own schools, they know how to diagnose a problem, and how to correct it. Fast.

We want to get between you and your computer. We don't want to interfere with it.

That's why our servicemen are always nearby.

And—wherever you are—there's only one number for you to call—collect: 303-449-7800.

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We'll keep you on speaking terms with your computer

Think of what's happened outside the computer room.

A whole new business has evolved: data communications. A business we helped create.

It's entirely new—and nobody understands it better than we do. Used properly, it can help you make data processing a very senior management tool.

GTE Information Systems covers the data communications business totally . . . from you to the computer. We provide the hardware and the software, and furnish the service. Coast to coast. Continent to continent.

No system is too widespread, or too complex.

For example, we created and operate one of the largest privately owned communications systems in the world. Serving the brokerage industry worldwide, it's a 100,000-mile network encompassing 21,000 terminals, 33 satellite computer locations and a master computer center. It provides brokers throughout the world with all the vital information they need—as it occurs and as it changes. Instantly.

The point is: we can supply everything from a single terminal to a global network. The products. The experience. The programming. The operation and service. All with complete inter- and intra-system compatibility.

When we get between you and your computer, everybody talks the same language.

If you'd like to see how we talk your language, too—or for specific details on any equipment or service we offer—mail the postcard.

GTE INFORMATION SYSTEMS

I'd like to know more about

☐ **The whole data communications system**
☐ **Video terminals**
☐ **Typewriter terminals**
☐ **Modems**
☐ **Multiplexers**
☐ **Communications processors**
☐ **Programming**
☐ **Service capability**

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'Cool Operator' Really Handles Beverage Dispensing Machines

Special to Computerworld

PHILADELPHIA – A small computer is being shared by two separate but related companies housed in the same building to operate machines which dispense frozen carbonated beverages in retail stores in 31 national markets.

The difference between profit and loss has been the fast turnaround provided by the NCR Century 200 in the processing of sales, ordering supplies, billing and the preparation of customer reports, David W. Williams, data processing manager of National ICEE Corp. and E.B. Evans Inc., said. "If it weren't for the computer, we'd be unable to maintain the right corporate control that now exists," he said.

The Small Systems User

Management is working toward the goal of having the computer handle just about every job required by Evans and ICEE.

At present the system processes all orders, handles all billing, maintains receivables and payables, controls all purchases and production, maintains the general ledger, monitors manufacturing-to-production batches, processes the payroll and prepares profit reports for ICEE distributors. "When we're finished," stated Arthur Abramson, executive vice-president and treasurer of both firms, "all aspects of Evans and ICEE will be on computer."

The system consists of a central processor with 32K memory, dual-spindle disk drive, an NCR 640 high-speed 1,500- to 3,000-line/min printer and card reader. All card sorting and handling (except for initial input data) have been eliminated with magnetic memory disk packs.

The system's programs are also sorted on disks, making applications easier to change and faster to run. Each program is automatically called from storage when the operator presses a few keys on the console. The system is programmed in Neat/3 and Cobol software.

The work flow for Evans begins with the receipt of orders from salesmen and customers, arranged according to the various plant locations. The input data is keypunched and a computer-prepared order form is routed to shipping. After the shipping department has filled the order, the order report is returned to data processing for billing.

A four-ply two-part invoice is prepared; one part is sent to the customer showing what has been shipped; the second part contains detailed management information (gross profit, net profit and gross margin) and is retained. At the time of billing, the customer's master records, which are on disk, are updated.

The preparation of statements, which formerly took 16 hours, is now completed in 45 minutes. Sales analyses are generated in 40 minutes instead of 14 hours, Williams noted.

Several routines can now be performed simultaneously, thus eliminating costly waiting periods.

Neighborhood children have no complaints about automation.

Shipper Learning To Love Paperwork

By John H. Robinson

Special to Computerworld

SAN FRANCISCO – Many small companies are swamped with paperwork which impacts their operation and profitability, but with the installation of small computers in major branch offices, Harper, Robinson & Co. is now thriving on paper processing.

The company, an ocean freight forwarding firm, generates shipping papers and stacks of import/export documentation for its clients.

The written record forms the basis of control for export and import of thousands of shipments worth millions of dollars.

In the late 1960s all documents at the company were still being typed by hand at an average speed of less than 50 word/min.

There was much duplication of effort, since the various documents for the same shipper contained name, address, ship-to-points and other common information.

Ocean bills of lading were rated manually, which meant clerks spent much of their time paging through tariffs to locate and apply the correct rates and codes.

Management installed IBM 1130 computers in two West coast offices in 1968. In 1971 it was decided to upgrade to System/3s and include two other offices.

These computers now handle 70% of the export documentation and 50% of import paperwork at these offices.

With the small computers the firm can offer customers in-transit inventory reports which are produced weekly or as required by the client.

John H. Robinson is president of the Harper Group of International Total Transportation Companies, San Francisco.

Orderly, Safe Storage In Minimal Space —that's proven Tab Data Media Cabinets. Versatility was born into these cabinets. They have been designed to accommodate hanging printout binders, disk packs and racked or hanging magnetic tape. They are even ideal for storing cards. Tab Data Media Cabinets can be ordered with roll-out shelves that bring data media right to your fingertips. And, if storing miscellaneous office paraphernalia is a problem, forget it. Just tuck it away in the generously-sized Data Media compartments and close the stylish TrimLine doors. Neat. For complete information about Tab 2, 3, 4 and 5 high Data Media Cabinets, call your local Tab representative. Or, write Tab Products Company, 2690 Hanover Street, Palo Alto, California 94304.

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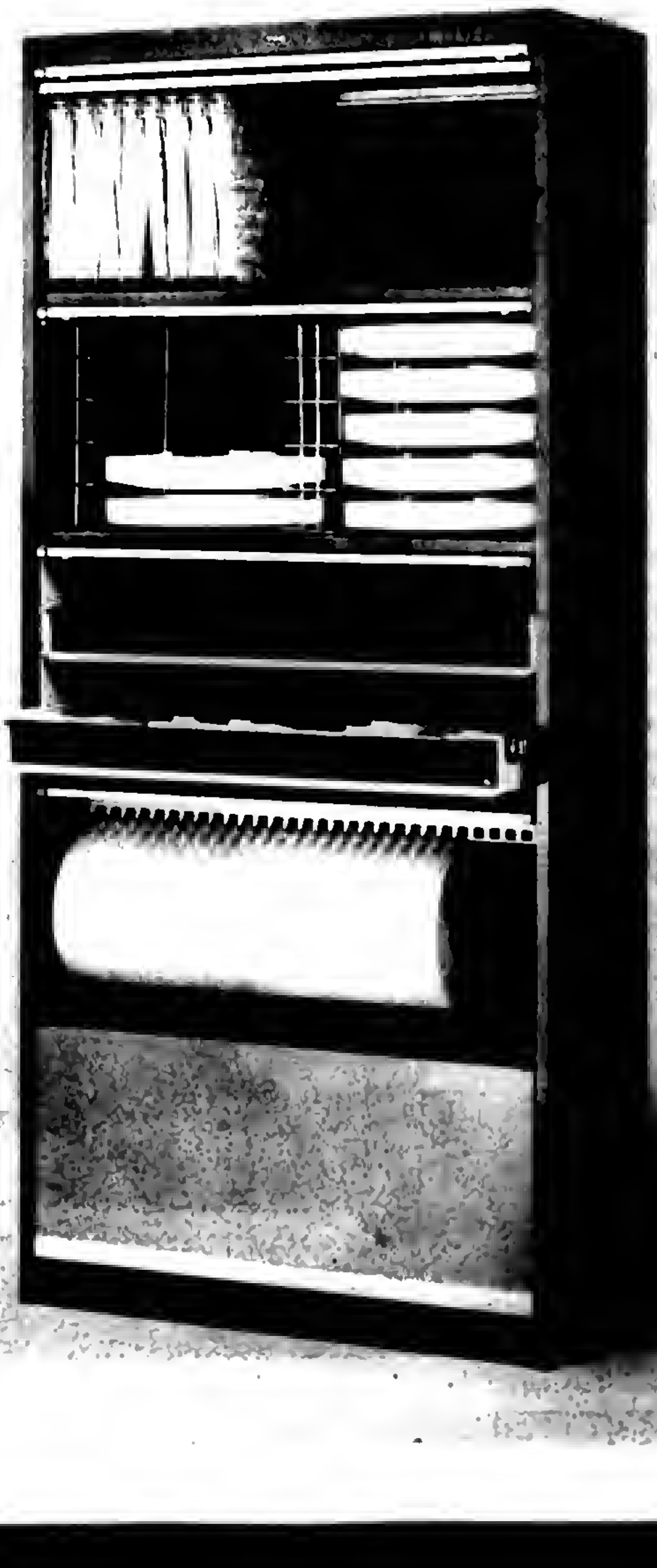

"That's an interesting story. Why didn't I see you at The Computer Caravan?"

Thousands of your prospects will be at The Computer Caravan/73. If you're not, they won't hear your story. But they will hear someone else's. That's not so good for your salesman. Or for you.

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Bits & Pieces

Remote Terminal Has OCR Capabilities

ANAHEIM, Calif. – A remote terminal with optical character recognition (OCR) capabilities is being offered by Datum Inc. to users with data-entry requirements.

The Model 5098 reads data from source documents, assembles it into Ascii alphanumeric characters and formats it for asynchronous transmission over normal telephone lines.

Any conventional asynchronous remote receiver can be used – teleprinters, paper-tape punches, video-display terminals – the firm spokesman said.

Normal scan speed is 9 in./sec, with other speeds available. Transmission rates are 10-, 15-, 30-, 60- and 120 char./sec, the spokesman stated.

Price for the standard 5098 is $1,795 from 170 E. Liberty Ave., 92801.

Large Plotter Boasts Fast Operation

CANOGA PARK, Calif. – A computerized flatbed plotter series with a work area of 6 ft by 10 ft to 6 ft by 20 ft is available from Xynetics, Inc.

The computer-based Series 2000 system has a maximum velocity of 30 in./sec maximum acceleration of .8G, resolution to one mil and accuracy to ±0.005 in. over the total drawing area, the firm said.

The system comes with an optional paper-feed system for contiguous plots to accuracies up to ±0.030 in. The drafting head can accept liquid and dry pens, scribe tools and photo heads, the spokesman added.

Depending on exact specifications and the software needed, the Series 2000 will cost in the $60,000 to $150,000 range from 6710 Variel Ave., 91303.

PDP-9 Users Offered Memory

LEXINGTON, Mass. – DMS-9 add-on core memory from Dimensional Systems Inc. is designed as expansion memory for the PDP-9.

DMS-9 expansion memory with controller costs $14,500 for 8K, $19,600 for 16K and $25,600 for 24K compared to DEC's stated cost for added memory and controller of $14,500 for 8K, $26,500 for 16K and $38,500 for 24K.

The firm is at 31 Hartwell Ave., 02173.

Microprogramming Leaflet Free

SUNNYVALE, Calif. – "Debugging Microprogrammed Systems" is the title of a four-page application leaflet available to designers of data-handling equipment.

The leaflet is directed specifically to engineers telling how flaws can be removed from computer memories, according to the author, Dr. William Davidow of Signetic Memory Systems.

Free copies are available from 740 Kifer Road, 94086.

Showing the Colors

Staran computers, developed over the past 10 years by Goodyear Aerospace, are demonstrated in a new facility at the firm's Akron, Ohio, headquarters.

...Making News On-Line

•UPI Trades Pencils For CRT Displays

By Michael Weinstein
of the CW staff

NEW YORK – Editors at United Press International are exchanging their teletypewriters, yellow paper and pencils for a computer network and display terminals.

Stories submitted from around the world are entered into UPI's computer facility in New York. From there an abstract giving a brief description of the story is sent to all UPI editors – news, sports, financial, etc. This abstract appears on the editor's CRT display and tells him enough about the story for him to determine whether he wants to see it.

If the editor requests the story from the terminal keyboard, the entire story is displayed. To facilitate handling, the editor can roll copy forward and backward by a control button.

Before Your Very Eyes

When the editor wants to change any portion of the copy, he moves a cursor to the desired point and adds, deletes or replaces letters, words, sentences or entire sections. Changed lines automatically open and close up on the screen.

When a story is completed, the editor can direct the computer to hold it for future use or it can be immediately placed in an output queue for transmission to subscribers of the news service.

The system allows for the placement of a priority on what goes over the wire. A late-breaking story can be placed anywhere in the queue or can interrupt a story being sent. At the end of the "flash" the interrupted story picks up where it left off.

The system is designed using a shared file capability to allow different editors to work simultaneously on the same story. Each editor's version is available for later retrieval from the computer, as is the original copy sent from the field.

Presently 42 editors access the computer network: 36 in New York, four in Washington and two in Chicago.

•PDP-10 Supports Complete System

MAYNARD, Mass. – By interfacing a phototypesetting system to a PDP-10 time-sharing computer, Digital Equipment Corp. is offering newspapers a total operations system.

The system can support up to 127 remote terminals from which reporters can enter stories, ad managers can input ads, production personnel can output galleys for pasteup and other personnel can perform functions such as billing, circulation and payroll, according to DEC.

As reporters enter copy, a name is assigned to each story so it can be accessed later for on-line editing and updating.

Once edited and approved, stories are justified and hyphenated for transmission to the photo composition units for typesetting.

Wire-service copy can be automatically input to the data base of stories and used in the same way as locally written material.

Using remote terminals, reporters can enter stories "from the scene" through standard telephone lines. The editor can access this story on his terminal, make corrections and send the story on for typesetting.

Up to 300 ad classifications can be accessed using coding which enables the manager to start, skip and kill dates. Expired ads are held in the data base for a specified time – giving time for renewal. Overdue customers are listed creating the option to reject ads.

A monitoring system allows the directing editor to produce programs showing the copy content and status of stories with the size and number of ads being prepared, according to the firm.

The DEC-1044 is the minimum CPU for the system with 96K 36-bit words of memory, 100M bytes of disk storage, two tape drives, line printer and redundant communications-checking equipment.

The price for the minimum system and software starts at $950,000. Larger PDP-10s can be ordered.

4M Bytes for 155, 165

370 Gets Add-On

By a CW Staff Writer

SAN FRANCISCO – Users of IBM System/370 models 155 and 165 can add Advanced Memory Systems memories up to 4M bytes, according to an Itel spokesman. (Itel markets AMS equipment.)

This compares with the maximum original design capacity of 2- and 3M bytes of main memory respectively on the IBM models, the spokesman said.

AMS has also completed engineering the CPU upgrade system hardware necessary for the add-ons. Starting in February 1973 (for the 370/155) and June 1973 (for the 370/165) these upgrade subsystems will be incorporated into all AMS add-on memory modules.

If not so incorporated, the CPU upgrade hardware would have to be ordered from IBM, at an extra cost of $15,000 to $18,000 and with a required downtime for installation of from 24 to 40 hours, the spokesman asserted.

Familiar Theme

The semiconductor process technology used by AMS in the 4M-byte add-ons is similar to the recently announced IBM memory systems used in "virtual memory" for the new 370/158 and 168, the spokesman said.

Compared with ferrite cores, standard to the 155 and 165, the new monolithic memory delivers higher performance while costing less, requiring less power and space, and generating less heat, he said.

The AMS add-on can be retrofitted to all 155s and 165s, from a zero-up basis in which all core memory is replaced with monolithic memory.

Cost for the 3M-byte version for either machine is $1,188,000 with a lease plan ranging from $32,400 to $27,000/mo on two- to five-year leases.

Purchase price of the 4M-byte version is $1,584,000 on either machine with leasing from $43,200- to $36,000/mo on two- to five-year leases.

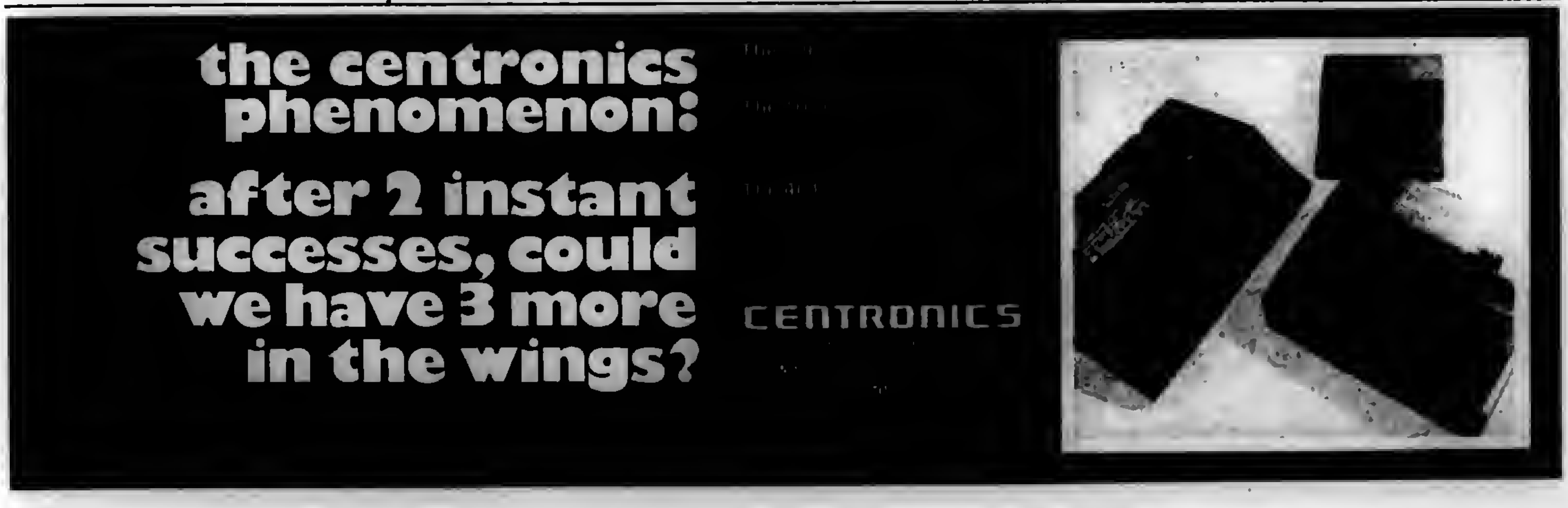
Itel is located at One Embarcadero Center, 94111.

Array Supercharger Offered Nova Users

SYOSSET, N.Y. – Users of Data General computers can speed up the array-processing capabilities of their minicomputers by a factor of from six to 70 with a hardwired array-processing arithmetic and logic unit (Apgen 1) from Elsytec, a firm spokesman noted.

For example, the multiplication of two 1,000-element arrays takes 2.8 μsec using a Nova 800 with Apgen 1 as opposed to 19 μsec using the Nova with hardware multiply and divide, the spokesman said.

Apgen 1 performs addition, subtraction, multiplication and division of two arrays composed of 16-bit words and also can take the square root, integrating, accumulating and performing logical operations on the elements of the arrays, the spokesman stated.


the centronics phenomenon:
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Miami, Fla. (305) 448-3650; Atlanta, Ga. (404) 237-1176;
Houston, Tex. (713) 772-1772

User Expects 20% Production Increase With Computer Controlled Test System

EULESS, Texas – The Continentel Telephone Electronics Company expects a 20% increase in the production of circuit boards by switching to computer control for production and testing.

The circuit boards enable a telephone line to be used for up to eight simultaneous conversations by "coding" each conversation into a different noninterfering frequency.

On the first of two inspections of these boards, the IBM System/7 tekes readings at about 50 locations. If a failure is detected, a signal is displayed on the control unit to indicate the location of the malfunction. This allows an inspector to make an adjustment or send the board back for repairs.

The total handling time per board for this test is 8 seconds, only 2.7 of which are used by the computer.

Second Test

On a second test, each circuit is anelyzed under simuleted use in telephone service. In 13 seconds, the computer tests 20 functions, indicates any failures and gives readings so that technicians can adjust each board to optimal performance.

The computer, which tests ebout 400 circuit board/dey, also keeps a cumulative record of types and locations of malfunctions detected. Engineers can then obtain a printed summary of malfunctions. This summary is used to pinpoint types of errors and improve design and production phases.

"The computer makes initial circuit board inspections 40 times faster than we could do it before," a spokesman said, "and we're now testing all elements on a circuit board. This was not possible before."

DEC-10 Users Get 2316-Type Disk Packs

IRVINE, Calif. – DEC PDP-10 users can now obtain a disk system utilizing the same dual density-storage techniques used by IBM 2316 disk packs, according to the vendor, Telefile Computer Products.

The disk system provides storage capacity up to 116M bytes per single disk storage cabinet with the DC-10G controller connecting directly to the PDP-10 through the DF-10 high-speed channel, the firm's spokesman said.

Operating features of the Telefile's DC-10G controller include verification of track location by hardware, error checking of data transfers by hardware, simultaneous seek operations, monitoring of many subsystem conditions and direct transfer to and from memory for data – eliminating blocking I/O channels, the spokesman stated.

Storage Units

The disk portion of the system is produced by Century Data Systems for Telefile and consists of dual density, high-speed, random access storage units. Each drive utilizes an 11-high disk pack.

Over 58M 8-bit bytes can be stored on the 20 recording surfaces of each pack with each disk accessed using 200 track/in. technology, the spokesman said.

Access to any of 406 positions on the disk is accomplished with a track-to-track access time of 10 msec and a maximum access time of 55 msec. Data is transferred at a rate of 312K 8-bit bytes/sec at a rotation speed of 2,400 rpm. The drive is up to speed in 90 sec and dynamically braked in 11 sec, the spokesman said.

The DC-10G controller is priced at $25,000 while the dual density disk drives – with a capacity of 116M 8-bit bytes per unit – are priced at $11,000 each from 17795 Sky Park Circle, 92664.

OCR Unit for Small Forms User

EAST HARTFORD, Conn. – Data entry users with a few applications involving small-sized forms – such as turnaround documents used for billing – can get a relatively low-priced Optical Character Recognition reader from Scan Optics.

The 20/10 is able to read forms up to 6 in. by 9 in. or journal tape using numeric, alphabetic and handprint input, the firm's spokesman stated.

Scanning speed is 2000 char./sec with a maximum throughput speed of 500 form/min, he said.

Compatible peripherals include most standard line printers and tape drives, the spokesman said.

Error control is performed by programmable on-line display end insertion, character rescanning, sorting, edge marking and serial numbering, he added.

Software is included for selective field scanning, editing and formatting. All software is compatible with Scan Optic's larger 20/20 system so the user can easily upgrade when he needs extended capabilities, the spokesman said.

Price is about $2,000/mo on a two year lease or $85,680 purchase from 22 Prestige Park, 06108.

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5561

Gas Load Needs Under Control Here

By C.A. Roberts

Special to Computerworld

PORTLAND, Ore. – Northwest Natural's main goal was, and still is, to do a better and more efficient job of controlling gas "takes," to attain the best possible load factor and resulting gas cost for our company. This goal is now being reasonably accomplished with a computer system saving the company some $50,000 in personnel costs, through elimination of manual efforts in gas control activities.

Accurate monitoring of flows and projection of daily gas requirements is the most important function of any gas control department. On Northwest Natural's large geographically oriented system, there are approximately 190,000 customers using over 980 million cubic feet of gas annually.

In the past an accuracy of ± 5% for gas purchase volumes was considered satisfactory. With the present tight gas supply situation in the Pacific Northwest it became necessary to reduce this tolerance to the range of ± 2%.

Faced with the need to handle these much tighter tolerances, Northwest Natural Gas turned to an IBM 1800 data acquisition and control system in 1970.

Control of system gas requirements can now be kept within these limits, providing meters and telemetry equipment are kept in calibration.

Before the computer control system was installed, the gas control supervisors at the control center had to spend a major portion of their time reading instruments and calculating gas flow rates.

The supervisors were thus left with little time for decision making; thus, it was difficult for them to do an adequate job of forecasting requirements which is essential for maintaining the balance between gas purchases, storage gas and gas sales that is necessary to achieving an optimum overall system load factor.

But Now . . .

In the new procedure, all telemetry signals are transmitted directly to the system in the control center. Some 245 signals are received by the computer, covering flows from orifice meters with static and differential readings, BTUs from calorimeters, pressures from line gauges and digital counter readings from positive displacement and turbine meters.

The interface between the telemeter system and the 1800 is a reed type relay system. Each signal received at the computer center has a relay for its point of connection to the computer. Through this type of interface the company can receive both digital and analog signals as well as check telemeter transmitters and receiver calibrations against computer readouts.

At several locations throughout the company's distribution system it is necessary to obtain more than one signal to transmit pressures from important control points. To accomplish this the computer keys a transmitted 420 cycle/sec tone every eight and 12 minutes which in turn switches solenoid valves at telemeter transmitter locations for denoting upstream and downstream pressure readings at pressure regulators.

The system computes hourly gas usage for the major industrial customers as well as gas taken into the system from the supplier's pipeline. From this data, the computer prints out an hourly demand log showing gas flows by gate station and customer.

Accurate Projections

Because complete and accurate information on hourly flows and accumulation of flows is available on a current basis, the gas control supervisors can project their load requirements much more accurately, and thus are better able to maintain as high a load factor as possible while keeping inflows to the system within the limits of gas entitlement specified by the pipeline.

The computer continuously scans flow and pressure readings, and an alarm signal is activated in the event any increase or decrease in pressure beyond set limits is detected at designated points on the system.

The gas control supervisors can also at any time call for a printout summarizing all important pressures on the system, or certain designated pressures by location.

Weather Forecasting

Good weather forecasting is essential to accurate gas load forecasting, especially when maintaining system load factors in the range of 95% or higher.

At Northwest Natural temperatures and millibar (atmospheric pressure) readings over a 24-hour period, taken at given points on the system, are input to the computer. There they are processed through a series of equations that consider 23 years of weather history. The result is a printout giving a forecast of minimum and maximum temperatures expected for the next 24 hours.

Gas loads and temperatures for a 30-day period are stored on the system's direct access disk file. Using this historical information and projected temperatures, the computer can forecast daily system gas requirements.

The computer also allows more accurate record keeping for gas curtailments.

Much improved management information is another benefit which Northwest Natural Gas has derived from the new system. Once a day the computer summarizes the data which it has logged, and produces a management information report which shows the purchases and sales of gas for the entire system over a 24-hour period.

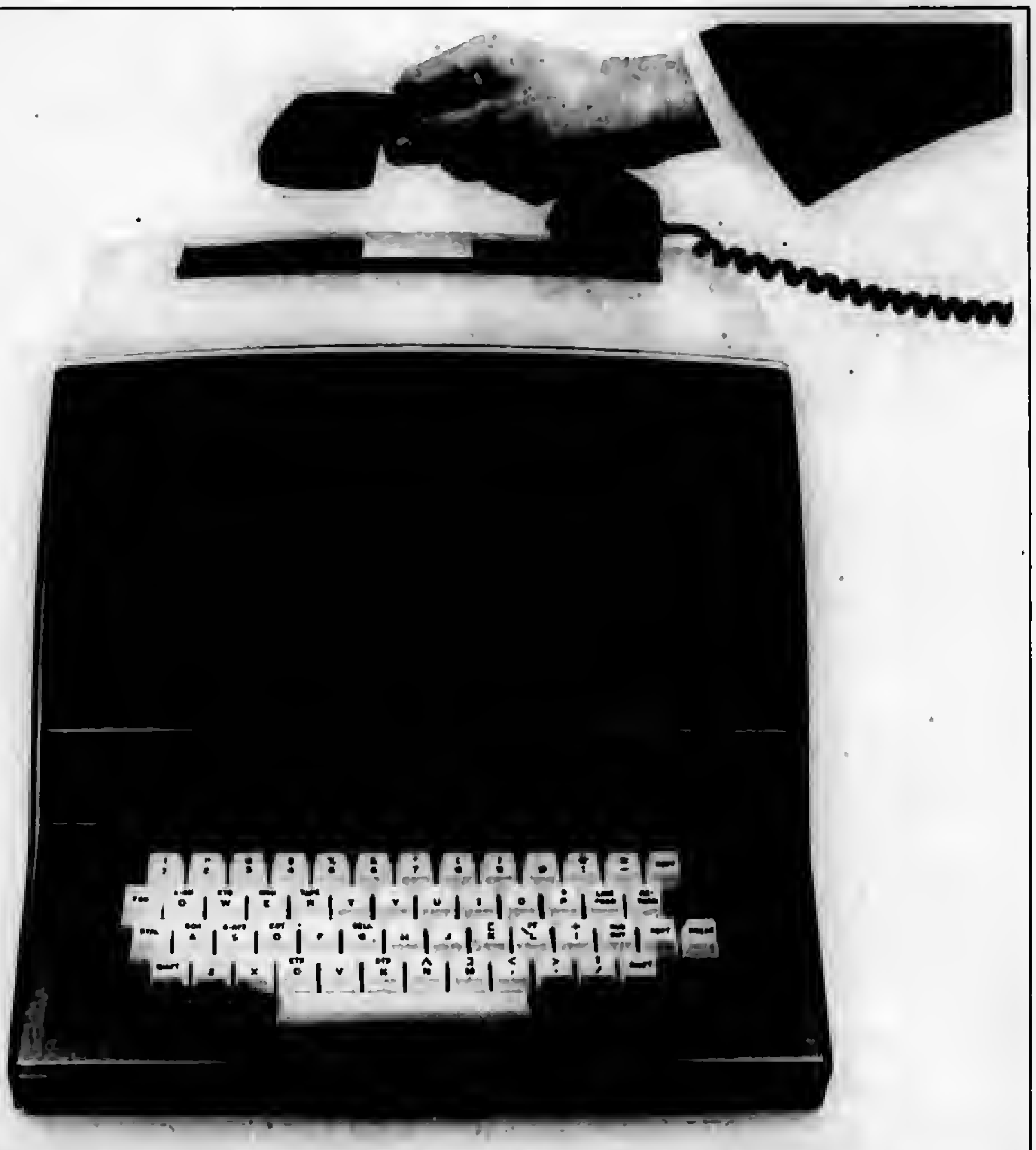
Looking Ahead

The computer also is used to make gas load studies and long-range projections of gas requirements, which provide excellent tools for management's use in evaluating load growth on the system.

The IBM 1800 system will produce a printout summarizing all important pressures on the system. Here gas control supervisors George E. Richardson Jr. and Woodrow J. Wright inspect a pressure summary.

A history of the hourly flows for each gate station is maintained in computer files and, by normalizing the data to a 20-year average temperature base, it can be projected with budgeted loads or forecasted increases for the next year's requirements.

C.A. Roberts is manager of the Gas Control Department for Northwest Natural Gas Co. in Portland.



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Guide Locates Technical Data

SAN FRANCISCO – Ever get the feeling that the technical information you want is available – somewhere – but you don't know where to begin to look for it?

A Guide to Locating U.S. Government Technical Information, Technology and Patents has been published by TTA Information Services Co., 4 W. Fourth Ave., San Mateo, Calif. 94402. The book describes the technical information activities of 24 U.S. agencies and notes 71 publications and information services programs available to the general public, the firm said.

Included among the agencies are the Superintendent of Documents, U.S. Government Printing Office, Library of Congress and the Department of Commerce.

The guide also gives details on "various data services designed to spur technology transfer and utilization," as well as descriptions of general policies on patents and lists of Nasa patents available for licensing.

The guide includes a list of U.S. Patent Depository Libraries.

The book is available for $15 from TTA Information Services Co.

Soviet Traffic Center To 'Start' Next Year

Novosti Press Agency

MOSCOW – The Start project, an automated traffic control system planned for this city, was recently approved by a commission of experts from the State Building Committee of the Russian Federation. Construction of the computer control center is slated to begin next year.

As part of the Start system, special underground sensors at intersections will record and transmit all data on the number of cars, and the direction and intensity of traffic to computers. The computers will process this information and directly control the traffic with the aid of street lights and directional signs.

Special TV cameras will be mounted at crossings. Operators sitting in a control room will monitor the traffic and note the license numbers of cars that violate the law.

Illuminated diagrams in the center will give a complete picture of traffic flow with special diagrams devoted to the most heavily traveled areas.

The Start computers will also be designed to respond to emergency cases such as the movement of fire engines and ambulances.

Legal Activities File May Aid Mich. Courts

ROCHESTER, N.Y. – The State of Michigan is using The Lawyers Co-operative Publishing Company's computer phototypesetting service to transcribe and publish a record of all legal activities of that state, in an effort to speed up the traditionally slow judicial process.

Under the new system, courts in Michigan send typed transcripts to the computer center in Rochester where they are entered on disks through an IBM 370/145.

An edited tape produced by the computer is used to produce the final camera-ready copy for publication.

Legal Footnotes Added

Lawyers Co-operative is responsible for all printing, type composing and also adds the legal footnotes.

As a by-product of this service the firm is constructing a data base for on-line interactive referencing of court cases.

The need for the computer publishing service arose from the inability of court systems to incorporate past cases into the body of the law. The time wasted on paper work is one of the major causes of delays in trials and the unresponsive operation of the legal system, according to a Lawyers Co-operative spokesman.

DP, Telescope Map the Sky

Special to Computerworld

SYDNEY, Australia – A large radio telescope constructed by members of the School of Electrical Engineering of the University of Sydney uses a computer to map the part of the sky to which the antennas are directed.

The telescope, it is claimed, will provide 10 times more detailed information about radio sources in the Southern sky than any other telescope in the world.

Many Small Antennas

The instrument, known as a "synthesis" radio telescope, uses a large number of small antennas to receive the radiation from astronomical objects, feeds this energy to an electronic receiving system and then to a computer which converts the received energy into a map of the part of the sky at which the antennas are directed.

The signal from the antennas is fed by underground cable back to the central receiver and an integrated signal is recorded every minute on tape. The signal is then sent through a telephone line to the university where it is fed into a PDP-11. The computer uses a number of complex programs to turn this information into a map of the region under observation.

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Profits Increase 25%

Food Chain Brings Inventory, Costs Under Control

By Royce R. Shafter

Special to Computerworld

FORT WAYNE, Ind. – Within a six-month period, Lucky Steer Steak Houses slashed food inventories at its 19 restaurants by 25%, while sales volume climbed 34%, leading to a profit increase of more than 25% for the period.

Much of the credit for this impressive performance goes to our computerized inventory control program, which we installed specifically to control food and labor costs.

The system tracks food stocks and usage at individual restaurants by class and item, calculates variations in item usage and pinpoints overstocks. The net result is lower average inventory, reduced pilferage loss and less waste from overportioning or spoilage.

With food and labor costs our primary target, we are putting more applications on our small computer. The IBM System 3/6 handles the payroll processing lor 600 employees; handles accounts payable for more than 700 suppliers; accounts for daily cash receipts from all 19 restaurants; prepares profit and loss statements for individual locations; and prepares corporate balance sheets.

Even more important than its operational versatility is the computer's contribution to better management at all levels – headquarters, field supervision and individual restaurants.

Inventory Control

Computerized inventory control applies to all 19 fast food restaurants, and to each of some 130 product items – from salad dressings to T-bone steaks, poultry to fish, condiments to carryout paper containers.

The vital control element is a master file record which continually updates current sales, replenishment purchases and stock levels – headquarters, field supervision gory and by item.

Every Sunday evening, the restaurant managers take a physical inventory of on-hand foods and supplies. They enter the item-by-item totals on a preprinted form and the completed inventory form is mailed to our headquarters here to become the key input for the inventory control system.

The managers report the week's purchases by mailing in the suppliers' purchase invoices. Cash register receipts, denoting sales, are sent in daily, along with notifications of bank deposits and any cash disbursements for such things as emergency supplies.

The report breaks down the store's inventory by nine product categories – meats, salads, dressings, potatoes, breads, beverages, desserts, paper items and condiments. It shows, for each item within each category, the total cost of the item; percentage of item sales to total sales; broken and whole case inventory; purchase quantity; usage for the current week and the four week average; dollar variation between current and average; and the number of days' supply of the item on hand.

Category totals are also provided and a final summary section showing the manager his total sales for the week, total inventory value, total food cost and average usage.

This report gives managers all the information they need to gear inventories to usage patterns, react to overstock or short supply situations, and pinpoint the problem areas where excessive variations in usage would indicate pilferage or overportioning.

Inventory improvement as a result of the control report has been dramatic. For example, one of our Lucky Steer units showed a total inventory value of $2,900 the first week the computer reporting system went into effect. Four weeks later, that restaurant's inventory was down to $1,500. Average reduction in inventory for all units in the chain is better than 25%. Future plans call for the computer to forecast requirements for raw food purchases and commissary production on a day-to-day basis, with the forecast keyed to current restaurant stock levels and food usage patterns.

Payroll System

The computer is also proving a tremendous time saver in its payroll application.

Under our old system, the restaurant managers had to assemble and total up time card data for each employee, calculating hours and extending by rate – a task that required up to six hours of the manager's time each week.

Now, each employee gets a computer-produced weekly time card with space for clock in-and-out times for each day of the week. The manager collects these at the end of each week, and sends them in to headquarters.

The system edits the data as it is being keyed in for valid identity codes, and for unreasonable or obviously errant time entries, updates the employee's master file record, produces a payroll register, and prints the paychecks.

The computer also produces a payroll summary for store managers showing rate and hours for each employee, total hours worked, gross pay and bonus amounts, and flags any employee working more than 40 hours for the week.

Another important management report is the "hours graph." The "hours graph" breaks each day of the week down into four time segments and using data from both the payroll and inventory routines, shows the total employee hours worked in each of the time segments, the number of employees at work and the labor cost.

It then provides the sales for the time period and the percent of labor cost to sales.

Ours is a totally cardless system. Data is keyed in directly on the System/3's console, and both master record files and the control programming itself reside on magnetic disks under direct computer control.

The computer has moved swiftly into the mainstream of Lucky Steer Steak House operations, and is slated for a much bigger role in the months ahead.

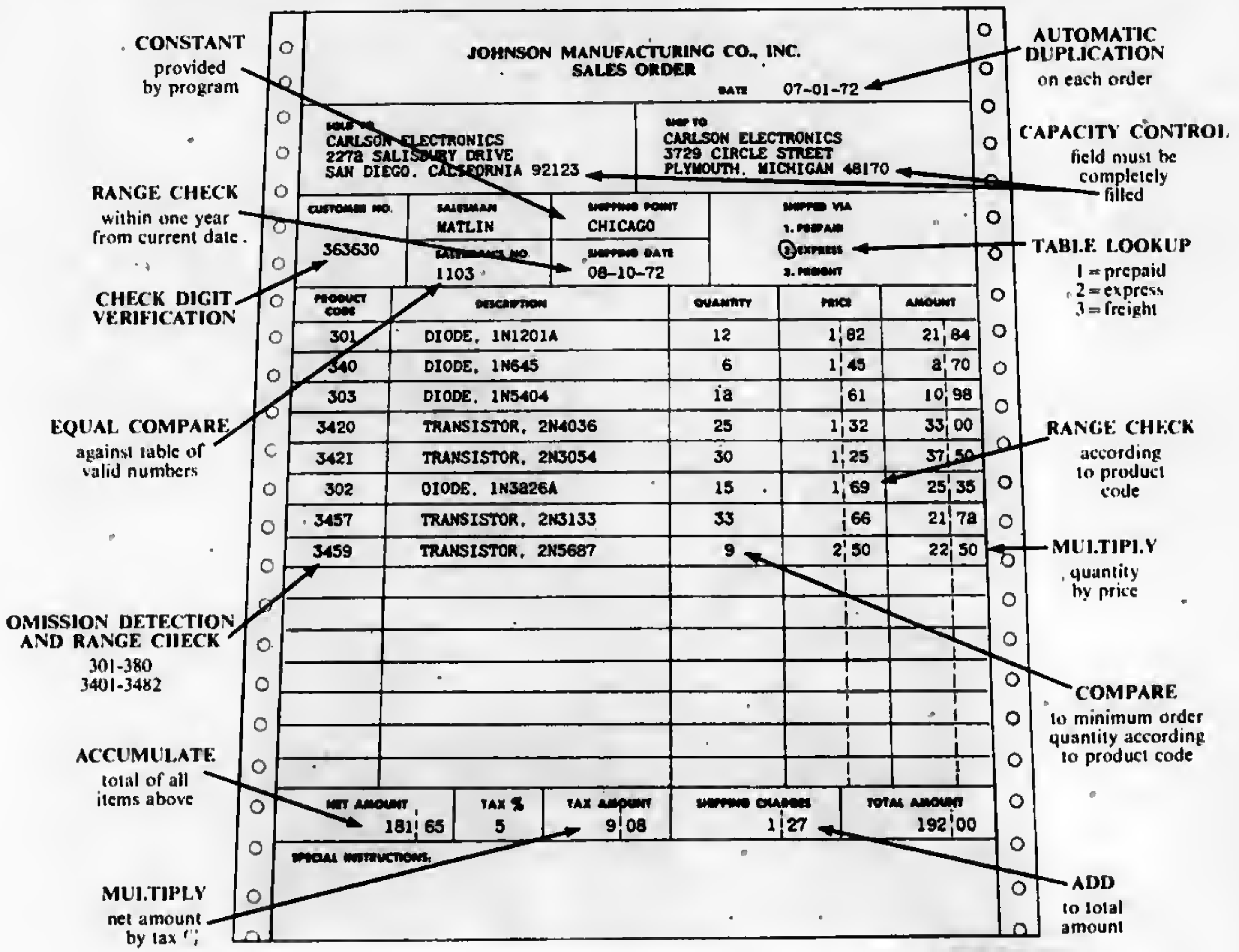
Royce R. Shafter is secretary-treasurer for Lucky Steer Steak Houses, Fort Wayne, Ind.

Recycling Rewarded

BOULDER, Colo. – A U.S. Department of Commerce Boulder Laboratories employee was rewarded recently for her suggestion to recycle computer printout paper.

Sandra Danielson's suggestion resulted in the collection of 40 tons of printout, 80% of which was recycled.

HERE'S WHY THE SYCOR 340 IS SO POPULAR FOR ORDER ENTRY.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PRODUCT CODE	DESCRIPTION	QUANTITY	PRICE	AMOUNT
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340	DIODE, 1N645	6	1 45	8 70
303	DIODE, 1N5404	18	61	10 98
3420	TRANSISTOR, 2N4036	25	1 32	33 00
3421	TRANSISTOR, 2N3054	30	1 25	37 50
302	DIODE, 1N3826A	15	1 69	25 35
3457	TRANSISTOR, 2N3133	33	66	21 78
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Users Must Take Hard Look at COM Trade-Offs

By Ronald A. Frank
Of the CW Staff

For both the prospective and current COM user, there are many trade-offs to consider that directly affect the efficiency of a microfilm operation.

A recently released Department of Defense standard has set 48x reduction as the microfilm standard but few systems can handle this reduction rate. Most of the current systems handle 42x or 24x.

One advantage of the 48x reduction specification is that the user gets about 50 more frames on a fiche, according to Jim Martin, vice-president for Quantor. With the better packing density there are "substantial savings" for the user, Martin said.

Another area that needs improvement is the availability of a good duplicator. Current models sell for about $20,000 and lease for about $1,000/mo. A better quality duplicator costing about $10,000 or $12,000 or leasing for about $700/mo would make COM systems more attractive to users, according to some experts.

"If we get a good low-cost duplicator, there won't be any roll film users left," is the way one observer explained the situation.

There are also potential problems with the films used with COM. Most current systems use diazo-type film which requires ammonia salts for processing. The ammonia has to be vented somewhere near the COM facility and often there are unpleasant results.

One COM expert said he would not be surprised to see the U.S. Government clamp down on the ammonia fumes entering the air. If this happens, the use of vesicular films which are processed with heat may be the answer. Up to now, the vesicular films have been more expensive than the more popular diazo kind.

Archival Qualities

While many COM users are only interested in immediate usage of their film, some also look at the archival qualities. This refers to the ability of the filmed output to retain its legibility after years of storage. There are no fixed standards on archival properties, but some vendors claim their film will still be readable after "hundreds of years."

While service calls on COM systems are becoming more infrequent as system reliability increases, this is still a sensitive area for most users, especially those with on-line COMs.

"These users don't have paper anymore for their major output requirements. They have to meet their schedules and when business records have to get out, they need service," Martin said.

Many users with on-line systems look on the COM as a CPU peripheral and expect it to be cared for with the same dispatch. One problem in this area is that the vendor is film-oriented, rather than CPU oriented. For the users this can often be translated into 24-hour delays on a service call.

NCR recently agreed to have its field force maintain Quantor equipment. If other vendors recognize that the COM user needs computer-type attention and maintenance, users' hesitancy about support may be greatly decreased.

In conjunction with the computer image attached to COM, one firm actually compares its devices with other peripherals. "Except for audio response, the CPU tells it like it is only when humans can see the output," according to Dave Davison, president of Zytron Inc., which operates COM service bureaus and also provides in-house services direct to users.

Welcome Alternative

"COM, with its electronic printing speed and low systems cost/bit, has provided a welcome alternative to paper and on-line systems and merits consideration every time we think of computer output," Davison said.

A major factor in enhancing the original benefits of COM which offers higher speed output and low storage and distribution costs is the recent development of microfilm-based "terminals" which allow "real-enough time" access to very large data bases at a fraction of on-line costs, Davison said.

As an example, a microfilm terminal using microfiche produced directly from a COM recorder can provide the equivalent in data storage capacity of 45, 2316-type disk files. This unit which leases for $350/mo, provides five-second retrieval to any item in the data base and can be operated under computer control, he said.

"Automatic retrieval devices like this coupled with on-line CRTs can greatly enhance the use of on-line systems by reducing data storage and transmission costs through the use of COM 'optical read only memory,'" according to one COM consultant.

Bulgarians Testing Computerized Farms

NOVI KRICHIM, Bulgaria – Use of computers in agriculture is being tested here on the 31,000-acre Lenin Agro-Industrial Complex, as part of an effort to concentrate production of goods and reduce the manpower needed on the farms.

About 170 complexes, averaging 54,000 acres each, have been started in Bulgaria during the last few years, and plans call for agriculture to hecome specialized, with, for example, 16 of the complexes concentrating on broiler production, while 43 others specialize in raising pigs.

Several of the complexes are reportedly being supplied with small computers to aid in operations management. Field radios and closed-circuit TVs have been installed in 24 of the complexes to facilitate assignments of men and machines.

CAI Assists Teachers In Identifying Disabilities

HOUSTON, Texas – Since last November, 400 Houston School District teachers and administrators have been taking advantage of a three-month computer-assisted instruction course designed to assist them in identifying learning disabilities in children.

A 40-ft-long van from Pennsylvania State University houses $650,000 worth of tutoring equipment, including 15 individual teaching stations. Each station is a computer terminal which projects written and illustrated information about child behavior upon two viewing screens.

The teacher-student interacts with the computer, using a keyboard and a pen-like pointer. A listening device completes each station.

Dr. J. Don Boney, chief instructional officer, attributes two values to the course: "It will sensitize teachers to the characteristics of children with learning and language disabllities." Secondly, it will let administrators see the educational possibilities in computer technology.

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CI Notes

Japan Relaxes Imports

TOKYO – The Ministry of International Trade and Industry has published a revised schedule of computer peripheral equipment that can be imported into the country.

Included in the revision are 51 types of equipment and a total of 505 models, compared with 332 models within 39 categories on the original list.

The list, which is designed as a guide for customs officials, is not designed to be comprehensive, but any firm wishing to export equipment into Japan will have to prove to the officials that its equipment falls within the guidelines, according to the U.S. Department of Commerce which released the guidelines.

IBM Rebuffed on Stock

SYDNEY, Australia – IBM has been rebuffed in an attempt to list its shares on the Australian stock exchanges. Current Reserve Bank restrictions will not allow the firm to list its stock here, according to Derek J. Docherty, controller for IBM Australia.

However, if the restrictions were altered, Docherty said, IBM would "welcome the opportunity" to have its stock listed on the exchange.

Supershorts

Data General Corp. has delivered its 4,000th minicomputer, a Nova 800, to the Asheville/Buncombe County Metropolitan Planning Board in Asheville, N.C.

– – –

DPF Inc. announced that all lawsuits pending between it and Marshall Industries have been settled. The litigation arose out of the parties' failure last year to conclude a proposed financing by DPF of Marshall's Data Systems Division.

– – –

Robert D. Klages, legal counsel to the marketing and services operations of Univac, has been named chairman of the Computer and Business Equipment Manufacturers Association Trade Committee.

– – –

Shipments of intelligent communications terminals from Sycor have exceeded a rate of 100 units per week, and are continuing to rise from this level, the firm said.

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Informatics Inc. Mark IV File Management System has been granted a patent by the British Patent Office. It is believed to be one of the first British patents issued for a computer software system developed by a U.S. firm.

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Interdata has signed a three-year OEM Purchase Agreement with Servo Corp. of America. Servo's first orders, under terms of the agreement, involve 13 New Series Model 50 communications processors.

To Promote Competition

NBS Seeks Release of Interface 'Specs'

By E. Drake Lundell Jr.
Of the CW Staff

GAITHERSBURG, Md. – Computer manufacturers should be encouraged to release at least tentative interface specifications upon product announcement, according to a recent draft study on "Means of Achieving Interchangeability of Computer Peripherals."

Prepared by the Center for Computer Sciences and Technology of the National Bureau of Standards, the study recommended that no interface standard be established for all peripherals but that standards be developed in specific areas (see story on Page 1).

At the same time, it urged a wider dissemination of interface specifications prior to delivery of products to increase competition. It also urged federal agencies to make wider use of the present de facto standards (IBM specifications) in order to increase procurement competition.

"The key to achievement of interchangeability of computer components is the availability of manufacturers' specifications describing the interface between his equipment units within a computer system," the report noted.

"The disclosure of these specifications in itself, with no accompanying interface standards, is sufficient to permit competition among component (e.g. peripheral) manufacturers.

"Furthermore," the study added, "any development of realistic interface standards is absolutely dependent upon the availability of manufacturers' interface specifications."

A Bit Reluctant

The study said there was a reluctance on the part of the mainframe makers to disclose such standards "because of the obvious resultant increase in competition to their own products."

The result has been that "each CPU manufacturer has developed concurrently his interface designs and definitions and has in some cases kept their specifications secret for his own competitive advantage."

This in turn results in "a proliferation" of interface specifications and has limited the interchangeability of computer peripheral equipment, the study charged.

But even though manufacturers have not done so in the past, the study said "the disclosure of specifications is feasible for equipment manufacturers. Further, disclosure is essential at time of first delivery, and is feasible at first offering of equipment using the interface, if proper marketplace behavior is being followed."

Such disclosure upon product announcement "does not preclude later changes to an interface definition by the disclosing manufacturer," the report stated, adding that "such disclosure in no way places responsibility on the releasing manufacturer for subsequent rigid adherence to the specification in questions.

"Peripheral manufacturers have shown the capability of sufficiently rapid response to minor evolutionary changes in specifications to maintain their competitive position.

"Changes in interface specifications would simply necessitate accompanying changes in released interface specification documentation," the study said.

This early release of specifications would result "in earlier and more healthy competition in the peripheral market. Further, this competition in peripherals would benefit the CPU competitors of the dominant company in that customers would have a wider selection of peripherals and thus their CPUs or computer systems would be more attractive."

At the present, NBS noted, "the growth of IBM to a dominant position in the CPU marketplace has made its interface specifications of particular value to the peripheral industry because of the large number of potential customers for peripherals that can be interconnected to IBM CPUs.

"Because of IBM's dominance in the marketplace," NBS said the IBM interface specifications have become the present de facto standards in the marketplace.

"This has resulted in additional choices of peripherals for the federal customer using IBM CPUs and has provided for more competition in the peripheral market."

IBM Faces Busy Court Calendar, Telex Trial Set for April 16

TULSA, Okla. – Telex has won the race to be the first firm presently suing IBM to have its cases heard in court.

The Telex vs. IBM case will go to trial April 16 here under the direction of Judge A. Sherman Christensen, U.S. senior district judge from Salt Lake City, Utah.

The other pending private case against the industry leader, the one filed by Control Data Corp. over four years ago, will go to court Nov. 5 under Judge Philip Neville in Minneapolis.

Meanwhile, no date has been set for the biggest suit of them all, the government's case against IBM. But the government has filed an appeal to an appeals court ruling that would keep 1,200 IBM documents out of the case.

The Telex suit against IBM sticks specifically, to the issue of the independent peripherals producers, unlike the Control Data case which covers IBM's actions across the board in the computer industry.

The suit claims that IBM monopolizes the interstate and foreign computer market, including the peripherals segment of that market, and that IBM priced certain 360 and 370 equipment in order to eliminate Telex from competition in the peripherals market.

The suit asks the court to enjoin IBM from engaging in those practices that would eliminate Telex as a competitor in the peripherals market.

The alleged practices include the extended-lease plans on some 360 and 370 peripherals and the IBM practice on the 370 of integrating peripheral controllers into the mainframe of the computer system.

In addition, Telex wants the court to restructure IBM in order to permit increased competition in the computer business.

In the other recent antitrust action, the Justice Department appealed a ruling of a court of appeals that barred the Justice Department from using documents that IBM claimed were privileged and that set up a special judge to review the contested documents in the case to see if they really were of a confidential nature.

Justice said it wanted to present "matters of law and fact" which were overlooked by the appeals court in its initial ruling.

In addition to the 1,200 documents that IBM has already identified as privileged, the Justice Department said IBM now might try to claim that an additional 90,000 documents were privileged, which could bog down the case for a long time.

Nearly Half of Booths For NCC Booked: Afips

NEW YORK – Almost 50% of the booths available for the 1973 National Computer Conference and Exposition scheduled for June 4-8 at the Coliseum here have been booked, the American Federation of Information Processing societies (Afips) has announced.

During the recent Fall Joint approximately 70 organizations reserved more than 320 booths, the NCC sponsor announced, accounting for 46% of the planned capacity of the show.

The 70 firms and 320 booths reserved represent approximately 80% of the 408 booths taken for the Fall Joint, the organization said, indicating sales were off to "an extraordinarily fast start." The organization predicted the turnout for the New York show would top 30,000.

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Dual CPUs

Microdata Heralds Communications Units

IRVINE, Calif. – Microdata Corp.'s 1600/60 Communications Processor combines dual CPU hardware with communications handling firmware. When combined with Microdata's full line of communications interfaces and software packages, the processor allows complete programmable communications systems to be assembled, the firm said.

Each of the 1600/60's independent CPUs contains a separate I/O system and microprogram control memory.

One CPU, a general-purpose computer, is dedicated to system control, control of peripheral devices and message processing. The second CPU, the Communications Operating Module (COM-60), services up to 256 synchronous and/or asynchronous communications channels operating full or half-duplex with throughput up to 40,000 char./sec.

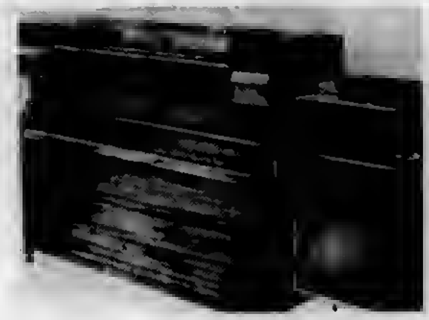
New OEM Products

Price for a typical system with 64 asynchronous modem interfaces (103 or 202), 32K bytes of core memory and cabinets, is $29,000 from 17481 Red Hill Ave., 92705.

Drum Plotter Makes Scene

ARVADA, Colo. – The 8000 series of high speed drum plotters, which can create graphic images in ball point pen, liquid ink or wash emulsions has been announced by Auto-Trol Corp.

Available in 14 in., 30 in. and 36 in. versions with plotter step sizes of .005 in., .010 in., .1mm and .2mm, the systems are available in on- or off-line configurations with interfaces and mag or paper tape units. Prices range from $6,000 to $13,000.



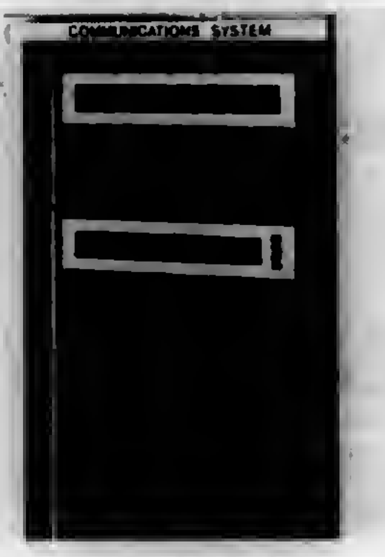
Auto-Trol 8000

Other New Products

The PR2000, a self-contained system for high-speed measurement and display of machine tool positioning, is available from Sperry Vickers Umac Division, Burlington, Vt.

– – –

The RL-2CW discrete, solid-state LED lamp with a metal collar and 5 in. leads from Litronix, Cupertino, Calif., mounts in a 3/16 in. hole and is inserted from the front. The price is $1.70 in quantities of 100 through 999.



Microdata 1600/60

– – –

Cambridge Thermionic Corp. (Cambion) offers a family of random access memory cards that directly interface with standard Cambion DTL (780) and TTL (783) logic cards. Memory capacity ranges from 256 words by 8 bit to 4K words by 1 bit.

– – –

The PC-mounting Series 780 Synchro Data Modules from North Atlantic Industries, Inc., Plainview, N.Y., provide a typical per-channel conversion cost of $650 at the 14-bit level of resolution.

– – –

A new series of data scanners capable of sampling outputs from as many as 1,000 sensors has been developed by Consolidated Controls Corp., Bethel, Conn.

– – –

A printed circuit card enclosure is available with card spacing, connector mounting centers, overall rack size and other key dimensions to specific user requirements from Vero Electronics, Hauppauge, N. Y.

– – –

A new series of sub-modular DC power supplies from Powertec, Inc., Chatsworth, Calif., provides a "building block" concept which combines the benefits of multiple-output design and single output modularity, the firm said. Prices run from $15 to $40 in lots of 100.

– – –

A breadboard for using dual-in-line components for interfacing I/O devices with Digital Equipment Corp. computers is available from Douglas Electronics, Inc., San Leandro, Calif.

– – –

A family of four LED numeric displays from Litronix, Cupertino, Calif., utilizes a "bubble top" integrated lens construction similar to that developed for smaller handheld calculator displays. This allows minimum use of Gallium Arsenide Phosphide material, which is then magnified to the specified digit height.

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Industry Said to Agree on Problems; Seeks Methods to Restrict IBM's Power

SAN FRANCISCO – The computer industry is capable of presenting a common set of proposals about how to solve the industry's problems, because "their problems stem from a common cause – IBM's dominance," Dan McGurk, president of the Computer Industry Association, told security analysts here recently.

"When you get down to the nitty gritty, the executives agree with one another about what the industry should ask for," McGurk said.

"The big problem is how to restrict IBM's power. And they take an industry outlook," he added.

McGurk has been touring the country speaking with executives of various computer industry firms to try to hammer out a proposal to submit to the Justice Department, giving the unified industry outlook on what relief can be expected from the antitrust action against IBM.

"I'm amazed at how almost uniform the outlook is about what is desirable. You might not think they will agree. But our experience is that they do," he told the analysts.

Regarding either the breakup of IBM or some form of government regulation over the firm, he said: "We have to ensure . . .that it be done sensibly, with input from the entire industry. That's because any solution will affect not only the parties to the suit but everyone."

McGurk pointed out that IBM's market dominance had the effect of drying up capital for other firms in the business and that this has a greater adverse effect on the industry than does IBM's ability to increase its customer base.

The breakup of IBM as proposed by the Justice Department might not have an adverse effect on IBM stockholders, he said, noting that a similar breakup increased the value of Standard Oil in 1972.

At present, the CIA is attempting to set up a unified industry position on an early relief proposal to be submitted to Justice. This would cover what the industry would like to see the Justice Department ask for in a preliminary injunction.

The injunction would be in effect while the full antitrust case is being tried.

Removal of Trade Bars Sought

WASHINGTON, D.C. – Both domestic and foreign impediments to sales of U.S.-made computers overseas should be eliminated, according to a special advisory committee established by the Department of Commerce.

"This Industry neither seeks, nor needs, active federal government assistance by means of subsidies, protective trade barriers, or the like," the ad hoc group said in a recent report.

"We do require the lessening, and eventual removal, of unrealistic and unnecessary domestic and foreign restrictions on the Industry's export capabilities," the group added.

The report was published by the National Export Expansion Council's Industry Advisory Committee on Office Machines and Computers.

The report noted that during the decade of the 1960s U.S. exports of office machines and computers increased eightfold from $208 million to $1.6 billion.

But, the report noted, the annual rate of increase in exports of computers and related equipment as well as office machines fell from 43.7% in 1970 to .2% in 1971, a sign of possible trouble ahead.

The major U.S. barriers against trade currently consist of restrictions on the type of computer systems that can be sold to Eastern European and other Communist-bloc countries.

The committee was established by the council to provide industry advice to Secretary of Commerce Peter G. Peterson on how best to increase exports.

Foreign Orders & Installations

The Netherlands Social Fund for the Building Industry has ordered a Univac 1106 with 86 terminals for the administration of benefits for workers in the Dutch building industry.

Digital Equipment Corp. has delivered a dual-processor Decsystem-1055 to Plessey Telecommunications in Liverpool, England, for software development, testing and exchange interface integration prior to installation at the telephone exchange in London. When operational in late 1974 the system will handle international accounting and traffic analysis for up to 144,000 call/hr.

The South African Coal, Oil and Gas Corp. has ordered a Univac 1106 for use in linear programming, production statistics, inventory, accounting, costing and scheduled maintenance.

Two West German health organizations have ordered 65 Datapoint 2200 intelligent terminals from Datapoint Corp. through its distributor, Gier Electronics GmbH. The firms will use the systems to collect claims information for citizens eligible for benefits under the national health insurance program.

Charles Early & Marriott (Witney) Ltd., a blanket manufacturer founded in 1669, has ordered a Univac 9200 for payroll, invoicing and order control applications.

The Nationwide Building Society, a large British mortgage loan institution, has ordered a Univac 1110 system to provide for a terminal network as well as on-line inquiry of members' accounts.

Kay and Co. and British Mail Order Corp. plan to install up to 1,000 Plessey Co., Ltd. CRT data terminals in on-line systems to expedite processing of customer orders. Bunker Ramo provides the terminals to Plessey under an OEM agreement.

General Motors, Oshawa, Canada, has ordered the Project Control/70 package from Atlantic Software Inc.

The Sao Paulo, Brazil, stock exchange has installed additional T-Scan Ltd. terminals to handle mark-sense cards.

The Union Bank of Switzerland, Zurich, has ordered 45 Datapoint 2200 intelligent terminals from Datapoint Corp.'s Swiss distributor, TRW International SA/TRW Communications. The terminals will be used to establish a central information file.

Recognition Equipment Corp. has shipped the Postal Address Reader-Indexer System (Paris) for installation in France.

Pourquoi est-ce que je dois changer de langue?
Il m'a pris dix ans pour apprendre celle-ci.
(Why should I switch languages? It's taken ten years to learn this one.)

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Effective COM Evaluation

Comparative Cost Analysis Assures Efficient System

By Joseph L. Kish Jr.
Special to Computerworld

Approximately 10 years ago, following the development of low-cost reader-printers, conventional rotary camera-produced microfilm was touted as the panacea for all record-keeping problems.

Merely reduce the hard-copy records and forms to 16mm microfilm and – voila! – the files become more manageable, require less space and become virtually tamper-proof.

Many companies fell for this sales pitch and found – to their frustration and sorrow – that microfilm was far from a panacea. Indeed, while it is true that, in the correct application, microfilm can dramatically slash record-keeping and retrieval costs, it is equally true that its indiscriminate use will impede retrieval and make costs soar.

New Pitch

Today these same companies are being wooed with a new line – convert your bulky computer printouts to an easy-to-work-with, space-saving microfilm format via a process known as computer output microfilm, and save money and increase operating efficiency in the process.

And again, as I have observed among a wide range of organizations, indiscriminate use is often made of this new process. What is needed is a hard look at COM – its costs, limitations and advantages.

Many organizations fail in their eagerness to simplify the problems inherent in retaining bulky computer printout.

COM as Alternative

Put in its proper perspective, COM is merely another way of preparing and distributing computer printout. It provides an alternative to two older methods – hard copy continuous forms and camera-produced microfilm.

The EDP manager contemplating the use of COM should conduct a comparative cost analysis between these various alternative methods to assure that COM will actually be the less expensive, most efficient alternative.

The following format facilitates this cost comparison.

A. Hard Copy Costs

Cost Factor Cost

1. Forms (number of forms used is average run x cost per thousand forms) ....$xxxxx
2. Printing (average production time for report under study x hourly computer printer operating costs) ....$xxxxx
3. Forms handling (bursting, etc.) costs (forms handling time required x hourly forms handling operating costs) ....$xxxxx
4. Binding, boxing, etc. (number of binders, boxes, etc. x cost per binder, box, etc.) ....$xxxxx
5. Office storage (cubic feet of space required x current space costs x retention period for the record under study) ....$xxxxx
6. Transportation to storage (cubic feet of records x cost of transporting to storage) ....$xxxxx
7. Inactive storage (cubic feet of records involved x annual cost of inactive storage x retention period for the record under study) ....$xxxxx
8. Destruction (cubic feet of records involved x cost of destruction per cubic foot) ....$xxxxx
9. Other costs ....$xxxxx
    - a. Mailing
    - b. Indexing
    - c. Etc.

    These can be determined by such methods as sampling, pilot study, etc.

Total cost of creating and retaining the record in its hard-copy form ....$xxxxx

B. Conventional Rotary or Continuous Forms Microfilming

Cost Factor Cost

1. Equipment lease amortization
    - a. Camera ....$xxxxx
    - b. Processor ....$xxxxx
    - c. Duplicator ......$xxxxx
    - d. Readers & Reader Printers ....$xxxxx
    - e. File equipment for microfilm ....$xxxxx
2. Cost of the microfilm (number of pages to be filmed ÷ pages per 100 ft of film (approximately 2,000 pages at a 20:1 reduction ratio; 2,400 at a 24:1 ratio); x cost per 100 ft of roll of film) ....$xxxxx
3. Cost of labor involved (number of pages to be filmed ÷ rated hourly output for the camera involved x hourly labor rate, including fringe benefits) ....$xxxxx
4. Costs of chemicals used in processor ....$xxxxx
5. Cost of producing and destroying the hard copy used for filming (the same costs involved in Section A will be incurred with respect to forms, printing, forms handling, destruction, etc.) ....$xxxxx
6. Other costs ....$xxxxx
    - a. Mailing
    - b. Hard copy prints from microfilm
    - c. Cost of duplicate microfilm
    - d. Film processing
    - e. Etc.

Total Costs ....$xxxxx

C. COM-Generated Microfilm Costs

I. Via a COM Service Bureau

Cost Factor Cost

1. Lease or amortization of:
    - a. Readers and reader/printers ....$xxxxx
    - b. Duplicators ....$xxxxx
    - c. File equipment ....$xxxxx
2. COM-film preparation ....$xxxxx
    (This will be a flat figure that will be quoted by the service bureau)
3. Other Costs ....$xxxxx
    - a. Mailing
    - b. Preparation of duplicate microfilm
    - c. Preparation of hard-copy prints
    - d. Etc.

Total Cost ....$xxxxx

II. Via an In-House COM Operation

Cost Factor Cost

1. Lease or rental of:
    - a. COM System ....$xxxxx
    - b. Readers and reader/printers ....$xxxxx
    - c. Duplicating equipment ....$xxxxx
    - d. Processors ....$xxxxx
2. Microfilm (number of pages to be converted ÷ (reduction ratio x 100) x cost per 100 roll of film) Note: This will give a reliable estimate of the cost of the total rolls of microfilm required) ....$xxxxx
3. Film Processing (total footage of microfilm rolls to be processed ÷ rated hourly speed of film processor involved x labor cost per hour, including fringes) Note: If a commercial processing laboratory is used obtain the figure by multiplying the number of rolls involved by the processing cost per roll ....$xxxxx
4. Disk/tape conversion (hours required for this conversion x average hourly conversion costs) ....$xxxxx
5. Other Costs ....$xxxxx
    - a. Mailing
    - b. Preparation of duplicate microfilm
    - c. Preparation of hard-copy prints
    - d. Etc.

Total Costs ....$xxxxx

Once the relative costs of preparing and distributing the computer-generated data by the forementioned alternatives have been determined, the EDP manager can then proceed with his systems analysis to assure that each alternative will facilitate, rather than impede retrieval.

Joseph L. Kish Jr. is president of Iron Mountain Information Management, Inc. of New York City. He is author of "Microfilm in Business," published by Ronald Press, and teaches courses in microfilm systems at New York University.

Credit Firm Appoints VP To Assure Quality of Data

REDONDO BEACH, Calif. – TRW Credit Data has appointed a full vice-president to director of consumer relations and quality assurance, and increased the department's staff.

"This function of quality assurance includes continuous inspection of our computer system to find new ways of increasing our efficiency in processing credit data," Edward S. Brennan, vice-president and general manager of TRW Credit Data, said.

Larry L. Jensen was named to the new position.

"We are taking specific steps to ensure that the information we receive is accurate, and we have introduced new procedures for investigating and verifying information when it is disputed by the consumer," Brennan added.

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WASHINGTON, D.C.	Systems Engineer
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Product Specialist

Graduate engineer desirable but not mandatory. Should have had considerable exposure to electronic hardware design and development. Should have familiarity with electronic manufacturing. Will be responsible for technical support of products sold to OEM customers.

Manager – Training & Documentation

Minimum of 3 years experience in EDP related training and documentation with a background in programming. Will organize and supervise customer training programs. Will write, edit and supervise production of operators, programmers, and reference manuals for Model 340 and future products.

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Survey Finds Buying Influence At DPMA Rises

PARK RIDGE, Ill. – The level of buying influences of attendees at the 1972 Data Processing Management Association (DPMA) exposition was up about 7% over the year-earlier show, according to an audience survey.

The survey, prepared by Exhibit Surveys and released by the DPMA, also showed that buying plans of the visitors were up 10% over the buying plans shown in the 1971 exhibition and crossed all areas, including computer systems, data processing accessories, peripheral equipment and computer-related services.

More Supervisors

The study also found that 65% of the attendees at the conference held managerial or supervisory positions – up 5% over the 60% in such positions a year earlier.

The number of college-educated visitors was up 6% over 1971, and most of the students attending the 1972 convention also held full-time jobs.

The 1973 DPMA international conference and exposition is slated for the Conrad Hilton Hotel in Chicago June 26-29.

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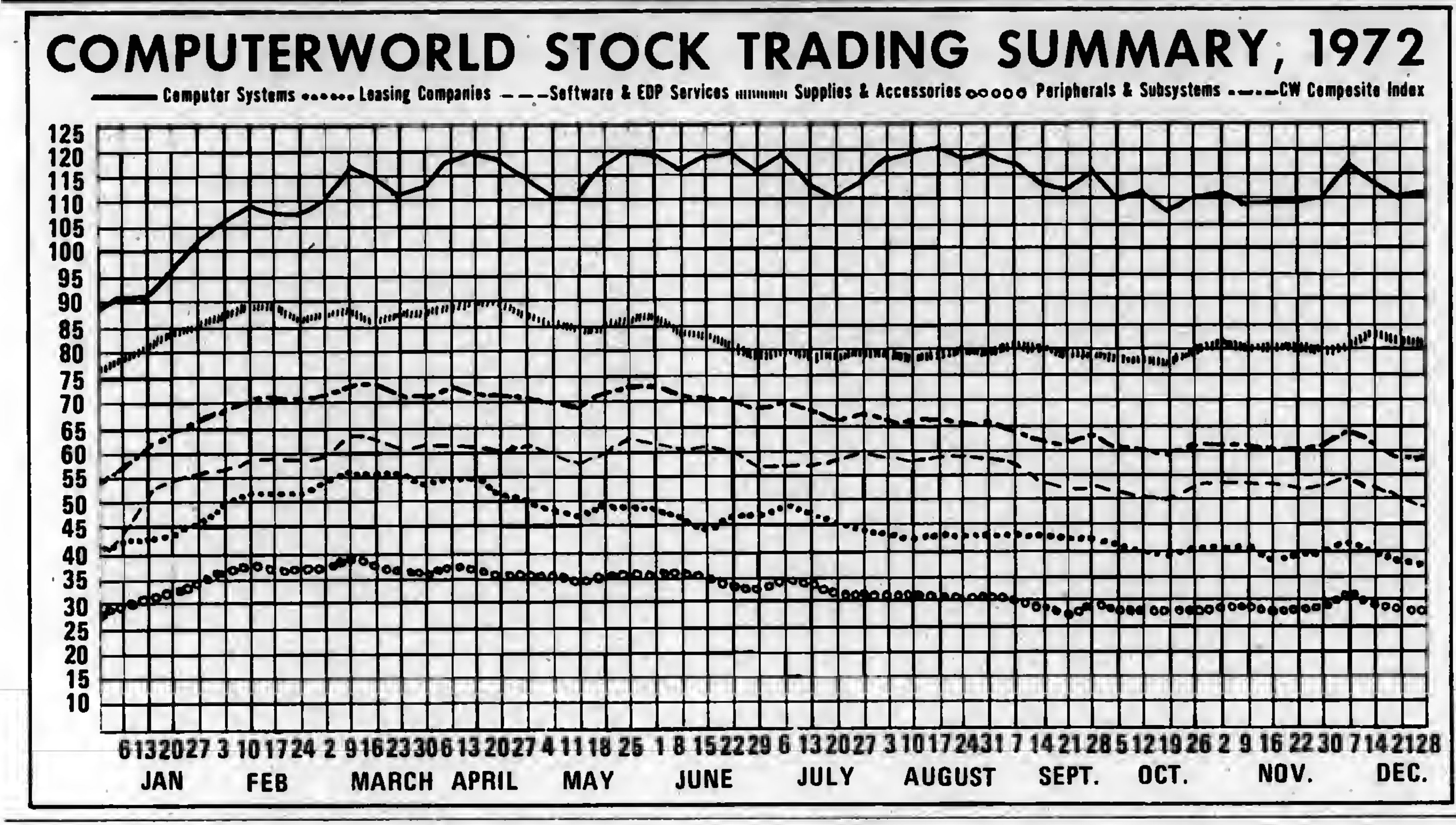

COMPUTERWORLD STOCK TRADING SUMMARY, 1972

Stocks Generally Consistent, But a Few Stand Out

NEWTON, Mass. – While the stock trading index for the year shows a general consistency in the values of the stocks in each of the five sectors, a closer examination reveals there were some killings to be made in the market, and also some baths to be had.

The mainframe sector began the year on the CW stock index at about 87 and finished at 111, having hit 120 during the spring and summer.

Prices of mainframe stocks generally started out near the high point of their range for 1971, although NCR and General Automation began 1972 nearer the low point of 1971.

Burroughs' was one of the mainframe stock darlings of the year, going from about 154 at the beginning of January, climbing steadily to 163 at the end of March, hitting 182 in June and 223 at the end of September. It finished the year at 213.75.

IBM began at 341, hit a whopping 426 during the year and closed at 399, also a tidy gain.

Honeywell, while it had a fling up at 148.5 at the end of June and reached 170 during the year, finished at 134.25, only 3 points above where it began.

In the mini sector, General Automation soared from 13.5 in January to close at 47, while DEC began at 76.25 and ended the year at 91.25. Data General was another mover, going from 59 to 111.25 and reached 115 during the year.

The software index showed a spread of almost 30 points. It peaked in early March, and then began a gradual slide.

Several companies began at the lower end of the range established the previous year, and tumbled even further through the year. A notable exception was National CSS, which began at 8.75 and climbed to 27+.

Applied Data Research, Computer Sciences, Computing and Software and Informatics all reached lower points during 1972 than in 1971.

On the brighter side, Automatic Data Processing began at the high end of the 1971 scale and kept climbing, from 73.25 to 90+.

On-Line Systems started the year at 10.25 and finished at 24+.

Taken as a whole, the peripherals sector finished where it started, between 25 and 30 on the index. Not many big gainers can be found; but Fabritek and Milgo doubled during the year, but were unable to hold these gains.

The field had a number of firms with substantial declines, notably Ampex, from 14.75 to 6; Calcomp, 19.5 to 10.75; and Mohawk Data Sciences, 22.25 and ending at 11+.

The leasing sector lost some ground in 1972, beginning its composite index about 42 and ending just under 40.

Boothe Computer went from just over 14 to 2+, DPF from 9.75 to 5.5, DCL Inc. from 8 to 2.5.

A couple of firms with strong diversified bases, such as Dearhorn-Storm and U.S. Leasing, managed to ride out the year with less fluctuation. Dearborn-Storm began and ended at 20 while U.S. Leasing ranged from 36.75 to 31.

The supplies and accessory sector showed a span of about 15 points during the year, but finished the year at about 82, six points higher than it began.

The CW composite index of all sectors reflected the relatively flat year on the stock market, beginning at about 53 and ending about 59, with a range throughout the year of 20 points.

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TRADE QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES WEDNESDAY, JANUARY 10, 1973

EXCH		PRICE 1972 RANGE (1)	CLOSE JAN 10 1973	2-WEEK NET CHNGE	2-WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	2 1/8	0	0.0
A	APPLIED DATA RES.	3- 7	3 3/4	- 1/8	-3.2
O	APPLIED LOGIC	1- 4	2 3/4	0	0.0
N	AUTOMATIC DATA PROC	72- 99	94	+3 3/8	+3.7
O	BRANDON APPLIED SYST	1- 2	7/8	0	0.0
O	COMPUTER DIMENSIONS	4- 14	4	0	0.0
O	COMPUTER DYNAMICS	1- 4	1	0	0.0
O	COMPUTER NETWORK	3- 7	4	+ 1/2	+14.2
N	COMPUTER SCIENCES	4- 10	5	- 1/4	-4.7
O	COMPUTER TASK GROUP	1- 2	1 1/4	0	0.0
O	COMPUTER TECHNOLOGY	3- 8	2 5/8	- 1/4	-8.6
O	COMPUTER USAGE	7- 14	8 3/8	- 1/2	-5.6
N	COMPUTING & SOFTWARE	14- 28	13 3/4	- 3/4	-5.1
O	COMRESS	1- 3	1 1/8	- 1/4	-18.1
O	COMSHARE	5- 10	7 3/8	- 3/8	-4.8
O	DATATAB	4- 9	4 1/4	+ 1/8	+3.0
O	EDP RESOURCES	2- 8	2 3/4	0	0.0
A	ELECT COMP PROG	1- 5	2 1/4	+ 1/4	+12.5
N	ELECTRONIC DATA SYS.	43- 65	54 1/2	-1 1/4	-2.2
O	INFORMATICS	5- 11	5 5/8	- 1/8	-2.1
O	1.O.A. DATA CORP	1- 3	3/4	+ 1/8	+20.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	11 1/2	+ 3/4	+6.9
O	LOGICON	4- 9	4 1/2	- 1/8	-2.7
A	MANAGEMENT DATA	4- 10	4 3/4	0	0.0
O	NATIONAL CSS INC	8- 31	30 1/2	+1 1/8	+3.8
O	NATIONAL INFO SRVCS	1- 5	1 1/2	+ 1/8	+9.0
P	ON LINE SYSTEMS INC	8- 28	23 3/8	-1 1/4	-5.0
N	PLANNING RESEARCH	6- 17	6	- 1/8	-2.0
O	PROGRAMMING METHODS	20- 25	24	0	0.0
O	PROGRAMMING & SYS	1- 2	1	- 1/8	-11.1
O	RAPIDATA INC	5- 27	22 1/4	-1 1/2	-6.3
O	SCIENTIFIC COMPUTERS	2- 4	1 5/8	0	0.0
O	SIMPLICITY COMPUTER	1- 5	3 1/2	- 1/8	-3.4
O	TBS COMPUTER CENTERS	3- 6	4	+ 1/8	+3.2
O	TCC INC	1- 3	5/8	0	0.0
O	TYMSHARE INC	7- 11	9 3/4	+ 1/8	+1.2
O	UNITED DATA CENTER	5- 8	5 3/4	0	0.0
N	UNIVERSITY COMPUTING	9- 26	9	- 5/8	-6.4
A	URS SYSTEMS	6- 10	7 3/8	- 7/8	-10.6
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	32- 49	31 7/8	-1 5/8	-4.8
O	ADVANCED MEMORY SYS	12- 23	20	+3 1/2	+21.2
N	AMPEX CORP	5- 15	6 1/2	- 1/4	-3.7
O	ANDERSON JACOBSON	4- 8	4 1/2	+ 1/4	+5.8
O	BEEHIVE MEDICAL ELEC	1- 8	6 1/2	0	0.0
A	BOLT,BERANEK & NEW	5- 21	10 3/4	-1 1/4	-10.4
N	BUNKER-RAMO	9- 14	10	+ 1/8	+1.2
A	CALCOMP	9- 25	11 5/8	- 3/8	-3.1
O	CAMBRIDGE MEMORIES	9- 15	14 3/8	+ 7/8	+6.4
O	CENTRONICS DATA COMP	6- 28	21	-1 1/2	-6.6
O	CODEX CORP	6- 25	17 1/4	-1 3/4	-9.2
O	COGNITRONICS	2- 5	2 1/2	- 1/8	-4.7
O	COMPUTER COMMUN.	1- 7	3 5/8	+ 1/2	+16.0
A	COMPUTER EQUIPMENT	2- 4	2 3/4	+ 1/8	+4.7
O	COMPUTER MACHINERY	7- 13	12 5/8	+2 1/4	+21.6
O	COMPUTER TRANSCEIVER	2- 9	5 3/8	+ 1/8	+2.3
A	COMPUTEST	3- 9	4 1/8	+ 1/8	+3.1
N	CONRAC CORP	24- 39	30 1/4	-1 5/8	-5.0
A	DATA PRODUCTS CORP	3- 7	4 1/4	+ 1/4	+6.2
O	DATA RECOGNITION	1- 5	1 1/4	0	0.0
O	DATA TECHNOLOGY	2- 5	2 7/8	+ 3/8	+15.0
O	DI/AN CONTROLS	0- 8	4 1/8	- 1/8	-2.9
N	ELECTRONIC M & M	3- 8	5 1/8	- 1/4	-4.6
O	FABRI-TEK	2- 5	3 5/8	- 1/8	-3.3
O	GENERAL COMPUTER SYS	6- 16	8	+2 1/4	+39.1
N	GENERAL ELECTRIC	59- 74	73 1/2	+ 5/8	+0.8
N	HAZELTINE CORP	7- 13	8	0	0.0
O	INFOREX INC	20- 36	21 3/4	- 3/4	-3.3
O	INFORMATION DISPLAYS	1- 5	1 3/8	0	0.0
O	INFORMATION INTL INC	8- 25	13 1/2	-1 1/4	-8.4
A	LUNDY ELECTRONICS	8- 14	8 7/8	+ 1/4	+2.8
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	20 1/4	-3 5/8	-15.1
N	MOHAWK DATA SCI	11- 27	11 1/4	-1 5/8	-12.6
O	OOEC COMPUTER SYST.	6- 12	5	0	0.0
O	OPTICAL SCANNING	6- 16	5 3/4	- 1/2	-8.0
O	PERTEC CORP	7- 17	7 1/4	- 3/4	-9.3
O	PHOTON	6- 15	5 3/4	- 5/8	-9.8
A	POTTER INSTRUMENT	7- 21	7 3/4	- 1/2	-6.0
O	PRECISION INST.	3- 13	3 1/4	0	0.0
O	RECOGNITION EQUIP	5- 15	8	+ 5/8	+8.4
N	SANDERS ASSOCIATES	13- 21	16 5/8	- 5/8	-3.6
O	SCAN DATA	5- 13	4 5/8	- 1/4	-5.1
O	STORAGE TECHNOLOGY	17- 39	31 1/2	-2 1/4	-6.6
O	SYCOR INC	7- 11	9 3/4	+ 1/2	+5.4
O	TALLY CORP.	8- 15	12 7/8	+1 3/4	+15.7
N	TEKTRONIX INC	34- 64	52 1/8	+2 1/4	+4.5
N	TELEX	6- 15	5 5/8	- 1/8	-2.1
O	WILTEK INC	10- 26	17 1/4	- 1/4	-1.4
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	8 3/4	+1 1/4	+16.6
A	BARRY WRIGHT	9- 14	11 3/8	-1	-8.0
A	DATA DOCUMENTS	17- 26	21 5/8	- 1/8	-0.5
O	DUPLEX PRODUCTS INC	8- 16	9 1/2	0	0.0
N	ENNIS BUS. FORMS	6- 10	8 1/4	- 1/8	-1.4
O	GRAHAM MAGNETICS	15- 27	19 1/2	+ 1/2	+2.6
O	GRAPHIC CONTROLS	11- 15	11 5/8	- 5/8	-5.1
N	3M COMPANY	76- 86	85 7/8	+ 3/8	+0.4
O	MOORE CORP LTD	42- 57	56 3/4	+ 1/4	+0.4
N	NASHUA CORP	48- 62	55 1/2	-1 1/4	-2.2
O	REYNOLDS & REYNOLD	37- 77	48 3/4	+ 1/2	+1.0
O	STANDARD REGISTER	14- 20	19 1/2	+1	+5.4
O	TAB PRODUCTS CO	14- 23	22 1/2	0	0.0
N	UARCO	21- 28	22 1/2	+ 7/8	+4.0
A	WABASH MAGNETICS	6- 11	6 7/8	- 1/4	-3.5
N	WALLACE BUS FORMS	21- 26	25 1/8	+ 1/2	+2.0
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-229	227 3/4	+3 1/2	+1.5
N	COLLINS RADIO	14- 27	22 3/8	-2 5/8	-10.5
N	CONTROL DATA CORP	43- 78	56	-4 3/4	-7.8
O	DATA GENERAL CORP	56-126	125 1/2	+13 1/2	+12.0
O	DIGITAL COMP CONTROL	5- 25	5 3/4	0	0.0
N	DIGITAL EQUIPMENT	72-101	97 1/4	+3 3/4	+4.0
N	ELECTRONIC ASSOC.	6- 13	8 1/2	+ 1/4	+3.0
A	ELECTRONIC ENGINEER.	6- 14	9	+ 7/8	+10.7
N	FOXBORO	23- 41	30 1/4	-1 1/8	-3.5
O	GENERAL AUTOMATION	13- 49	47 3/4	-1	-2.0
O	GRI COMPUTER CORP	2- 5	2 1/2	0	0.0
N	HEWLETT-PACKARD CO	46- 91	91	+3 1/4	+3.7
N	HONEYWELL INC	118-170	133 1/4	-1 3/4	-1.2
N	IBM	333-426	411 1/2	- 1/4	0.0
O	INTERDATA INC	8- 16	12 1/2	+1 1/4	+11.1
N	MEMOREX	15- 38	17 7/8	+ 3/8	+2.1
O	MICRODATA CORP	5- 10	9	+ 1/4	+2.8
N	NCR	29- 38	31 1/2	- 3/8	-1.1
N	RAYTHEON CO	27- 47	33 3/8	- 1/4	-0.7
N	SPERRY RAND	30- 50	49 1/8	+ 1/8	+0.2
A	SYSTEMS ENG. LABS	7- 16	7 5/8	- 1/8	-1.6
N	VARIAN ASSOCIATES	14- 22	19	+ 1/2	+2.7
N	WANG LABS.	23- 61	30 3/4	-1 1/4	-3.9
N	XEROX CORP	121-172	151 1/4	- 3/4	-0.4
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3 1/8	0	0.0
O	BRESNAMAN COMP.	1- 3	1 3/8	- 1/8	-8.3
O	COMDISCO INC	3- 18	15 7/8	- 5/8	-3.7
O	COMMERCE GROUP CORP	5- 11	6	- 1/8	-2.0
O	COMPUTER EXCHANGE	1- 3	3/4	0	0.0
A	COMPUTER INVSTRS GRP	7- 14	8 1/4	+ 3/4	+10.0
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	6	+ 1/4	+4.3
M	DATRONIC RENTAL	2- 4	2	0	0.0
A	DCL INC	2- 10	2 3/8	- 1/2	-17.3
A	DEARBORN-STORM	16- 26	24 7/8	+2 5/8	+11.7
A	DPA, INC.	5- 8	7 5/8	+ 1/2	+7.0
A	GRANITE MGT	5- 11	5 7/8	- 3/8	-6.0
A	GREYHOUND COMPUTER	6- 11	5 5/8	- 1/2	-8.1
A	ITEL	7- 12	10 1/2	- 3/4	-6.6
N	LEASCO CORP	17- 24	17 1/2	- 1/2	-2.7
O	LEASPAC CORP	6- 15	7	+ 1/4	+3.7
O	LECTRO MGT INC	1- 4	2 1/8	- 1/8	-5.5
A	ROCKWOOD COMPUTER	2- 7	2 5/8	- 1/4	-8.6
O	SYSTEMS CAPITAL	3- 20	13	+1 1/4	+10.6
N	U.S. LEASING	19- 35	34 5/8	+1	+2.9

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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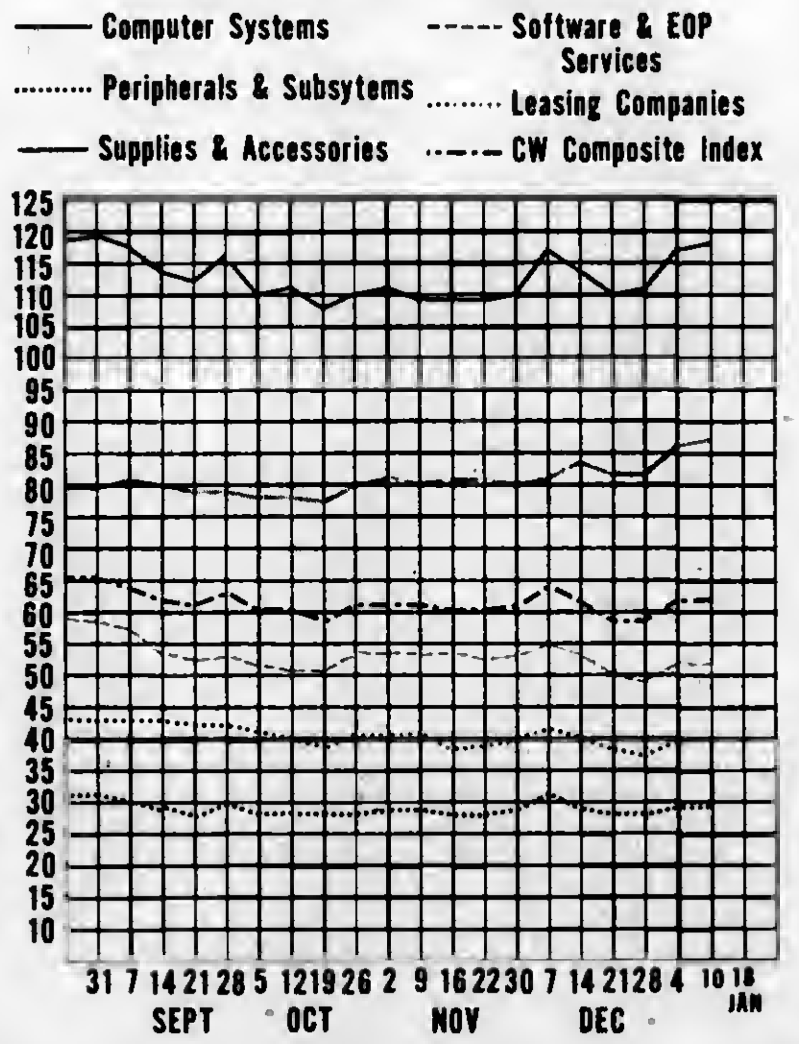
Computer Stocks Trading Index



Earnings Reports

LUNDY ELECTRONICS & SYSTEMS

Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.01	$.03
Revenue	3,732,897	3,017,981
Earnings	10,244	23,384

ROCKWOOD COMPUTER

Six Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.11	$.37
Revenue	23,806,633	23,535,397
Spec Item	b43,326	c316,849
Earnings	505,427	1,224,347

a-Restated. b-Charge; loss on sale of assets and gain on repurchase of company's debentures. c-Credit; gain on repurchase of company's debentures.

CALIFORNIA COMPUTER PRODUCTS

Year Ended June 30

	a1972	a1971
Shr Ernd	.....	$.98
Revenue	$53,871,000	44,650,000
Earnings	(12,899,000)	2,279,000

a-Report notes that fiscal 1972 results are in accordance with new accounting policies. Prior years are not restated.

DATATAB

Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.08	$.01
Revenue	1,377,478	980,298
Earnings	66,130	9,440
9 Mo Shr	.19	.11
Revenue	3,923,272	3,004,872
Spec Chg	4,476	.....
Earnings	184,200	94,179

SANGAMO ELECTRIC

Nine Months Ended Sept. 30

	1972	1971
Shr Ernd	$1.04	.....
Revenue	84,045,000	a83,252,000
Disc Op	.....	(1,715,000)
Spec Chg	.....	b1,685,000
Earnings	2,825,000	(1,348,000)

a-From continuing operations. b-Primarily from disposal and writeoff of substantially all the assets of Transitel Computer & Support System Division.

SCANTLIN ELECTRONICS

Nine Months Ended Sept. 30

	1972	1971
Shr Ernd	.....	$1.13
Revenue	$7,883,471	5,189,954
Spec Cred	.....	a5,477,714
Earnings	(2,223,867)	2,405,607

a-Consists of tax credit from loss applied against extraordinary license fee income, gain from sale of license fees, and tax loss carryforward.

LEASCO

Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.74	$.30
Revenue	168,879,000	153,094,000
Spec Item	a1,340,000	b899,000
Earnings	11,944,000	4,937,000
9 Mo Shr	2.00	1.30
Revenue	484,543,000	446,094,000
Spec Credit	3,000,000	1,203,000
Earnings	32,410,000	20,874,000

a-Credit; gain on insurance investment. b-Charge.

CLARY

Nine Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.16	$.56
Revenue	9,330,000	6,239,000
bSpec Cred	15,000	650,000
Earnings	248,000	875,000

a-Restated to reflect acquistion on a pooling-of-interests basis. b-In 1972 from purchase of debentures; in 1971 gain from sale of assets and elimination of certain liabilities, less loss related to discontinued computer operations.

TYMSHARE

Nine Months Ended Sept. 30

	1972	1971
Shr Ernd	$.21	$.14
Revenue	11,195,922	9,336,225
aSpec Cred	275,000	189,000
Earnings	606,536	404,062

a-Tax loss carryforward.

FABRI-TEK

Three Months Ended Sept. 30

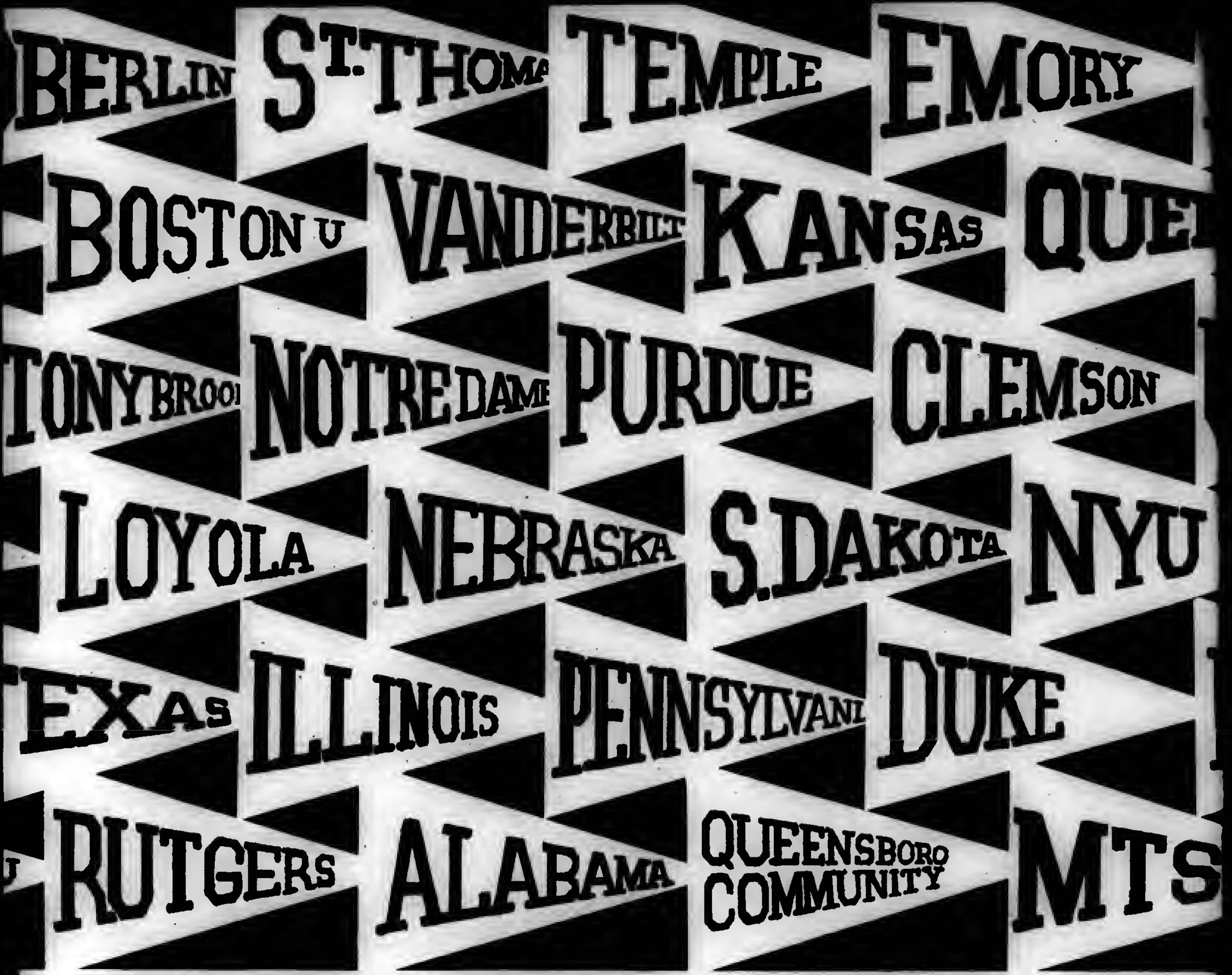
	1972	a1971
Shr Ernd	$.04	.....
Revenue	5,401,534	$2,956,719
Disc Op	.....	(79,328)
bSpec Cred	10,008	15,160
Earnings	135,548	(446,105)
6 Mo Shr	.04	.34
Revenue	9,730,340	8,292,880
Disc Op	.....	47,519
bSpec Cred	77,656	1,912,815
Earnings	116,007	1,091,811

a-Restated to reflect accounting changes. b-Gain on purchase of company's outstanding debentures and in 1971 six months includes gain on sale of Nicolet Instrument Corp.

MEMOREX

Nine Months Ended Sept. 30

	1972	1971
Shr Ernd	$.15	.....
Revenue	105,979,000	$80,627,000
Earnings	562,000	(5,276,000)



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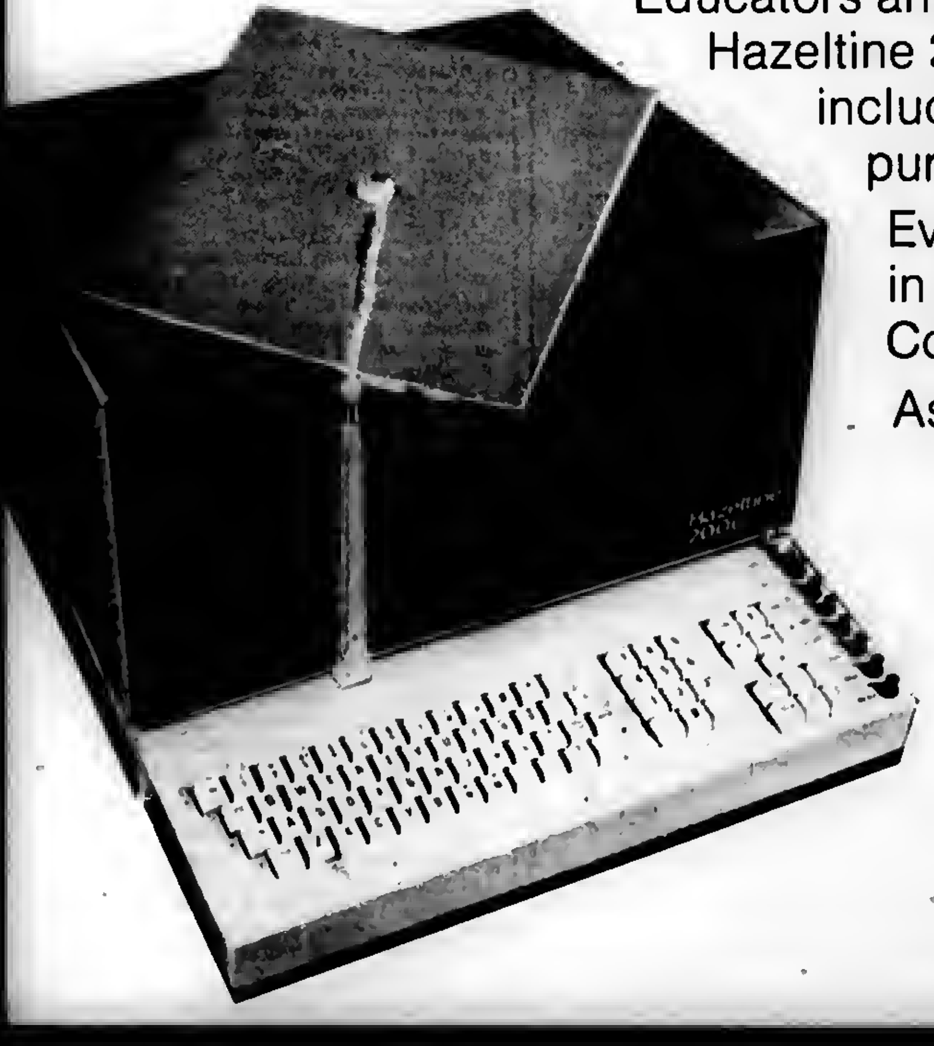

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IBM/CDC Pact: 'No User Disruption'

NEWS IN BRIEF

NEWSPAPER

Telex in Court To Stop Pact

By Ronald A. Frank
Of the CW Staff

ST. PAUL, Minn. – Telex Corp. late last week asked in federal court here that the IBM/CDC settlement be set aside because "CDC in conjunction with . . . IBM destroyed CDC's data base," thus preventing Telex from pursuing its suit with IBM. The CDC action, in destroying its evidence data base, was "induced by IBM and was undertaken by CDC in connivance with IBM," Telex charged.

The destruction of the data base "was in direct violation of, and in blatant disregard . . . " of the previous court order under which CDC was to provide Telex with its information and data base, Telex charged.

As condition of the settlement between IBM and CDC, CDC agreed to destroy the anti-IBM data base "for the purposes of depriving Telex of the use of said data base," Telex charged.

Telex asked the court to order CDC and IBM to prepare a comparable data base and make it available to Telex for use in its IBM suit. The Telex petition for dismissal of the settlement will be heard in U.S. District Court here on Jan. 26.

370/115 Expected— At Under $7,000/Mo

WHITE PLAINS, N.Y. IBM is reportedly set to introduce the 370/115. The machine will feature integrated peripheral controllers and a price tag believed to be under $7,000/mo. The 115 apparently will have about 50% of the power available in the 370/125.

On the Inside This Week

Edos Spooler Jumps Throughput 300% – *Page 11*

WU Satellite Service May Be Available in '74 – *Page 15*

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Education 21
Financial 34
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Software/Services 11
Systems/Peripherals 17

Service Bureau Sold by IBM

By E. Drake Lundell Jr.
Of the CW Staff

MINNEAPOLIS – The oldest of the antitrust suits against IBM ended here last week when Control Data Corp. accepted an out-of-court settlement and in effect handed the broader issues raised by the case to the Justice Department for resolution.

Is settlement pattern emerging? Story on Page 4. Industry reaction on Page 25.

In total, Control Data may have received as much as $146 million in either direct cash outlays or in promises of future business from IBM. In turn, CDC had to put up $16 million in cash to buy the IBM subsidiary, Service Bureau Corp., which will be run by present IBM employees and offer the same services.

The settlement in the case, which was started Dec. 11, 1968, is extremely favorable to CDC, most sources agreed, even though it does not give the firm all it sought in the original suit – the complete breakup of IBM in the computer industry.

Officials of both companies said the settlement is not expected to disrupt user services.

Under the terms of the settlement, IBM is paying Control Data $15 million as reimbursement for expenses including legal fees. In turn, CDC agreed to pay $16 million for Service Bureau Corp.

Under the terms of the agreement, IBM will not reenter the service-bureau business in the U.S. for the next six years.

IBM also agreed to give CDC six months' free rental of the equipment presently installed at Service Bureau, an amount that industry sources said could equal about $5 million over the time period.

IBM also said it would continue to use services of Service Bureau Corp. at the present level, which amounts to approximately $5 million yearly for the next five years, or $25 million in total.

(Continued on Page 2)

What CDC May Get

Service Bureau Corp.	$ 45 million*
6 months' free rental of equipment at SBC	5 million**
Reimbursement for legal fees	15 million
5-year contracts	30 million
Fringe benefits for SBC workers	26 million
IBM business with SBC for five years	25 million
Total	$146 million
CDC paid for SBC	–16 million
Net to CDC	$130 million

*This is based on the value of Service Bureau Corp. at 30 times its 1972 earnings of $1.5 million after tax. Stock in companies is generally valued at between 20 and 30 times earnings. Wall Street sources feel IBM could have gotten 30 times SBC earnings if the firm had been sold to the public.

**Industry estimates.

Deal May Be User Feast

By Don Leavitt
Of the CW Staff

MINNEAPOLIS – The antitrust settlement that resulted in SBC's going from IBM to CDC is more than alphabet soup to the users involved. It may be a real feast, according to several industry observers.

As separate operations, Service Bureau Corp. and the time-sharing services of Control Data Corp. have, in part, duplicated and, in part, complemented one another. Together, they may well be symbiotic, so the whole is greater than the sum of the parts.

Analysis

SBC has multiple local data centers doing business-oriented batch work; Call/370 time-sharing service; and a large sales force used for working with customer problems. SBC service is based on IBM 360s and 370s.

CDC has developed two separate time-sharing or remote-computing networks. Kronos, like Call/370, is for conversational problem-solving. Cybernet is for remote-batch work. Both services utilize

(Continued on Page 2)

Multics Goes Commercial, Honeywell Pushes Security

By Don Leavitt
Of the CW Staff

WELLESLEY, Mass. – Security features and the user's ability to write his own operating system commands were stressed by Honeywell last week as it finally introduced Multics, the Multiplexed Information and Computing Service system, as a standard commercial product.

The virtual-storage capabilities of the system were described but not highlighted, and the availability of PL/I and APL as the programming languages for the system was downplayed.

On-line information is a feature of Honeywell's Multics system.

MIT Legacy

Developed at MIT's Project MAC over a seven-year period, Multics is a combination of hardware and software, communications capabilities and supervisory techniques that make it, in Honeywell's view, the first of a new class of "user-oriented computing systems."

Multics runs on the 6180, an enhanced version of the 6080 mainframe, that includes hardware changes to support segment referencing, data-protection rings and paging capability.

The system is, by definition, intended only for a selected group of large-scale sophisticated users, such as government and academic installations and commercial time-sharing networks, a Honeywell spokesman said.

MIT has been using it, based on the original 645 hardware configuration, for about 40 months, typically with 50 concurrent users, Robert Scott, manager of computer services at MIT, said. National CSS has recently signed an agreement to install Multics on its commercial network,

(Continued on Page 4)

Exec 8 Revamp Opens Up Univac 1110 to 158 Range

By Vic Farmer
Of the CW Staff

ROSEVILLE, Minn. – By revamping the Exec 8 operating system, Univac has opened up the 1110 Series to users in the IBM 370/155, 158 range.

The 1110 1x1 low-end configuration announced last week is based around the use of only one Command/Arithmetic Unit (CAU) and one Input/Output Access Unit (I/OAU). These units are the standard CPU and I/O building blocks of the 1110 Series originally announced in 1970.

The revamp of the Exec 8, according to Univac, consists of changes in some algorithms so that main core-residence requirements are reduced and more of Exec 8 can be relegated to disk storage.

This proportion of main storage to disk is user-variable, but if the proportions are

(Continued on Page 4)

Oldest of IBM Antitrust Suits Settled Out of Court

(Continued from Page 1)

In addition, IBM has provided for the reimbursement to Service Bureau for retirement and other fringe benefits of current Service Bureau employees, approximately $2.6 million per year for 10 years – or a total of $26 million.

The Service Bureau Corp. presently has 40 offices in the U.S. and last year earned $1.5 million after taxes on revenues of $63 million, the firms said.

IBM has also given CDC four five-year research and development contracts that will be billed on a time and materials basis. This is expected to bring CDC $6 million per year, or a total of $30 million over the term of the contract.

> *"The settlement is timely and conclusive and gives fair value to both sides." – Frank T. Cary, IBM president*

Included in the research and development effort will be projects for "developing advanced technology in the areas of magnetic storage, terminals, transaction-oriented software and data-services networks," according to an announcement by the two firms.

Both IBM and CDC will have the rights to the developments made under the contracts and CDC will be free to make them available to others in the industry on a license basis.

IBM and CDC also agreed to extend their worldwide patent cross-licensing agreement until June 30, 1978, under the settlement agreement.

The parties also announced that all the pending claims in the CDC suit against IBM and the IBM counterclaim against CDC and its subsidiary, Commercial Credit Corp., would be dropped.

The claims were dismissed "with prejudice" which means that neither party can bring up the same issues again in the future.

Case History

The case was filed by Control Data on Dec. 11, 1968, but had been under investigation at Control Data since 1966. The suit is thought to have pushed the government into filing its suit against IBM a month later.

"The decision to file a lawsuit in 1968, although difficult at the time, has now proved to be one of the best management decisions in our history," according to William C. Norris, president of Control Data.

"We are extremely pleased with the settlement. It was fair and our company will achieve substantial long-term benefits from the business transactions," he added.

An insider at CDC indicated that "jubilation and exhilaration" were words too tame to describe the reaction around the company when the settlement was announced.

For the other side, IBM President Frank T. Cary said: "I am gratified with the settlement reached with CDC. This suit has gone on for over four years, and has represented a significant and growing expenditure of management time and legal expense. The settlement is timely and conclusive and gives fair value to both sides."

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Combination to Serve Users Better

(Continued from Page 1)

CDC 6000 Series mainframes.

As separate entities, SBC and CDC have had what one observer called "strange" limitations.

In its data centers, SBC handles the entire operation, through custom-programmed or prepackaged applications. Call/370, while providing a common data base accessible from multiple-user locations, has been limited in computational power and file size. It is good for "light" time-sharing, the observer felt, but gets "almost prohibitive" in cost as the complexity of a program increases.

Kronos and Cybernet, by contrast, have strong compute capabilities in their CDC configurations and the service is comparatively cheap. While SBC features customer support, CDC has provided little under its time-sharing services. They are for the professional and he must know what he is doing, the observer explained.

Serving People

The settlement combines the two approaches and puts the SBC sales force and user-support philosophy into the CDC organization. It puts CDC into the "people-service" area, and provides the SBC user with a broader range of services available from the vendor he already knows.

Both sides of the newly combined operation support Fortran IV and Basic in time-sharing. SBC also includes a PL/I processor, while CDC backs Cobol, Algol and its own Compass language. Both have rather extensive libraries of public programs or routines.

Kronos or Cybernet users can work from a variety of terminal devices including CDC Marc I, II, IV or V units, conventional teletypewriters or the Cope series from University Computing. CPUs including IBM 1130, Univac 9200 or 9300 and Honeywell 200/2200 mainframes can also be linked into the systems, CDC noted.

Call/370 can be accessed through IBM 2741 units operating in correspondence or BCD code, Teletype Models 33 or 35, or other terminals equivalent to these devices. It also supports 300 bit/sec Ascii terminals including Datapoint 3300s, Hazeltine 2000s, GE Terminet 300s or Univac DCT 500s, the company said.

CDC is expected to run each of the services separately at least until it can determine the impact of any consolidation proposals. Users may gain some support immediately, but there won't be any basic changes "in this calendar year," in the opinion of an official of a competing time-sharing service.

Checkless Society? IT's Close

HEMPSTEAD, N.Y. – The Hempstead Bank has ended its experiment with a checkless/cashless society system even though all concerned were pleased with the operation.

The test ended, officials explained, because the equipment used was designed around a punched-hole code (similar to telephone dialer cards) rather than the magnetic stripe code which has come into favor with the American Banking Association since the experiment began.

"Under the circumstances, we've learned all we could from the test as originally structured," a Hempstead spokesman said recently.

During the 13-month test, checking account customers of the bank's Syosset, N.Y., branch office used plastic Instant Transaction (IT) cards to make purchases at 32 stores, including several supermarkets and a variety of other neighborhood retailers.

IT went into operation Nov. 1, 1971 and looked very much like an electronic credit card authorization system. A customer making a purchase gave his IT card to the merchant who in turn put it in a terminal unit connected with the bank's computer.

At that point, however, the customer had to key in a unique three-digit number. If the key-in matched a code etched on a piece of copper wire embedded in the opaque card itself, processing would continue. Otherwise processing would stop.

After matching the secret code, IT would compare the transaction amount to the customer's available funds. If they were large enough, funds were immediately transferred from the customer's account to the merchant's, and a printout was produced as hard-copy verification of the transaction.

A system of transaction codes enabled IT to handle cash withdrawals, delayed payments, payments on account and returned purchases, in addition to normal sales, all without producing any paper documents for later processing.

The Syosset test proves the practicality of the IT concept not only for the bank, its customers and the merchants, but for the banking industry in general, the Hempstead spokesman said.

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'Technology Barely Adequate'

Intensive R&D Expected to Solve USAF Software Gap

By Marvin Smalheiser

CW Correspondent

LOS ANGELES – The U.S. Air Force faces a severe software gap in its Command & Control (C&C) requirements for the 1980s, according to a recent development planning study.

But according to the study, an intensive R&D program would increase the Air Force's current expenditure of $10 million a year in R&D information processing to a level of $25 million a year by fiscal 1976.

A review of the study was given at a recent meeting of the Los Angeles Chapter of the Association for Computing Machinery by Lt. Col. Allen C. Haile of the Air Force Space and Missile Organization and Dr. Barry Boehm of Rand Corp., study director.

Both Haile and Boehm emphasized that software is a greater problem for C&C than hardware and that software R&D is seriously inadequate.

During the 1980s, Boehm said, the USAF "will lean as hard on its software as it will on its hardware."

Inadequate Support

The chief problem, the report found, is that "information processing technology is barely adequate to support Air Force C&C functions today."

These functions include such activities as the Strategic Air Command (SAC). Tactical Air Command and communications for Theater Air Operations.

Estimates of the Air Force's annual spending on software are between $1 billion and $1.5 billion, compared to $300 million to $400 million on computer hardware, the report said.

But where C&C is concerned, "indirect costs of software slippages far exceed direct costs, because software is on the critical path in overall C&C system development.

"On one current project, providing an expected seven years of C&C capability for a total cost of about $1.4 billion (or about $200 million per year), software delays have caused a six-month delay in making the system available to the user command, resulting in a loss of about $100 million worth of C&C capability.

"Moreover, in order to keep the software from causing further delays, several important functions will not be provided in the initial software delivery," according to the report.

Software is frequently unresponsive, the report found, mainly because of the dearth of techniques for requirements analysis and design of C&C information processing systems.

The report noted that "95% of the 465L software delivered to SAC had to be rewritten to meet SAC's operational needs; 67% of the Seek Data II software delivered in Vietnam had to be rewritten."

The following problems critical to providing effective support of C&C were mentioned:

- Inadequate requirements analysis/design/exercise technology.
- Software/system certification.
- Software timeliness and flexibility.
- Hardware survivability.
- Data security.

Other problem areas involve communications processing, source data automation, image processing, computer system performance analysis, associative/parallel processor exploitation, software transferability and computer-aided instruction in computing.

'Appropriate . . . Standards'

Regarding R&D, the report urged the "appropriate development of hardware and software standards, software library and tool inventory, data collection and dissemination and related activities to orient the huge bulk of other information processing R&D activities toward critical Air Force problems.

And ". . . in many C&C areas the Air Force does not now have an adequate data base on how it uses information processing capabilities to support C&C operations."

The remedy, according to the report, is a "serious coordinated effort to measure how its current and evolving command and control software inventory, development efforts and maintenance activities are distributed."

Savings of $167 million annually through added R&D are cited as representative of potential benefits.

Increasing software productivity from 10 to 11 instructions per man-day through added R&D would save $100 million a year, the study said.

Other R&D recommendations of the study include:

- A development planning program for the software-first machine.
- A development planning program for automated system exercise aids.
- A development planning program for structured programming.
- A C&C usage study.
- Efforts to define terminology and procedures for information gathering and analysis of C&C software development and usage.

Delaware Will Get 3d-Party Computers

By a CW Staff Writer

DOVER, Del. – In what could be considered as "living theater" the incident of Arthur Hill and IBM [CW, Dec. 6] appears concluded, with the State of Delaware the apparent winner. The state expects to cut hardware leasing costs by more than $100,000/yr with third-party equipment.

Hill, the state's DP manager, wanted to replace IBM's computers with machines from Greyhound Leasing.

IBM's local salesman and area manager, in an effort to keep the account, Hill said, threatened Hill with professional ruin and tried to carry out this threat with visits to local politicians.

Amidst an exit profuse with apology and the rationale that it was all just a misunderstanding, IBM effectively removed itself from the cast of players after replacing the sales personnel concerned.

Hill now will get three interim third-party IBM computers to replace the IBM 360/40s presently used in the state's DP center.

Later in the year one of the third-party 360/40s will be replaced with a third-party 360/75 from Greyhound which, Hill stated, will further decrease DP costs for the state.

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Pattern Emerging in Settlement of Anti-IBM Suits

By E. Drake Lundell Jr.
Of the CW Staff

"six down . . .
. . . two to go"

That's how the scoreboard currently reads in the antitrust actions against IBM. In the past few years, six of the major suits against the firm have been settled and only two remain – the Telex suit, scheduled for trial April 16, and the main event, the government case.

The biggest question raised by the settlement between IBM and CDC is how it will affect the government and Telex actions, since the suits had been closely linked during the pretrial discovery procedures.

But the way IBM has handled the previous six suits may give some indication of future actions, even though the picture is presently cloudy.

Five of the cases – Applied Data Research, Programmatics, Data Processing Financial and General (now DPF), Control Data and Motor Replacement Corp. – have all been settled out of court at terms definitely acceptable to those firms.

In the Greyhound suit, the court found that Greyhound did not prove its case, but that decision is now being appealed.

It appears, one source said last week, that IBM wants to settle all of the suits it can out of court to keep from having to take its case before a judge.

"Otherwise," he said, "why would IBM have given Control Data such a favorable settlement? If IBM thought it could win, I would think they would have let the case go to trial instead of giving away all of that."

At the same time, one legal source said IBM might have agreed to such a settlement – after negotiating with CDC for more than a year and a half – in order to clear the slate and apply its full legal force to the main battle, the government suit.

Analysis

In addition he noted, as did several other sources, the settlement of the CDC action will place a heavier burden on the Justice Department in preparing its case against IBM.

In the past, all of the documents filed in the Control Data case have been edited and microfilmed and then passed along to Justice. In addition, Justice had relied heavily on the Control Data expertise for much of its information on the computer industry.

Without this help, Justice's case may have to be delayed even further.

Back to School

Often the Justice Department lawyers have admitted in court that they did not really understand the computer business and that they would have to learn more about it before they could possibly take their case to court.

The judge in the case has suggested that Justice get additional help in order to get quicker action in the case. The department said with the support being provided bv CDC it would not need additional help.

Now that that well is dry, sources said, Justice will either have to beef up its staff considerably on the case or delay the trial still longer.

Justice declined to comment on the effect of the CDC settlement.

Back at the Ranch

On the other hand, the letter CDC President William C. Norris sent to stockholders last week indicated the Justice Department suit might be further along than others may believe.

Since the outcome of the Justice Department suit was "uncertain" in 1969, he said, so "we found it necessary to proceed with our case, even though we would have preferred to avoid the huge investment in a Control Data lawsuit."

The statement implies CDC now feels more certain of the outcome of the Justice suit and so was willing to drop its suit against IBM.

So, in effect, Control Data has told the Justice Department that it has given Justice all the help it can and that the ball is now firmly in the hands of the government.

Some sources believe Norris wouldn't have accepted any settlement in the case unless he was positive the Justice Department had a reasonable chance of getting the full relief desired.

And that is nothing less than the complete restructuring of IBM into separate companies along product lines – a software company, a peripherals company and a CPU company – or some other form of relief just as drastic.

CDC's Relief Plan

Norris also revealed that Control Data has submitted to the Justice Department a "constructive, nonpunitive plan for restoring fair competition to the computer industry. This relief plan has been developed over the past four years through the team efforts of top members of Control Data's technical and management staff, outside legal counsel and a leading U.S. economist.

"This effort is by far the most comprehensive and thoughtful plan which has been submitted from industry," Norris added.

The CDC plan submitted to Justice indicated that while the breaking up of IBM into many small companies was technically feasible, it would probably not be politically popular and therefore could probably not be done.

In addition, the plan said that breaking up IBM into just one or two large companies would not solve the problems in the industry.

Therefore it recommended that injunctive relief be granted against IBM's allegedly unfair market practices and that IBM's participation in industries that are "complementary" to the computer business be stopped.

Honeywell Stresses Security of Multics

(Continued from Page 1)

the Honeywell spokesman added.

Under Multics, subprograms and data arrays are not linked in the conventional way but are carried as separate segments which can be dynamically linked after execution has started. This allows a user to create and modify a sequence of procedures based on intermediate results.

Access Rings Secure

Multics maintains a segment access-control file as well as setting a protection-ring level for each segment, and an access-ring level for each user. Access to specific data files is controlled by the owners of the files and is beyond the reach of anyone else, Honeywell said. This both prevents unauthorized access and permits desired sharing of data, the company added.

As with most virtual systems, paging under Multics divides the segments into fixed-length blocks and fits them into available real memory as needed. This prevents large programs from hogging real memory and allows more effective management of that system resource.

Multics is an operating system and software design that is modular in concept and implementation. The operating system is, in fact, treated as two major separate entities. The central resource manager is the "hard core" of the system and is protected against all modification.

The library of user system commands and subroutines, on the other hand, is carried in the rings that are accessible to at least some users. Each user can supplement or replace any or all of the standard system commands, Honeywell said.

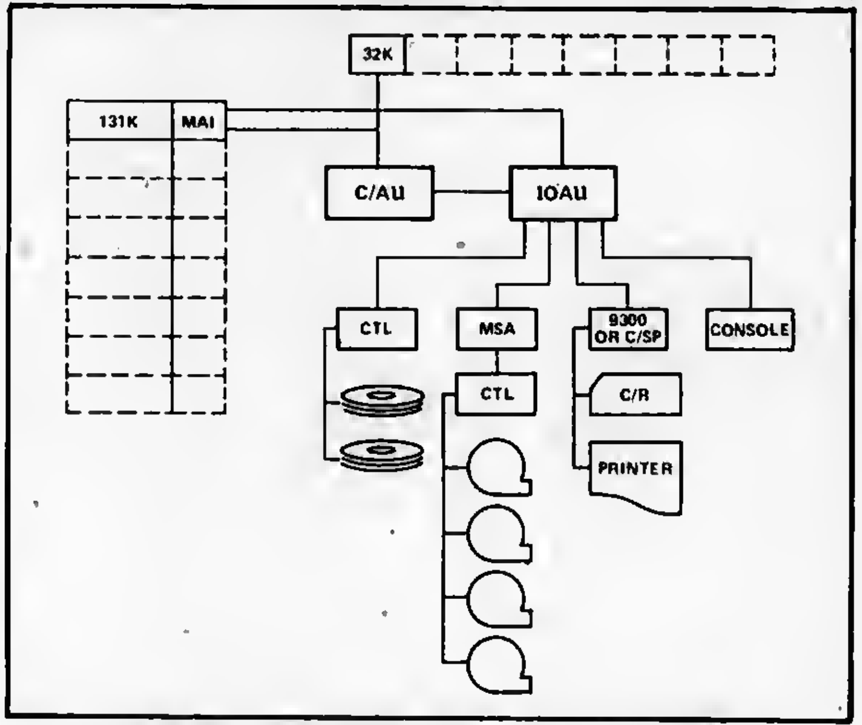
Since the user interface with the Multics system is through references to service command and subroutine segments, the system can be functionally expanded for each user by creating new segments, without altering or destroying old ones, the spokesman added.

The company said a typical small Multics configuration would include one 6180 central processor, 192K words of main memory, 1M words of bulk core storage, 200M bytes of disk storage, one input/output multiplexer, one Datanet 355 communications processor, five tape units, a card reader, card punch and printer, plus terminals. Purchase price of this configuration would be $3,565,000.

The system can support much larger configurations, including multiple processors. A typical large system might include dual processors, 384K words of main memory, 2M words of bulk core storage, 1.6 billion bytes of disk storage, eight magnetic tapes, two Datanet 355 communications processors and two card readers, punches and printers. Purchase price of this system would be $7,064,000.

Honeywell said a system configuration would be determined by the needs of the users and for practical purposes there is no maximum configuration.

Currently installed 6080 mainframes cannot be field-upgraded to be 6180s. First deliveries of the new system are scheduled for the first quarter of 1974.



This basic 1110.1x1 configuration rents fur $36,000/mo.

Univac Revamps Exec 8

(Continued from Page 1)

misused, some throughput degradation can occur, according to a Univac engineer.

Although the 1110 Series is not "virtual"-oriented, Univac claimed benchmarks made against the 155 – even including a 20% performance penalty (an estimate of the effective performance increase of the 158 conversion using VS1) – revealed throughput performance was "competitive."

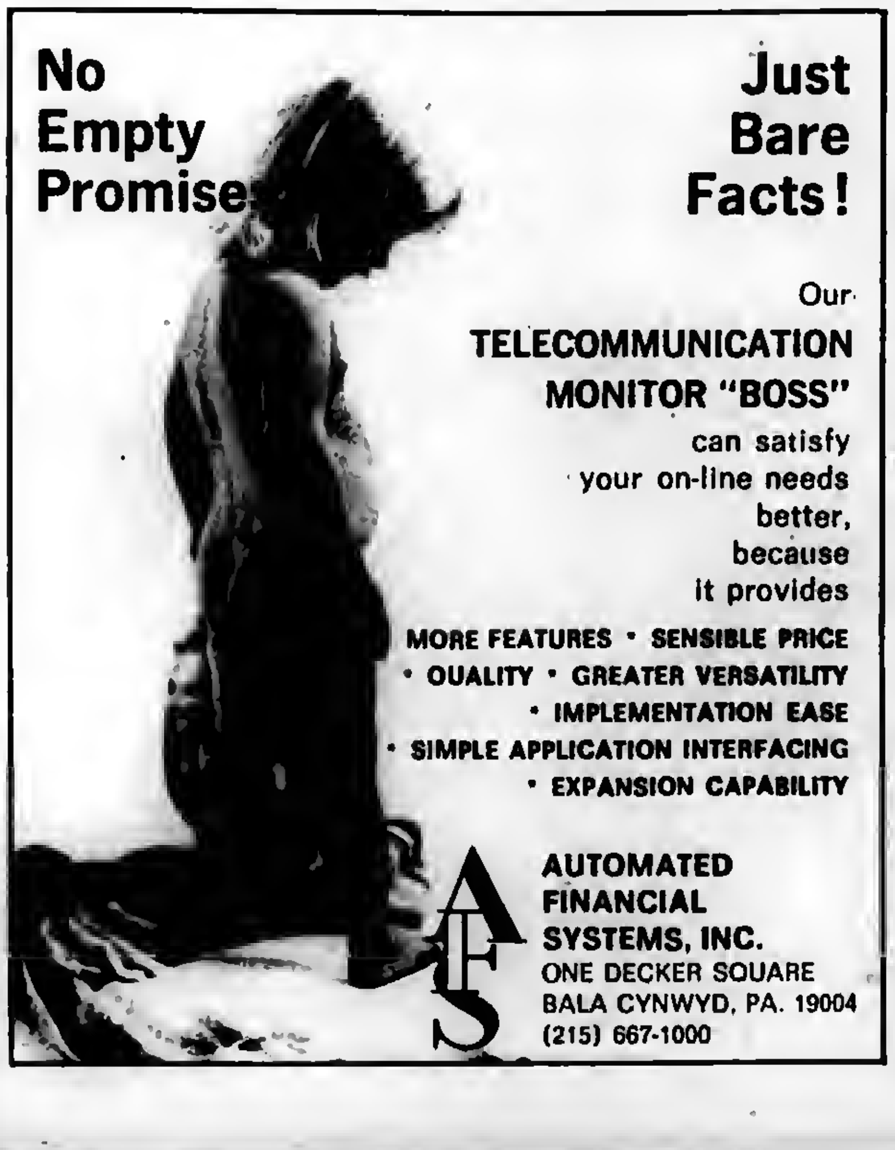
Program size, however, can affect throughput, according to Univac.

Univac gave the virtual-memory concept the edge in execution of large programs, but maintains that the Exec 8 operating system would be more effective in a general-business program environment.

Main features of the 1110 1x1 include:

- 36-bit word.
- 32K-word to 256K-word main storage with a word read cycle of 320 nsec and write cycle of 520 nsec.
- 128K-word to 1,024K-word extended-core storage with a cycle time three to four times slower than main storage.
- Complete upward convertibility progressing through the 1110 2x1, 2x2, 4x2 or 4x4 configurations (the first number indicating the number of CPUs, the second the number of I/O access units).
- The CAU (CPU) employs a four-deep instruction overlap with an "effective instruction execution rate of 300 nsec."
- Partial- and double-word addressing.
- Each I/OAU can control eight to 24 I/O channels.
- Deliveries start within six months.
- Rental of minimum configuration is $36,000/mo with purchase tagged at $135 million.
- PL/I will be available late this year.

In effect, the 1110 1x1 overlaps the 1108 introduced in 1964. A Univac spokesman implied that the 1108 system, while still in production, should be closed out at a nice discount for some "lucky" users.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Mass. Medicaid Funds Approved

BOSTON – The Massachusetts House Ways and Means Committee has approved a $1.5 million Medicaid computer program for the Public Welfare Department.

If approved by the Senate Ways and Means Committee, the funds will be used to set up a computer system to pay the bills submitted by doctors, druggists, nursing homes, hospitals and other Medicaid vendors.

The Vendor Payment System will supplement the system which pays recipient checks and which began operations several months ago [CW, Sept. 20].

Anthony M. Scibelli, chairman of the House committee, said the funds were approved with the understanding that the Welfare Department would contract with a "fiscal intermediary" – a private agency – to take over administration of certain portions of the program.

The Welfare Department has agreed to contract with a "fiscal intermediary" to handle drug bills and those incurred by persons over 65 who are also in the federal Medicare program.

News Wrapup

'Pay Up or Else': In N.Y. Computer Warns Drivers...

NEW YORK – Nearly 8,000 motorists here will be denied auto registration this month unless they pay up parking tickets worth almost $320,000.

The combined efforts of the city's Parking Violations Bureau (PVB) and computers at the state Department of Motor Vehicles (DMV) produced a list of 7,896 scofflaws for the month of January and have denied registration to over 12,000 since the system went into effect six months ago.

The PVB, with the help of a service bureau, prepares a tape of those who have not paid three or more parking tickets. The tape is sent to DMV where registration information is stored on the department's computers. Notices are sent to the violators and auto registration is withheld until the city receives payment.

The largest scofflaw identified by the system this month owes the city $6,005 in 126 unpaid parking tickets.

...While Calif. MDs Issue Same Warning to Computer

SAN JOSE, Calif. – A group of local anesthesiologists has expressed dissatisfaction with the state's new computerized billing system.

In a meeting with Dwight Geduldig, state director of medical services, the doctors claimed payment from Medi-Cal was slow and inadequate.

Some physicians told of having billed In August for services rendered in July and still have not received payment. Others said payments have been below overhead costs and were below payments in other specialties.

Although Medi-Cal was designed to speed and standardize payments to physicians, there have been the usual programming bugs associated with new systems, according to officials of the Santa Clara County Medical Society, which is working with the state to resolve some of these problems.

Geduldig will meet with physicians again in mid-January to answer their complaints. The anesthesiologists will then meet to decide their next course of action.

DP Used in Insurance Flimflam

Special to Computerworld

LANSING, Mich. – Using the reputation of the computer as an almost "infallible analyst," an independent Michigan life insurance agent "convinced" about 100 Michigan policyholders to replace their existing policies with term policies from an Indianapolis firm for which he worked.

Robert Rowe, deputy commissioner of the Michigan Commerce Department Insurance Bureau, said: "It was a flimflam, a computerized con game using people's ignorance of the computer to false advantage."

According to an article in the *Lansing* (Mich.) *State Journal* the United Presidential Life Insurance Co. employed "computer techniques to convince prospects that it would be to their benefit to replace their existing insurance policy."

But what actually happened, said David Feintuch, executive assistant to the insurance commissioner, was that the agent, acting more or less on his own, would "take existing policies and feed the cash value and the age of the policy and the age of the policyholder and other relevant information into a computer. The thing would then fire back tables of all types . . ."

Feintuch said the computer "would take all these things, put them together and do summary paragraphs" and "he would then feed in the proposed insurance and do the same thing and it would come up with 20 different tables from which the uninitiated would have to pull out the information he wanted."

At this stage the agent would then "explain" the computerized data in such a way that it looked like the computer actually recommended the policy.

Under Michigan law it is necessary for an agent to fully explain a policy.

In addition, the agent was using unlicensed subagents to write new policies using the same technique – also a violation of Michigan law.

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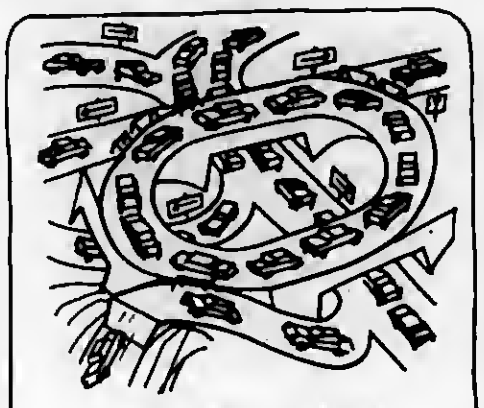

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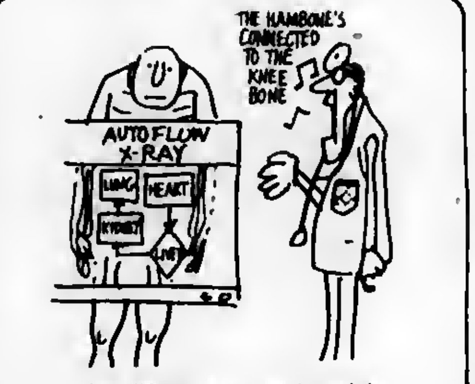
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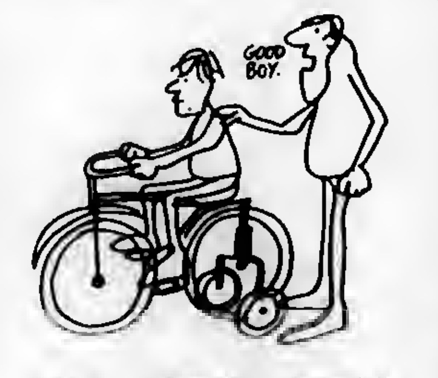

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Computers and the DP Employee — Part I

Office Jobs in UK Being Eliminated, Not Created

By Joseph Hanlon
Special to Computerworld

LONDON – Computers are wiping out office jobs in the UK at a greater rate than they are creating them.

Since computers were first introduced into the UK, they have eliminated 330,000 office jobs, and will eliminate 340,000 more in the next six years. Already computers do 3% of all office work and by 1979 they will do 6.5%.

These conclusions from the study on "Computers in Offices" by the UK Department of Employment are based on questionnaires returned by 86% of all office computer installations valued at over $50,000, plus interviews with users, service bureaus and manufacturers.

For the purposes of this study, office work was defined as "the work of administering private or public business." This includes payroll, accounting, billing and record-keeping applications, as well as airline reservation, stockbroking and banking systems.

Despite the large number of jobs eliminated, computers had put only 1,400 office workers out of work by January 1969, according to the survey. This is because the long time it takes to install a computer system (three years and three months on average) allows much time for the individual to plan and take advantage of the job situation itself, the report noted.

The data for this three-part series comes from a little-noticed report, "Computers in Offices," issued last December by the UK Department of Employment.

The first part of the series attempts to give a complete picture of the impact of computers on employment.

In particular, the report made three points: the turnover of women in boring jobs is so high that much staff attrition takes place naturally; people move into newly created DP jobs; and office jobs in general increase so much faster than computers can gobble them up that new jobs are often open within the same company.

To determine the number of jobs ended by computers, three factors must be balanced: the amount of office work (increasing steadily), new DP jobs created (increasing only slowly) and the amount of office work taken over by computers (increasing rapidly). Counting only traditional office work and ignoring new work that can be done only because of computers, the amount of office work (and thus the number of possible office jobs) is increasing 2.4% per year.

Computers, however, have "hit their stride" and are taking over increasing amounts of office work – in January 1969 only 1.2% of office work was done by computer, compared to 3% now and an expected 6.5% by January 1979. EDP staff, including data-entry people, is increasing only at a steady 17,000 per year.

In 1972, for example, the number of office jobs would have increased by 125,000 if there were no computers. Of these jobs, 60,000 were actually taken by computers while approximately 17,000 EDP individuals were added. Thus, the new jobs created for an expanding population were only 82,000 and 43,000 were lost.

Since computers were first introduced into the UK, according to the Department of Employment, they have eliminated 330,000 office jobs, adding a DP workforce of 170,000, for a net loss of 160,000 office jobs – equal to 21% of the present UK unemployment! By January 1979 computers will have destroyed 340,000 more jobs and the DP staff will total only 270,000, for a net loss of 400,000 jobs, according to the DE.

The report showed that EDP has not been of much help to women: only 1% of DP managers and 4.5% of analysts are female. On a lower level, 21% of programmers, 30% of operators and 98% of data-preparation staff are women.

"At the average well-established EDP installation in January 1969, the number of office posts taken over was 106, of which 100 were clerical, typing and office-machine operating jobs normally largely done by female staff, and the balance was of a supervisory, executive or management nature normally held mostly by males," the report noted.

"Computers in Offices" is UK Department of Employment Manpower Study No. 12. It is available for $2 from Pendragon House Inc., 899 Broadway Ave., Redwood City, Calif. 94063.

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Editorial

On Buying a Computer

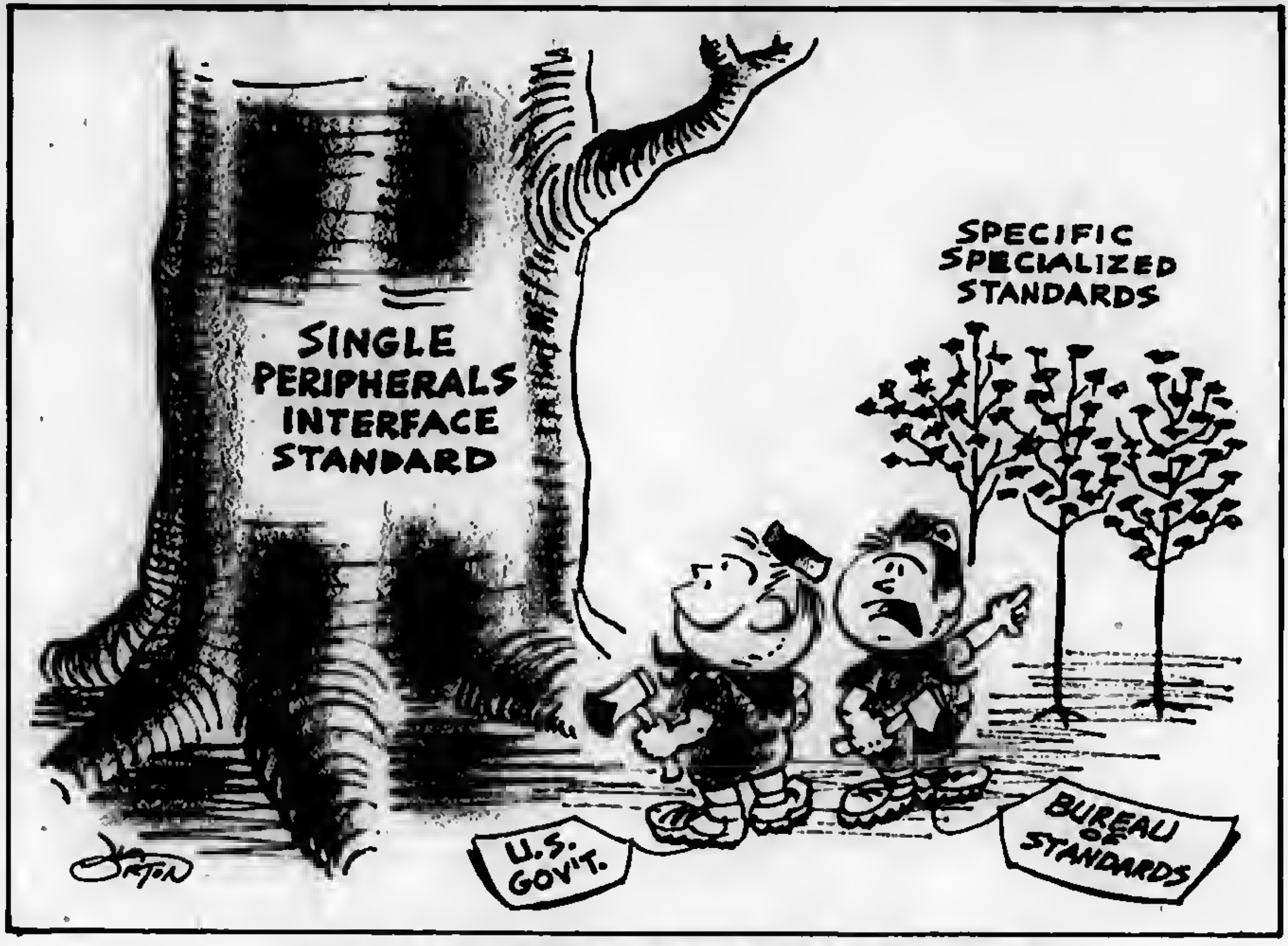
The acquisition, and even the consideration, of a new computer system can be a traumatic experience for the user.

The vendors eager to install their equipment often become enmeshed in highly competitive situations in which the technical capabilities of the CPUs seem to take a back seat.

For the user objectively attempting to evaluate the merits of proposed systems, external pressures to influence his decision usually only complicate his considerations.

It is very difficult to determine at what point a salesman stops doing his job and his actions become unfair trade practices.

But the message for the user is clear. Be well prepared when considering competitive vendors' proposals. And above all, know exactly what your equipment goals are.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'Let's Start Attacking the Issue Over Here, Okay?'

Letters to the Editor

Vocational School Seeks Aid In Getting Languages Working

We presently have available to us three RCA 501 computer systems. After many hours of attempted usage, we are unable to get the Cobol or Assembler languages working properly.

We are asking for help in obtaining operations manuals and/or someone to call for advice or assistance. Do not recommend Univac as we have exhausted ourselves trying to communicate with them. We would greatly appreciate any aid or assistance received.

Allan M. Chermak
Area Vocational Tech. Institute
1601 9th Avenue North
St. Cloud, Minn. 56301

In the World of 'Hard Sell' Disappointment Is Expected

IBM certainly does not need the mere defense I might provide and certainly it has more than enough voices in its corner to defend its monopolistic position.

However, the front-page article in the Dec. 6 issue dealing with IBM marketing forces would probably lead many to defend that manufacturer.

The documented coercion effected by one sales team was obviously not subscribed to by IBM management. I am sure that any individual involved in sales, whether it be for a large company such as IBM or the smallest company, is disappointed when confronted with the prospects of losing a customer to a competitor's efforts.

Frankly, I see no dishonesty or impetuousness on the part of a salesman who suggests further study as an alternative to losing a sale to his competition.

This ill does not seem nearly as grave as that committed by the implication that all of IBM operates in this manner and the manner is wrong.

Norman C. Heinle Jr.
President
Datamatics
Englewood Cliffs, N.J.

Program Reliability Of 100% Does Not Exist

In Don Leavitt's report on the software reliability session of the FJCC [CW, Dec. 13] some users are said to object to the use of probability concepts in defining software reliability and one user is said to make the analogy of probability as used in weather reports.

Due to the fallibility of programmers and the infeasibility of testing all paths and input combinations of non-trivial programs, there will always exist an element of uncertainty regarding the capability of a program to perform error-free when put into operation.

Even if it were possible to exercise all paths during testing, there may be a combination of inputs – not anticipated during program design – which will cause an error under operating conditions.

In other words, there is no such thing as a program which is 100% reliable. Just as the Weather Service cannot guarantee sunshine in Monterey at 2 p.m. next Sunday, we cannot honestly *guarantee* a user that his program will run error-free for two hours.

However, as in the case of weather prediction, we can *estimate* the probability of occurrence of certain events. Based on test results, we can estimate the probability of a program's functioning without error for various operating times.

There are various ways to define and measure software reliability: probability of no error for a specified operating time; number of errors per operating time interval; time between errors, etc. Whatever the measure employed, probability will always be involved.

Thus, both the producer and consumer of software products will incur risks of non-error-free software operation. The major objectives of a software reliability program are:

- Estimate these risks
- Determine whether the risks are acceptable in relation to the importance of the software to mission success
- Determine whether risk reduction can be obtained at a reasonable cost.

Norman F. Schneidewind
Professor of Information Systems
Naval Postgraduate School
Monterey, Calif.

Library System Costs Cover All Mainframe Costs

The report on the FJCC seminar on computers in information data centers [CW, Dec. 13] was both comprehensive and well-grounded in the practical realities of library automation.

In relating the specific economics of the Bucknell Library On-line Circulation System (Blocs) which my paper presented, however, costs of development and operation were stated at $68,000 (total) and $8,000 (per year) respectively, *exclusive* of mainframe charges.

Our system is extremely inexpensive precisely because those two respective figures are *inclusive* of *all* development, and all operational Sigma 7 costs.

Michael J. Smith
Manager
Library Information Systems Project
Bucknell University
Lewisburg, Pa.

Fletcher Jones Remembered

I am in complete agreement with Dale McCallon [Letters to the Editor, CW, Jan. 3] in reference to the passing of Fletcher Jones, cofounder of Computer Sciences Corp.

I personally think the Industry would like to see a more detailed story on Jones and some of the many contributions he made to data processing.

Ronald G. Shepherd
Arlington, Va.

A well-written tribute to Fletcher Jones appears in the December 1972 issue of CSC News, the newsletter of Computer Sciences Corp, Los Angeles, Calif. Ed.

Who Needs Certification?

ACM has taken initial steps toward joining DPMA and others in sponsoring the professional certification program. Its leaders seem to feel this is necessary if ACM is going to become a real professional association, like doctors and lawyers.

The trouble is that computer professionals are not like doctors and lawyers and others in a very key way: we do not deal directly with the public.

The average citizen rarely hires a computer programmer. Most of the people who do employ us are paid to know what they are doing.

This leads to a more serious problem.

An employer interviewing a brilliant young computer professional is not about to risk annoying him by asking whether he is certified. That is, the best people in this business are not going to have any trouble getting jobs, and they will have no real incentive to apply for certification.

Inevitably, the best people in the profession will tend not to have certificates. The mediocre people will have stacks of them. It should take everyone else only a little while to realize that a CDP might not be the best thing to mention in a resume.

I wish ACM would worry more about serving its members and less about regulating them.

Joseph T. Rigo
Ombudsman
New York City ACM
New York, N.Y.

The Ombudsman's Job

In a recent article [CW, Dec. 27/Jan. 3], Alan Taylor attacked Gordon Smith and the ACM Ombudsman Program. I was surprised, as I felt Taylor would have welcomed this attempt at membership responsibility by one of the data processing organizations.

In his article, Taylor assumes that Smith was referring to a computer operator when he blamed the "person running the computer" for the computer errors.

Smith was simply differentiating between errors made by computers and errors made by people. On the contrary, the program seeks to correct these people errors at their source, which is most often management.

One such approach now being studied would educate top management so that it might recognize poor programs and procedures created by those persons Taylor says the program seeks to protect.

R. Peter Ericson
Hartford, Conn.

Constructive Criticism Needed

Alan Taylor's attack on the ACM Ombudsman Program must have been written during a temporary anatomical displacement of his thinking ability. Such a vindictive deviation from professional stature is not what I would have expected from him.

To take Gordon Smith's quote and transform it into a direct attack on computer operators is quite unfair. The people who are really "running" the computer and responsible for it are upper management who okay or ignore the setting of policies inherent in operational systems (the whole mess, not just the computer portion).

The difficulty is that too many people unfamiliar with organizational mechanics and computers are put off by the defense, "the computer did it and we cannot fix it." The ACM Ombudsman, who is a volunteer, attempts to determine what the real cause of an error was and so inform the person requiring assistance.

I agree that ACM could do much more to assist the public. So could DPMA, Society of CDPs and Acpa.

In my five years of active ACM participation I never encountered any pressure, subtle or otherwise, from any of the ACM institutional members.

Jon A. Meads
Chairman – Siggraph
ACM
New York, N.Y.

Users Not Blameless

Problems of Computer Buying Take Some Tracing

The Taylor Report
By
Alan Taylor, CDP

Recently, a Virginia bank that was expecting a sorter it had paid for on the second-hand market was disappointed. The sorter did not arrive on the date expected, the money was taken out of the dealer's account – and chaos reigned.

There was no doubt about the location of the sorter. It was sitting in a Hudson Valley, N.Y., bank, doing the day-to-day work. Nor was there any doubt as to the contract of the buying bank.

What was, however, in doubt was the responsibility – ethical, legal or operational – of the selling bank to honor the expectations of the buyer.

This doubt arose because there were two intermediaries involved – used computer dealers. One represented the selling bank – but the buying bank did not know about him. One was working on a contingency, and had found a client for the selling dealer. The selling bank knew about him to some extent, but took no responsibility for any of his contracts.

Even when all four parties were together, during the inspection operations, this situation did not become clear. The inspecting officers of the buying bank did not realize that the "friend" their dealer had along was in fact a principal party. No one disabused them of the notion that their dealer represented the selling bank.

And the selling bank would not release the equipment because the new sorter they were expecting had not yet been delivered.

How often does this situation happen? Not too often is it as complex as this case, but it certainly can happen quite frequently.

One marketing man "showed me his inventory" of available equipment stretching over the next year. It was displayed upon the status board in one of his offices near the O'Hare Airport in Chicago.

Much of the equipment on the display board was still in use in customers' hands. It was scheduled for delivery at some time and some contractual arrangement together with a deposit of a comparatively small percentage (5% to 15%) had been made.

Some of it, particularly some of the more common peripherals, was available in warehouses – often the same as those used across the country by IBM to stock its spare equipment.

He had contracts but he did not have title to the equipment.

Title Delays

This is a key problem. Title for equipment does not pass merely because a contingency contract has been made between some equipment owner and a dealer. Most of the equipment offered by dealers is not really totally theirs; they may have an option on it.

Moreover, because of the problems of finding customers, when these options are obtained, the dealer often passes off the equipment to other dealers as being "available."

There is generally enough room for two commissions. Many dealers count on this. When equipment comes onto the market, dealers who have a contact may well offer it to anyone they feel is likely to buy – even though they themselves have not got physical or legal possession of it.

The dealers have started an association so they can meet some of the people who are offering such equipment right across the table. They feel this might help stop the practice. Perhaps it will – I really don't know.

However, I think something further should be done. Talking across the table certainly may help solve the problem within a group of dealers, but my interest is with users – not dealers. It does little toward solving the users' problems.

The normal user only deals with dealers once every few years. But users are reasonably interested in purchasing used computer equipment, because there are extremely good values around.

Where a system is operational on a Model 30, for example, and is performing all the needed work within the available time, then there is little incentive to upgrade to larger equipment.

But there is incentive to reduce the costs. Where computer equipment is available on the open market at around half the original cost (as is the case with many five or six year old 360 computers today) the cost effectiveness of such equipment is often much better than the cost of new 370 equipment.

Good for Seller, Too

There are equally good reasons for wanting to dispose of equipment. When new systems are introduced and new equipment comes in, users make much of the equipment that had previously been purchased on the open market.

Often its book value has been written down with conservative banking practices. This makes the sale of the equipment, although useful, not particularly important.

Already the book value is approaching zero, and the selling firm regards any income it receives as being a type of windfall profit.

They therefore do not really worry too much about the selling operation either.

To the seller the delay of a month or two in getting rid of the equipment is comparatively unimportant.

Further they find themselves in a quandary as to when to sell. IBM may have said delivery of some equipment will take place in November – but the salesman said he will try to "have it moved up" and they should be ready to receive the equipment at the beginning of October.

Sometimes the salesman succeeds and the delivery is moved up. Sometimes he doesn't and it isn't. Sometimes – and worse – even though it is originally promised for delivery at one point it actually arrives considerably late.

Contracts Key Problem

The key problem for the selling organization is that it does not have a firm contract from the new equipment supplier. (Or rather the contract, although firm, has been written by the equipment supplier in such a way that it protects the supplier and doesn't protect the user at all.)

True, contracts usually permit the user to cancel the contract for a failure in delivery. I'd like to see what happens to the DP manager who cancels out a contract for a sorter because it's a week late, or permits the advanced sale of another sorter to be legally consummated and has the sorter physically taken out of his possession!

He wouldn't last long in his bank, and I doubt whether anyone would later give him a recommendation for new employment at such a level.

As long as this current situation continues, whereby delivery dates from new equipment manufacturers are effectively discretionary, while delivery dates of used equipment can be fairly firm, it seems unlikely the current title problem can be properly cleared up.

How can the seller of used equipment risk his operations by giving title to a buyer?

And how can a dealer do more than take contingency deals when his prime clients are unable to negotiate clean terms with any customers he finds for them? I don't think that the majority of the dealers are unwilling to operate in a tight manner, and I think they are responding to the situation as effectively as is practical.

Who then is to blame? And who can do something about the situation to help the user?

There is no question as to where the original blame lies. The use of loose contracts that made some sense in 1950 when computers were not safely manufacturable at a time when the industry of the country relies upon computers is pure nonsense.

The terms currently offered by computer manufacturers are an insult to the users, an insult which the users currently swallow. There is no reason why delivery dates are not made firm, or why, upon failure of delivery the supplier does not provide adequate replacement computers at his own expense.

We're not in Model T days but to read contract terms you would think otherwise.

Perhaps the manufacturers are only the original culprits; the users themselves, by their inactions, continue to perpetuate the problem.

The failure of the user organizations to act for the users – as opposed to being loyal customers of a particular vendor – is the reason why the manufacturers can get away with poor contracts.

Currently the manufacturers can effectively veto any user group's demand for better contract terms.

They can pressure user groups and their members by providing subsidies for "house-trained" user groups; providing advanced information and advanced deliveries; threatening or actually proceeding to politically attack professionals who go against the manufacturer line as in the case of Arthur Hill of Delaware [CW, Dec. 6]. Under such circumstances any well organized value-analysis by the manufacturers will quite properly show that the most profitable thing is to continue to provide poor contract terms and support a controlled user group! (Indeed, if they ever need to strengthen such control, they only have to continue to provide the poor software which makes such user groups an essential part of user life. If all the software provided were reliable then user groups would soon find their independence!)

What can be done? At the moment we can only gather ideas.

The dealers – with all the problems – are making profits and providing good value and could perhaps act as a focal point. They could provide some of the financial support necessary for an appropriate investigation as to what users can do to improve the situation.

However this may not be practical. The dealers themselves are also open to pressure from the large manufacturing organizations.

Public acknowledgement of improper political pressures on data processing professionals certainly are a help. But the usual policy of hiding things under the rug is of no professional help.

At the moment I see only one way to attack the situation.

When buying or selling through a dealer users should not merely visit the equipment installation site, but insist on visiting and talking with the principals (the current owners). Talk to the dealers working for both parties and any intermediary ones before setting a system in progress.

Any ideas readers have would be gratefully received and carefully considered.

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DUCS-VI will be available during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goran.

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THE AUTHORS

Roger MacGowan is professor of Computer Science with the Dept. of Defense Computer Institute in Washington, D.C. and is a frequent contributor to professional journals.

Reid Henderson is President of Compudemics, Inc., and is both a CPA and CDP. He also lectures at George Washington University and the Industrial College of the Armed Forces.

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Let's First Solve Our Social Problems On Person-to-Person, Not Group Basis

By Richard L. Fyfe

Special to Computerworld

Viewpoint

In response to the article in the Dec. 13 issue titled "DPers Fail Social Role," I would like to offer the following comments:

- There are very few modern professions that are open to and have incorporated into their ranks so many men and women of different ethnic and color groups. Joseph Rigo, representing the "rock hide bound" banking industry, should be one of the last to speak about social inequity.
- Since when is it the responsibility of a particular profession to take upon itself social challenge? If we were sociologists, lawyers or politicians, perhaps the article's statements would be justified, but because we are responsible for handling and analyzing data, does this justify the responsibility for the cause of the data?
- That we may offer an idea or, as Rigo indicated, stir up interest in social concerns is a tribute rather than a condemnation. We all have opportunities in the data processing profession and in every other profession to help our fellow man or woman as the case may be without being champion for a cause.
- Again Rigo states: "We look for some way to help change the world to make life better for other people without lousing up our own lives in the process."

Well, I ask how in the name of sanity can a person with a loused-up life possibly help anyone else? Or how does one loused-up life – which by the way is never singular – possibly balance anything?

- If people that he (Joseph Rigo) knows fade from the scene when the hard work begins, then perhaps his circle of acquaintances needs more integrity. I do agree there are people who like to stir things up and then having achieved their purpose drop from the scene, but this is not characteristic of the data processing society.
- I believe again that Rigo's statement that the computer professionals are not experts in the areas of concern of these social organizations is not substantiated nor is it realistic.

A computer professional is not an expert in all fields. A bank teller handles money all day long, but does that make him a financial expert?

- Finally, I agree with Rigo. It is time for our community and social organizations to pool our professional skills and solve problems, but let them be our own local problems in our own communities and our own companies and let us not be like the social opportunists who are always interested in developing "so-called" low-cost housing projects in someone else's town while neglecting the problems of their own town.

Let us solve social problems on a day-to-day, person-to-person basis by the strength of our own personal convictions and not try to pass off responsibility to the group or the town or the company. When social decision time comes, let's make it on an evaluation which is not biased by external responsibility, but by personal responsibility.

- My final thought is that whether we are computer professionals, nonprofessionals or members of any other trade or profession, if each head of each family could show enough concern to be responsible for his own family then we would have very few social concerns to process data about.

Richard L. Fyfe does MIS consulting for AMF, Inc., White Plains, N.Y.

DOS/VS Can Benefit DOS Batch User

By Bennett I. Moyle

Special to Computerworld

Viewpoint

Over the past few months, various industry observers have commented on the potential value (or lack thereof) in DOS/VS for batch processing. The point often made is that the DOS user in a "real-memory" environment who is forced to fit his programs into predetermined partition sizes will know when he must acquire more memory, but (it is implied) the VS user will be less ambitious about limiting his programs to predetermined sizes, and will realize that he must acquire more memory only when performance degradation from heavy paging occurs due to too many, too large programs.

Although a DOS installation today may struggle to fit many of its programs into fixed-partition sizes, there are inevitably many programs at the installation which are considerably smaller than the partition sizes.

In a multiple-partition operation, the effective loss of memory is also multiplied. Consequently, the "real-memory" user who finds himself "needing" more memory because many of his programs will no longer fit, may really only be using a small percentage of his memory capability.

A DOS/VS installation, on the other hand, can use the memory left over by small programs for large programs running concurrently in other partitions.

Consequently, when the "real memory" appears to have "run out" in a DOS/VS installation, as indicated by heavy paging, a higher percentage of the real memory will have been utilized than in the DOS environment.

Universal Access

At initial installation, then, a DOS/VS batch system should make significantly better use of real memory than its immediate DOS predecessor, not so much because it can use external storage for programs larger than real memory, but because all programs have access to memory independent of partition sizes or fixed-address boundaries.

If the DOS/VS installation runs into degraded processing in the future due to addition of many large programs, that may not be as unhealthy as it sounds. Those large programs, if attempted on the predecessor DOS, would have to be redesigned into several programs of smaller size requiring passage of data files between them, or else would have been written in overlay structures.

Both of these techniques would probably extend the run time of their application considerably, which is one way of defining "degradation."

These considerations suggest to me that the DOS batch user can benefit significantly from DOS/VS.

Bennett I. Moyle is a systems programmer with the Federal Reserve Bank of Minneapolis.

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City Asks Help With Popular S/3 Programs

By Don Leavitt
Of the CW Staff

VENTURA, Calif. – Like many municipalities, this city has been willing to share its DP experiences and programs with others. Lately, however, a new wave of interest in Ventura's programs has provoked a rethinking in how the city can and should respond.

Cooperation has usually been on a rather casual basis with surrounding cities and towns, and reciprocity was expected and received as a matter of course, Ventura's general services manager Fred Patrick explained.

Growing Interest

During 1972, the city shifted from a Honeywell CPU to an IBM System 3/10. More or less concurrent with the development of software for the new equipment, Ventura began getting requests for the programs from western localities, with no apparent means of reciprocating.

Applications already installed at Ventura include budget and inventory control, payroll for city employees and a fundamental licensing system. All of these are written in RPG II, are being sharply enhanced and would provide most municipalities with a good DP base, Patrick said.

Both Patrick and city attorney Bruce Leavitt saw two possible meanings to the wide-ranging interest in Ventura's software. First, it would cost the city money to fulfill the requests and, second, IBM was apparently spreading the word about the software as a means of selling S/3s to other cities.

Ambivalent Feelings

Ventura didn't want to lose money but neither did it want to provide vendors a means of making money from the city's work. Leavitt has been exploring how to protect Ventura's and the users' interests so that neither IBM nor any other vendor could acquire copies of the software and start peddling it for a fee.

Since they felt IBM stood to benefit by a wider distribution of the programs, Leavitt and Patrick approached IBM's local branch manager, Bill Avery, to see whether the company would be willing to improve the available documentation, and pay for its distribution.

Ventura would, under this plan, underwrite the cost of reproduction of the program decks themselves.

IBM has not yet decided how to answer this request, Avery said recently. He denied company salesmen would use the possible availability of the programs as a means of selling S/3s.

To the best of his knowledge, Avery added, IBM had never previously been asked to underwrite this type of project. He denied any plans to distribute the software as Installed User Programs (under which IBM would charge a fee).

Random Notes

'Grasp' Gains 370 Sensing, AVR, Class Queue Managers

BURLINGAME, Calif. – Version 2 Level 4 of Grasp II, now available from Software Design Inc., allows DOS users Automatic Volume Recognition (AVR), class queue management (CQM) techniques and the ability to recognize if the package is being run on 360 or 370 equipment.

AVR, long a standard feature of IBM's OS, searches all the peripherals for desired volumes and warns the operator when a needed data set is unavailable. CQM allows DOS users to share system resources according to a priority scheme. If the 370 test is positive, this version of Grasp II will use 370 instructions, an SDI spokesman said from 880 Mitten Road, 94010.

Repro-Modeling Cuts CPU Times

SANTA MONICA, Calif. – Repromodeling, a new technique developed by Technology Service Corp., has, in some applications, reduced computer time to run a model by factors of from 100 to 10,000, a company spokesman said recently.

The technique is used with complex models in which the number of parameters, the difficulty in defining the model or interpreting the implications of its execution, or the time needed are major factors. The technique "collapses" or approximates the model by determining which factors will significantly affect the output. TSC is at 225 Santa Monica Blvd., 90401.

Infonational Adds Service Office

FT. WORTH, Texas – Infonational Inc., a San Diego, Calif.-based software and service company, has opened a new computer center for users in the Dallas /Ft. Worth area. The center is at 6421 Camp Bowie Blvd., 76116, and is organized around a 360/40.

Edos Spooler Jumps Throughput 300%

RICHMOND, Va. – Throughput for DOS/360 users may improve as much as 300%, at a cost of only 2K of core, with the Extended Spooling Facility (ESF) software from The Computer Company.

That degree of improvement has been noted, the company explained, when comparing ESF-based operations to unspooled I/O operations with a "typical job mix." Shifting from other spooling packages to ESF also improves throughput, but the results are not as dramatic or clearcut as compared to completely unspooled systems, a spokesman said.

Spooling is the technique of moving data from card readers to disk, or from main memory to disk before going to printer or punch, in order to separate high-speed CPU processing from the drag of low-speed I/O gear.

ESF differs from other currently available spoolers in its use of dynamic buffering within main memory, its approaches to command chaining which reduces the instructional overhead and its management of the space it uses out on the disk, the spokesman claimed.

ESF is a special, optional feature that works in conjunction with The Computer Company's Extended DOS (Edos) enhancement package for the 360. As originally released [CW, April 12], Edos had no spooler of its own but was – and still is – compatible with any of the spoolers that operate under IBM's DOS Release 26.

Unlike the other packages, ESF is integrated into the DOS/Edos supervisor which, the company said, eliminates the need for pass-backs to DOS when a spooling operation is done. Meanwhile, the operator picks up time by being able to communicate with the system directly from the device he is currently tending.

This is an extension of the "hot reader" approach, now part of IBM's Power II spooler, but under ESF it includes support for line printers and card punches.

Data records going out to the disk are noted on special directory cylinders, and the records themselves are moved to a general data "pool" on the disk.

Records are blocked dynamically to take advantage of buffer space available in core as data is moved from disk to the final output device.

Records on the disk are compressed through the elimination of all blanks. This saves space but also saves excessive movement of the disk-access arm, thus improving the execution time, the company said.

Everything in Its Place

The system creates separate "generic queues" for the type of output device to be served. Thus one printer can handle the work of several, still within a priority "first-in/first-out" mechanism, and output gets produced in the sequence it is wanted, the spokesman noted.

Installation of ESF, linked as it is to Edos, means that all the features of the main enhancement package – relocatable loader, load balancing, resident transients and even 6-partition support – can be used along with the spooling itself

ESF is a separately priced feature, available for $200/mo in addition to the $225/mo charged for the basic Edos package.

The Computer Company is at the 7th and Franklin Bldg., 23219.

'Samson' Reports CICS Activity Over User-Defined Time Periods

NEW YORK – Users of IBM's Customer Information Control System (CICS) can gain a series of "snapshots" of what the system is doing (or not doing) without seriously interrupting the operation, by using the System Activity Monitor (Samson) module from On-Line Software Inc.

Samson displays the number of tasks in the system, and lists both the active and suspended tasks. In addition to showing the dispatchability status and priority of each task, Samson also shows the reason for suspension of each task that has not been dispatched.

Functionally, Samson operates as a CICS transaction, and can be activated from the control terminal or any other unit linked to the CICS net. The user simply specifies the time interval between displays and the number of cycles to be generated before that use of Samson is terminated.

The Samson response would normally be displayed on a CRT terminal long enough for the analyst/user to spot any significant pattern, particularly if he is aware of a problem that may be tied back to a particular task.

If activated by an entry from a terminal with hard-copy facilities, the Samson responses could be made available for more thorough analysis later without losing the dynamic capture of the ongoing activity, an On-Line spokesman noted.

In any case, the ongoing reports, which may reflect monitoring at one-second intervals, are said to provide the user with more useful information than is available either through core dumps in case of system problems or standard end-of-day statistics from CICS, he added.

The Samson module operates under either DOS or OS, takes only 1,300 bytes of storage and costs $500.

On-Line Software is at 2 W. 45th St., 10036.

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The Computer Caravan welcomes

Delta Data Systems Corporation

as an exhibitor in the 1973 Spring Caravan.

DELTA will exhibit a typical video display terminal system which includes a terminal with special function keyboard, a cassette recorder, and a line printer. The company will also show its DELTA 5000 video display terminal and MultiTerm programmable terminal multiplexer. These and other DELTA products offer unique features such as special character generators, upper/lower case, PAGING, built-in interfaces for computer/terminal compatibility, 3000-character memory, and others, all designed to solve difficult terminal system problems.

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'Infonet' Adds RJE Service on 360/195 To Ease Transfers From In-House CPUs

LOS ANGELES – Users with in-house 360 systems strained by general overload or by individual jobs too large for the equipment can shift some of their work to a 360/195 recently made available to subscribers of the Computer Science Corp. (CSC) Infonet remote-computing network, under an agreement between CSC and United Air Lines.

Normal Infonet service is based on Univac 1108 mainframes. Because of the availability of common languages, these can handle many jobs originally written for 360 users, but some conversions are required, particularly with file organizations.

The 195 support has been acquired from United, CSC said, primarily to avoid those conversion chores for OS/360 users.

Infonet 195 will be parallel to, but less ambitious than the 1108 service, which allows users to shift jobs – including both program development work and application processing – from interactive to batch mode, and back again, as a user option.

The ability to change from mode to mode "on the fly" is unique to Infonet, CSC spokesmen claimed, but is not part of the 195 operation. The new offering is strictly for remote batch work and has no interactive capability.

The Infonet 195 features 2,097K bytes of core storage, with "virtually unlimited" disk storage. Access may be over 2,000 bit/sec dial-up lines or dedicated lines at any speed, using IBM 2780/3780, IBM 1130, System 3, 360/20, or any terminal capable of emulating these systems.

The 195 operates under OS/MVT release 20.7 with access to Hasp II/RJE. Users also have access to Bdam and Isam file access methods. The service supports Assembler F, ANS Cobol, Fortran G and H, and PL/I F, as well as RPG, loaders and utilities, CSC said.

Initial applications available under Infonet 195 are geared to users in the oil and gas, nuclear and general construction industries, but the system can be used for almost any batch processing job.

Service on the 195 is available to Infonet users nationally, seven days a week, from 8 a.m. to 11 p.m. in the east, to 5 a.m. to 8 p.m. in the Pacific time zone. Normal high-speed dial-up communications service is provided by Infonet at no cost to the user.

CSC is headquartered in Century City, 90067.

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Disk packs are CFI Memories' only business. So we can't afford to turn you down when you come up with a request for something unusual.

And because we carry IBM-compatibles as well as non-standards, no one else can beat our performance on your total disk pack and cartridge requirements.

CFI Memories maintains an extensive inventory for fast delivery. Every item in it has all the quality, all the long-term performance you demand.

Take our new 3336 disk pack, for example.

It's designed for the new IBM 3330 and other media-compatible disk drives. And besides this super-new unit, CFI stocks disk packs and cartridges for older systems that other suppliers try to ignore.

CFI Memories is a single, reliable source for all your disk pack needs. For fast delivery on any — repeat, **any** — disk pack, write CFI Memories, Inc., 305 Crescent Way, Anaheim, California 92801 or call (714) 776-8571.

Because if no one else can help you, CFI can.

Disk packs are our only business.

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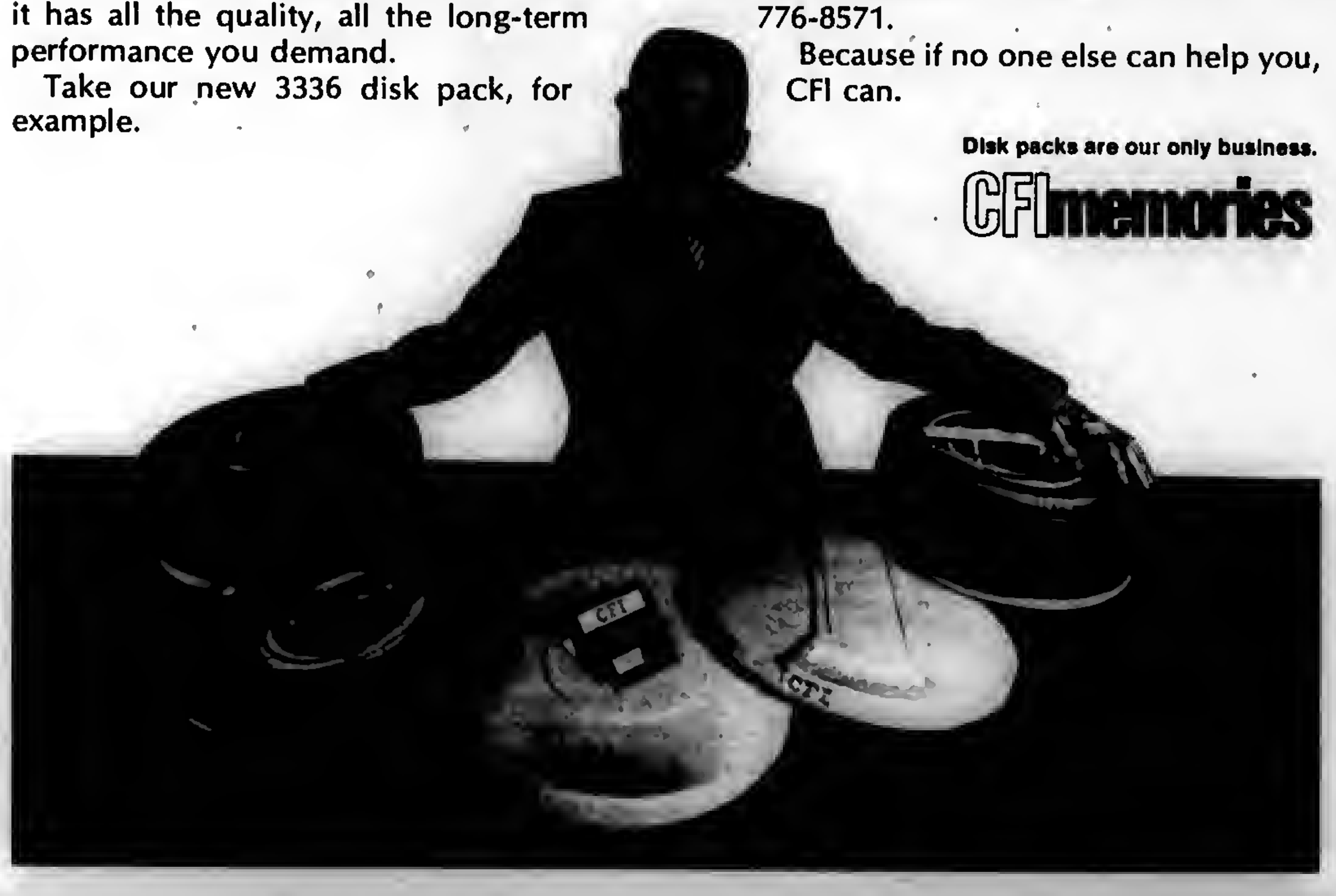


DDA Package Faster, Smaller Than IBM's

ORLANDO, Fla. – A Demand Deposit Accounting (DDA) package from Florida Software Services (FSS) is compact enough to manage multiple banks or multiple branches in 24K to 30K bytes of storage. It does the work faster than IBM's DDA package, according to FSS, even though the new offering is written in Cobol, while IBM's is written in BAL.

Cobol allows the user to modify the system coding easily and the use of bank control cards permit the creation of processing streams that use different combinations of existing modules to meet individual bank or branch requirements.

The FSS package requires only one such control card per bank or branch but the card provides for the definition of more than 20 processing characteristics. These include the choice of check digit calculations, overdraft handling and service charge computation and report formats, an FSS source noted.

User-Coded Routines

The package, as distributed, includes various modules for each of these operations but also enables the user to code his own routines. The new procedures can be accessed through appropriate entries in the bank control cards.

One routine FSS includes in its package provides automatic loans to cover overdrafts. In this instance, the bank control card entries would show how to identify those customers eligible for this type of support and the dollar limit to which they can be carried.

The system utilizes a series of files for easy access of specific data. Both the balances and name/address files are Indexed Sequential (Isam) with an eye to day-to-day processing. The Stops/Holds and Transaction files are unlimited in size.

The FSS system is simple to install and is mailed to users along with documentation and test data. It has been field-tested and is currently installed at 17 sites, the company said. The system costs $7,500.

FSS can be reached trhough P.O. Box 2269, 32802.

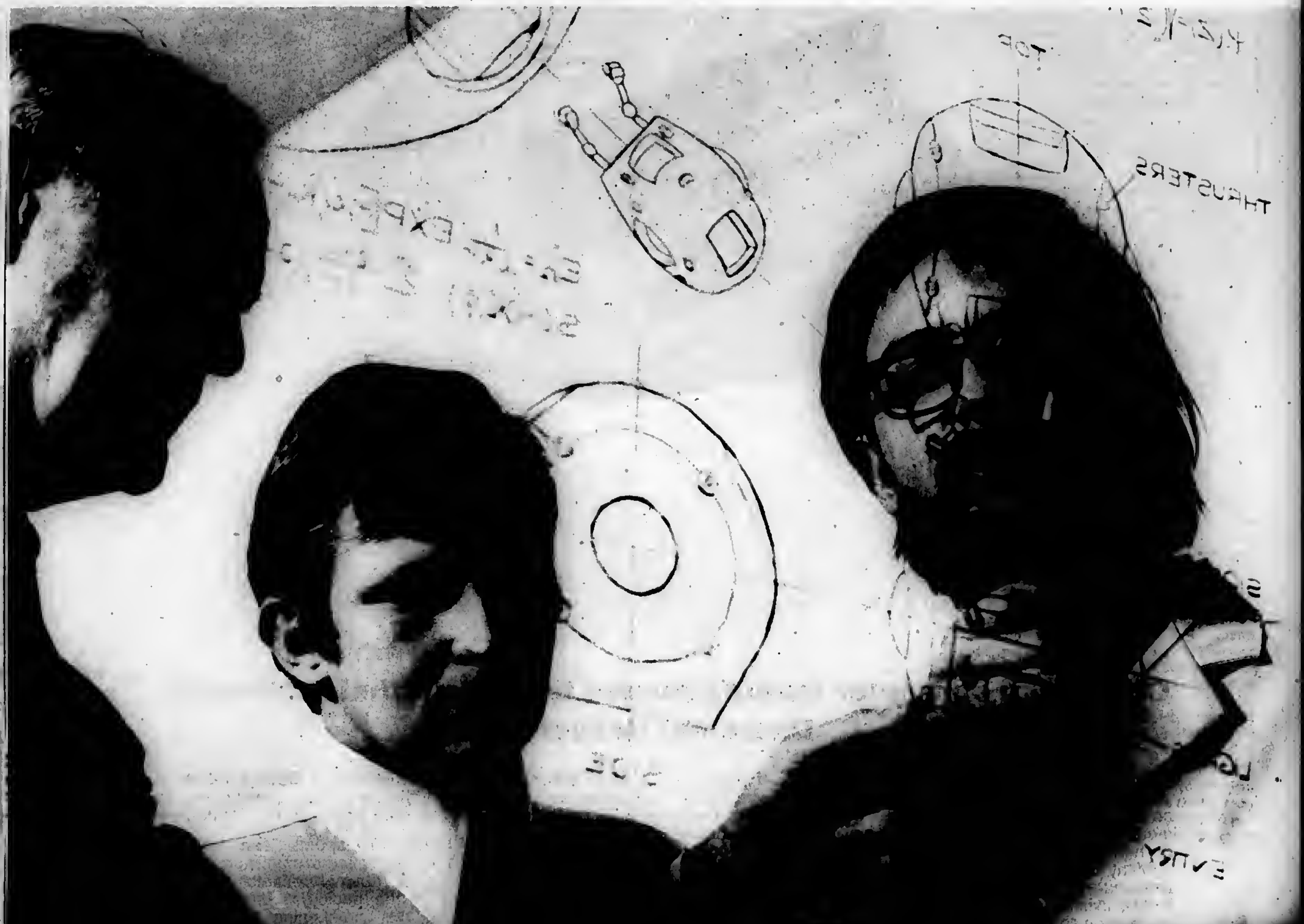
Accounting Service 'Mailed'

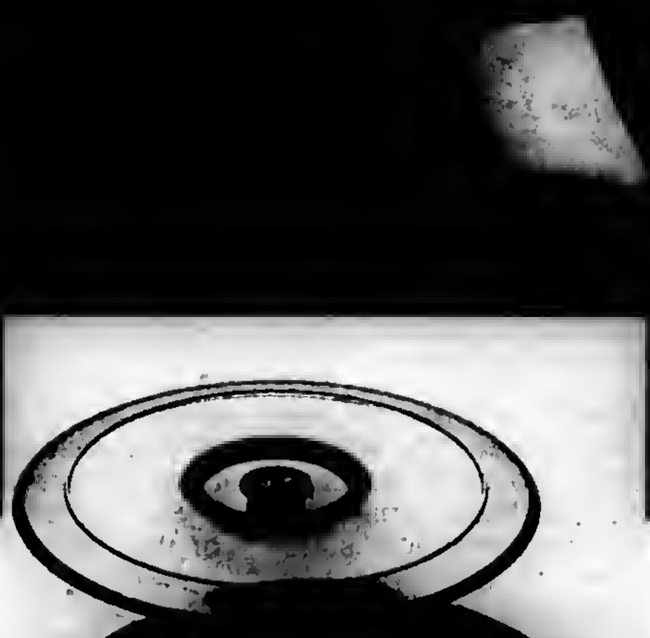
PHILADELPHIA – An accounting and inventory control system with features particularly useful to firms in the mail order or publishing business is available to users in the middle-Atlantic states on the Data-Tek computer utility network.

Geared to users that need to process 500 to 5,000 invoice/mo. and maintain inventory levels on 100 to 5,000 items, the system also provides direct mail addressing operations.

Data-Tek is at 3401 Market St., 19104, with branches in New York City and Harrisburg, Pa.

People who think this far ahead are thinking BASF/2000 A.D.





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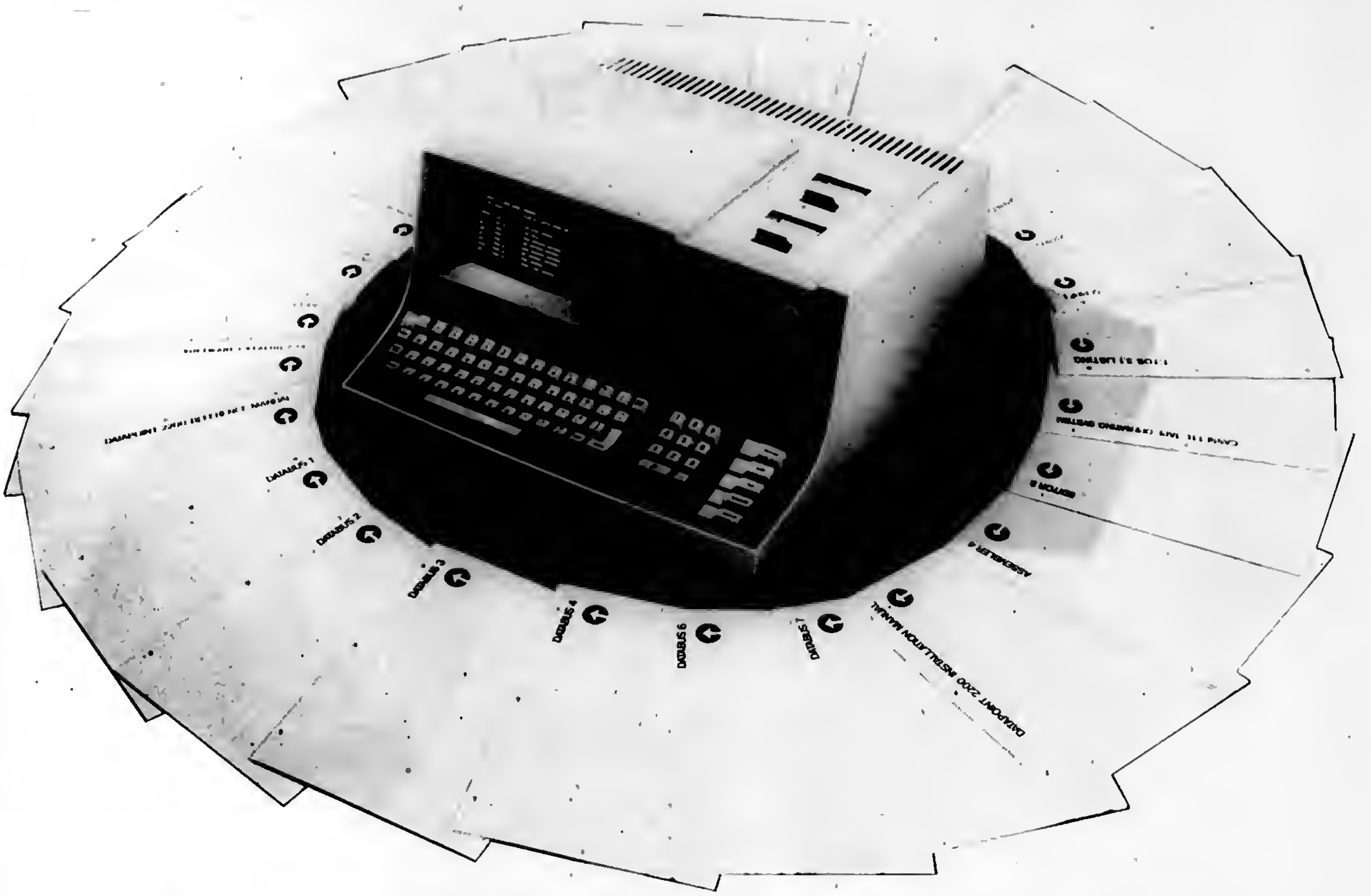

Other mini computer manufacturers talk about their software: Datapoint delivers

The Datapoint 2200, a unique combination of powerful computer, display, and dual cassette drives, has established an enviable record as an all-purpose computer and communications system. Its success, however, is not based on hardware capabilities alone.

Many computer professionals have been pleasantly surprised to discover that the Datapoint software catalog makes available more comprehensive offerings of program-generation software than most other mini computer makers. And all the programs are created and run on the Datapoint itself — no other computer is required.

Here's a selection of available Datapoint software:

OPERATING SYSTEMS

DOS	A powerful Disc Operating System based on the 2.4 megabyte cartridge disc.
MTOS	An operating system based on the Industry-compatible magnetic tape.
CTOS	For stand-alone operation, a powerful cassette-tape operating system.

DATABUS, A HI-LEVEL LANGUAGE — Databus, the Cobol-like Datapoint Business Language, was written especially for the Datapoint. The language contains comprehensive character and arithmetic capabilities. While programs may be written quickly in English-language statements, its real power lies in its ease of I/O operation. Tapes, disc, and printers are handled in Databus as well as communications peripherals.

SCRIBE, A TEXT PROCESSING LANGUAGE — The combination of a Datapoint 2200 plus an upper and lower case printer can form the heart of a text-processing system. The SCRIBE program, actually a high-level language, allows text to be entered via the 2200's keyboard, visually edited and stored on a cassette tape. Upon command, this stored text may then be printed on a Selectric typewriter or on any Datapoint printer.

ASSEMBLY LANGUAGE PROGRAM GENERATION — Machine Language Programs are quickly constructed by use of the Editor, Assembler, and a selection of Debuggers.

TERMINAL EMULATORS — Datapoints can simulate many well-known terminals and offer a multi-purpose alternative to a user. A variety of Terminal Emulator programs are available with many of the packages offering more flexibility than the original, yet maintaining the required discipline. Recent terminal packages include an IBM 2780, CDC 200 User Terminal, UNIVAC DCT-2000 and UNITERM, a flexible teletype-format emulator.

UTILITIES — Many sub-routines and other useful software items are available for the applications programmer. I/O drivers, communications, fixed and floating point arithmetic and a variety of other routines are available as well as a complete set of diagnostics.

This proven-in-use software capability is a big reason for the success of the Datapoint 2200 as a versatile computer or data terminal system in more than 1000 installations. Prices for the Datapoint 2200 begin at $6040 with a variety of lease and purchase plans, with worldwide maintenance available.

For more information, contact your local representative or the home office of DATAPOINT CORPORATION. That's right — we've changed our name from Computer Terminal Corporation to reflect more adequately our growing involvement in a wide range of data processing systems, services and software. DATAPOINT CORPORATION, 9725 Datapoint Drive, San Antonio, Texas 78284 (512) 696-4520.

Datapoint

Home Office: 9725 Datapoint Drive/San Antonio, Texas 78284/(512) 696-4520 • **Sales Offices:** Beverly Hills, Calif./(213) 553-0611 • Boston/(617) 691-9220 • Chicago/(312) 671-5310 • Cleveland/(216) 831-1777 • Dallas/(817) 265-7745 • Darien, Conn./(203) 655-4600 • Denver/(303) 771-0140 • Detroit/(313) 557-6092 • Los Angeles/(213) 645-5400 • Minneapolis/(612) 654-4054 • New York/(212) 759-4656 • Orlando, Fla./(305) 671-4500 • Philadelphia/(215) 272-1444 • Phoenix/(602) 265-3909 • Portland/(503) 289-9655 • San Francisco/(408) 732-9953 • Washington, D.C./(301) 587-3910 **International Representatives:** TRW Communications/Toronto, Ontario, Canada/(416) 461-7288 • TRW Communications/Lyss/Berne, Switzerland/Telex: 34446 • TRW Electronics-International/Los Angeles, California/Telex: 674593

COMMUNICATIONS

WU Sets Satellite Service for 1974

NEW YORK – Satellite services for data and other users could be available as early as July 1974 now that Western Union's plans to build a domestic system have been approved by the Federal Communications Commission.

A WU spokesman said the first launch of the Westar system is scheduled for April of next year with the second satellite shot set for June. A third satellite could be launched in October 1974.

Construction of ground stations to interact with the satellites will begin at sites near New York, Chicago, Atlanta, Dallas and Los Angeles. Additional stations may be constructed at Portland, Ore., and Honolulu.

The satellite facilities will be most meaningful for long-distance private-line users, the spokesman said. For this type of data user, the availability of satellite channels could mean "economic rate reductions" for distances greater than 1,000 miles, he said. Satellite channels will be "insensitive" to distance contrasted with present phone rates which are based on mileage.

The actual rates for the satellite channels will depend on the number of subscribers utilizing the available facilities. This "fill factor" will determine how soon the carrier can recover its investment and how much will be charged for the channels, the spokesman said.

While switched-services users such as TWX and Telex users will not normally know whether their messages are being transmitted over satellites, private-line users who operate their own nets will probably have the option of using the airborne facilities.

"We will probably not average our terrestrial rates with satellite rates. And for non-switched services we will probably identify the satellite circuits for the user," the spokesman said.

Western Union may use existing satellites such as the Intelsat vehicles and Anik I in Canada to test out its ground stations, the spokesman said.

Data Briefs

Timeplex Channel Card Has Bell-Type Modem

NORWOOD, N.J. – Timeplex has a multiplexer channel card for use in its Timeplexer units that performs the functions of an asynchronous channel and also contains a complete Bell-equivalent 103- or 202-type data set.

Called the T-ACM, the card is said to eliminate the need for modem power supplies, cables and EIA interface circuits when using a multiplexer.

The T-ACM card can be coupled to either dial-up or private lines using appropriate connecting arrangements. A series of cards matching the functions of about six Bell modem types will be available in February. Prices start at $300/card from Box 202, 65 Oak St., 07648.

CRTs Interface With RCA

PHOENIX – Courier Terminal Systems Inc.'s Executerm CRT terminals are now available for users of Univac Series 70/45, 55, 60 and newer 2 and 6 computer systems.

A line program which can be assembled with standard RCA Communications Oriented System (COS) or Multichannel Communication System (MCS) compatible software enables the Courier terminals to replace RCA 752, 8750 or 8752 video-data terminals.

The software interface leases for between $9/mo and $12/mo.

Courier is at 2202 E. University Drive, 85034.

S/4 Connects to 360/370s

WELLESLEY HILLS, Mass. – Keane Associates Inc. has added a binary synchronous communications capability to its System/4 desk-top computer.

The feature allows the S/4 to transmit data to and from 360/370 CPUs at 2K bit/sec with records up to 128 bytes on transmit and up to 133 bytes on receive.

The communications capability is available on installed systems or initially delivered units within 30 days, the company said. The feature costs $2,150 or $52.50/mo. The firm is at 36 Washington St., 02181.

MICR Terminal Aids Banks

WHITE PLAINS, N.Y. – GTE Information Systems has a hard-copy MICR terminal for banking and financial users. Featuring a Selectric keyboard, the terminal can encode checks and other documents using special MICR ribbons.

Data can also be transmitted to another terminal and information can be received and stored on tape for later MICR encoding. Called the 5-53, the terminal includes a tape-cartridge system that can store up to 73K characters. The unit costs $225/mo or $7,215. GTE is at 4 Corporate Park Drive, 10604.

Feed and Insurance

360/50 Controls Special Terminals

By Ronald A. Frank
Of the CW Staff

ATLANTA – Independent terminals and selected customers serviced by a 360/50 have meant considerable cost savings for Computone Systems Inc.

Computone provides special feed-formulation data based on current commodity prices to its agricultural customers. Previously, the company was using its in-house feed-formulation terminal with an IBM 1070 terminal system that included a 1053 printer. This equipment cost about $300/mo and operated at 15 char./sec, according to William Robeson, Computone president.

Speed Increased

"We built a scanner to replace part of the functions of the IBM 1070, and connected it to a Memorex 1240 terminal," Robeson said. "The Memorex units cost about $160/mo and in addition to the savings, the independent terminal operates at a faster speed of 60 char./sec."

The in-house unit together with the Memorex 1240 has now been installed at about 45 agricultural sites which use Wats lines to query the CPU in Atlanta, which is equipped with 12 incoming lines.

The 300% increase in transmission speed also produced an 80% reduction in transmission time, according to Thomas Newbill Jr., Computone vice-president. The IBM terminals had mechanical tabbing and carriage return which cut their effective speed to only 12 char./sec, Newbill said.

The Memorex 1240s need no carriage return and the tabbing is electronic, he said. The switch to the independent terminals cuts the time of an average inquiry from five minutes to one minute, Newbill said.

The time-sharing system provides an important service to feed makers and sausage makers. In making animal feed, the formulator must guarantee a nutrient analysis that specifies total protein, fat and carbohydrate and concentration of particular nutrients, such as vitamins, minerals and amino acids.

The manufacturer's problem is to meet these specifications at lowest cost. Different feed materials – such as grains, alfalfa, fish meal and chemical additives – contain different amounts of these nutrients, and the prices of these feed materials vary every day.

Computone's linear-programming techniques provide the solutions to such formulating problems. From a 1240 terminal at his own plant or mill, a nutritionist enters current prices for available materials. He receives as printed output the current least-cost formulation for the product, taking into account the product specifications and inventory constraints previously stored in the 360/50.

In sausage-making, the customer receives an optimum formulation based on the prices and composition of different cuts of meat – pork cheeks, beef trimmings, etc. – as well as binders, extenders and other ingredients. Generally, a manufacturer will check his formulation daily or weekly.

Insurance Needs

In addition to its agricultural customers, Computone provides an audio-response service to insurance companies. Using portable terminals developed by the company, insurance salesmen access the Computone data base to get data that will help estimate the insurance needs of a prospect.

The salesman, in the prospect's home, uses an acoustic coupler on the terminal to transmit the customer's requirements to the Computone data base. The answer is then received via a Wavetek audio-response system through the speaker in the portable terminal.

Before installing the Wavetek response system, Computone had an IBM 7770, Robeson said. The switch caused a savings of about $1,000/mo, he estimated.

The combination of agriculture and insurance doesn't seem strange to Robeson. Currently his company is working to provide a specialized service to real estate agents, he added.

Microdata's Dual Processors Designed for Data Networks

IRVINE, Calif. – Microdata's 1600/60 Communications Processor is designed to upgrade the firm's line of communications interfaces and software packages to assemble programmable communications systems.

Each of the 1600/60's two independent CPUs has its own I/O system and microprogram control memory.

One CPU – a general purpose computer – is dedicated to system control, control of peripheral devices and message processing. The second CPU, the COM-60, services up to 256 synchronous and/or asynchronous communications channels operating full- or half-duplex with throughput up to 40K char./sec, the firm's spokesman commented.

Typical applications for the new system might be a data concentrator, front-end preprocessor and store-and-forward message-switcher, a company spokesman said.

Price for a typical system with 64 asynchronous modem interfaces, 32K bytes of core memory and cabinets is $29,000 from 17481 Red Hill Ave., 92705.

**Now...get both in one...
a batch terminal
and a time sharing terminal.**

No longer is it necessary for the batch terminal user who has a need to access a local time sharing system to maintain a simple, low-speed terminal just for this purpose in the same office. Sycor now has eliminated this expense by adding low speed (100-300 baud) asynchronous communications capability to its Model 340.

A Sycor 340 user can access any major time sharing system, input the problem, receive the solution, and continue with the data entry operation. Captured data then can be batched to the central computer facility at 1200-4800 baud speeds using IBM-compatible BSC procedures.

In addition to this unique dual communications capability, Sycor provides users with T.A.L., a programming language developed specially for data entry applications. A wide choice of peripherals also is available – printers ranging in speed from 30 cps to 200 lpm, 7 or 9 track magnetic tape drives, and a 250 cpm card reader.

To get started getting both in one, call or write today for our colorful, informative brochure on the versatile Model 340.

The Sycor 340 Intelligent Communications Terminal.

SYCOR INC
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Ann Arbor,
Michigan 48104
(313) 971-0900

Computer Users' Forum Registration

Name______________________________

Title______________________________

Company______________________________

Address______________________________

City______________________________

State_______________Zip_______________

1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:_______________

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:_______________

2. Please check the appropriate city:

____ Boston	Feb. 13-15 (Tues, Wed, Thur)	Sheraton-Boston Hotel
____ Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
____ New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
797 Washington Street
Newton, Mass. 02160

For additional registrations, copy this form – or write for extra copies.

SPACE SAVER

FOR THE 1973 COMPUTER USERS' FORUM & EXPOSITION – The National Computer Conference that's coming to you.

If you're interested in more efficient EDP operations, then you should be reserving your space right now for The Computer Caravan/73 Users' Forums. This unique program will soon be in a city near you – with shirtsleeve workshops, panel discussions, user-oriented experts, and an exchange of information that will benefit you and your company.

Each day of the three-day show will feature a different topic. You'll be able to air your problems, and learn how others have solved theirs. You'll ask questions, give opinions – and get answers. And you'll come out of the Forum with some new ideas on making your EDP operation more efficient.

FORUM TOPICS

Day 1 – Data Entry
Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 – Communications
Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management
Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Forum Attendance is limited
In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

Bits & Pieces

Inking System Keeps Ink Pressure Constant

ANAHEIM, Calif. – A pressure-control inking system automatically keeps ink pressure constant as pens vary speed in Calcomp's new top-of-the-line Model 7000 programmable drafting system.

The sensing system enables the unit to produce an even line width to .0002 in., while the moving pens attain speeds up to 42 in./sec, a firm spokesman said.

List price is $81,000 and includes a controller, flatbed plotter, pressure-inking system, basic software and a one-year service warranty from 2411 W. LaPalma Ave., 92801.

Users Offered 'Naked' Reader

MELBOURNE, Fla. – An OEM approach to selling to end users is being tried by Documation Inc. with the "W" series of card readers.

For $2,420, users can buy the M300W, M600W and M1000W without the outside cabinets, for installation in the user's existing cabinetry.

Units read standard 12-row, 80-column punched cards at 300-, 600-, and 1,000-card/min, a spokesman stated.

Delivery is 60 days from P.O. Box 1240, 32901.

Spectrum Users Work With TTYs

FT. LAUDERDALE, Fla. – Users of the Spectrum Dynamics Model 550 programmer/verifier can accept coded input from teletype writer terminals.

The Model 510 can accommodate even, odd or no parity with all communication made through an external mating connector on the rear of the 550, the firm stated.

Priced at $1,500, the 510 option is available from 2300 E. Oakland Pk. Blvd., 33306.

UPS on Firm Ground

WILLOUGHBY, Ohio – Cyberex, Inc. has designed and delivered an Uninterruptible Power System to the Tennessee Valley Authority that Cyberex claims will assure reliable operation through earthquakes and other seismic disturbances.

Units supplied to the TVA are single phase, 15kVA continuous systems with diode coupling to the plant battery system.

The firm is at 4399 Industrial Park, 44094.

Raytheon to Service Wyle Users

EL SEGUNDO, Calif. – Wyle Computer Products has contracted with Raytheon Service Co. to provide nationwide service for Wyle's 8000 Series of display terminals – replacement units for IBM 2260s.

251 Has Multiprogramming

NCR Adds Step Between 200, 300 Series

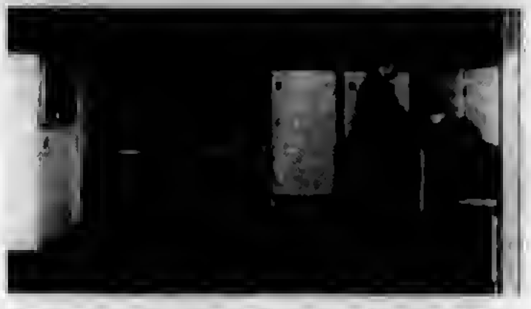
By Michael Weinstein
Of the CW Staff

DAYTON, Ohio – NCR has unveiled a multiprogramming computer system to give its users an intermediate step between the Century 200 and 300.

The Century 251 will compete for new users with the IBM 370/135, Burroughs 2700 and 3700, Univac 9400 and Honeywell 2050 and 2060, the firm's spokesman said.

The 251 is the smallest NCR computer to provide on-line and multiprogramming capabilities, with a typical system renting for around $10,000/mo, the spokesman stated.

The 251 is available in four memory sizes – a basic 96K bytes, 128K bytes, 192K bytes and 256K bytes – with the single cabinet memory having a cycle time of 1.2 µsec. for each 4-byte access, the spokesman said.



Century 251 comes in four memory sizes.

The memory provides two-way interleaving so that up to 14 peripherals can operate simultaneously in a 251-based system, he continued.

What's New?

New features, previously only available in the larger Century 300, include the B-4 executive operating system and the NCR high-density disk subsystem which provides 48M bytes of information per disk pack, the spokesman said.

The B-4 operating system speeds up user operation by enabling the 251 to use only the portion of main memory and peripherals required for each processing job, he noted.

User programs can be written in high-level Cobol, full Fortran or NCR's proprietary programming language, Neat/3.

The new system will be particularly suited for users moving to multiprogramming and who foresee the need for future growth, the spokesman observed.

For example, a typical user could be a bank with the 251 acting as the hub of an information network connected to on-line teller terminals.

In such an operation, the user could further use the multiprogramming capabilities and disk access to develop a centrally accessible information file, the spokesman suggested.

NCR offers integrated software packages – such as those for inventory and production control – that could be utilized by the user to develop his own tailor-made system, he concluded.

First customer deliveries are expected in the last quarter of 1973.

Univac Disk Storage Subsystems Write Data on 406 Cylinders

PHILADELPHIA – Users of Univac computers are offered a new intermediate capacity, direct-access disk subsystem with faster access time than previous models in addition to a new version of the larger-capacity 8440 disk subsystem.

Designed for Univac 9700, 1106, 418III and 494 computer systems, the 8424 Disk Storage Subsystem consists of a control unit and from one to four 8424 disk units.

Each unit contains two independent drives with each providing up to 58M bytes, 25M 18-bit words, 16M 30-bit words or 10M 36-bit words of storage, a Univac spokesman said.

The 8424 subsystem records data at the same bit density – 2.2K bit/in. – as the Univac 8414 disk units but writes data on up to 406 cylinders – twice the number of the 8414, the spokesman asserted.

Average positioning time has been improved to 30 µsec by using an electromagnetic servocontrolled actuator. Twenty read/write heads are mounted on the actuator which moves the 20 heads in unison over the area of the disk.

The control unit interprets and executes file instructions, checks the validity of the data being transferred and furnishes status information to the processor, he said.

Other features include file scan, record overflow and dual-access operation which permits two independent access paths to a single disk drive.

Enhancements added to the 8440 disk-storage subsystem – available to users of Univac 1100 Series computers, 9700 system and Series 70/6, 70/7, 70/60, 70/61 systems – include an increase in capacity to approximately 954M bytes or 160M 36-bit words per subsystem.

The 8424 subsystem consisting of control unit and one 8424 storage unit costs $2,365/mo (including maintenance) on a one-year rental. Purchase price for the basic subsystem is $78,225.

Univac's 8424 Disk Storage System can provide up to 467M bytes or 640M characters of on-line information.

Pricing of the 8440 subsystem consisting of a control unit and one 8440 storage unit starts at $3,493/mo (including maintenance) on a one-year rental. Purchase price for this basic subsystem is $115,909.

Disk Drive Series Can Store 100M Bits

HICKSVILLE, N.Y. – Per Data has a new series of moving-head disk drives with storage capacities from 25M to 100M bits per drive.

Up to four drives can be daisy-chained for a total storage of 400M bits, the firm spokesman stated.

Specifications include 10-µsec access time – track to track, 35-µsec – random access time, write protect, 2.5 MHz data rate at 2,400 rpm and integral power supply, he added.

Cost for single units is about $3,000 from 102 New South Road, 11801.

For the MD With Everything...

CAMBRIDGE, Mass. – For the doctor with everything, CSM Medical Devices, Inc. has a computerized patient history-taking system.

The Doctorsaid system uses a PDP-8 to ask multiple-choice questions of the patient through a microfilm-display terminal.

The Doctorsaid system lists for $20,000 for the minicomputer and software system, and $8,000 for each remote terminal.

Each mini will handle up to 16 remote consoles. The rental provides a remote console and printer at a rate of $4 for each history taken, with a minimum rental fee of $500/mo. Purchase and rental are from the firm at 377 Putnam Ave., 02139.

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Users Offered OCR, Key-to-Disk Entry in One System

DALLAS – Users can now handle all data-entry operations – Optical Character Recognition (OCR) or key-oriented – on a single system provided and supported by a single supplier, according to the developer, Recognition Equipment Inc.

The OCR portion of the system is any model of Recognition Equipment's Input 80 character page reader. These units can be configured to read single-, multiple or multifont input as well as handprinted data, the firm's spokesman said.

On-Line With Reader

The key-to-disk feature is configured on-line with the OCR page reader to a central processor with 32K words of memory, a 7- or 9-track tape drive, a 2-1/2M-byte disk subsystem, and from one to 22 keystations, each with its own video-display terminal, he stated.

Optional system features include up to three additional 2-1/2M-byte disk drives, three additional tape drives and a communications interface, the spokesman added.

Total Data-Entry System

The capabilities of a total data-entry system allow the user to process all unreadable documents from OCR applications, the spokesman asserted.

Processing of unreadable input is handled in one of three user-specified and interchangeable modes: video display of single character images; contextual display of the entire line wherein the unrecognizable character is to be found; and a combination of single character with total line display, the spokesman said.

The system also allows the user to designate one data-entry station as a correction unit with the operator making corrections to all unreadable input. If the operator cannot determine the correct input form, he can store that record for future consideration without stopping the flow of input to the system, the spokesman said.

With eight CRT keystations, the key-to-disk system costs from $73,160 and leases for $1,780/mo, plus maintenance. Additional key stations cost $2,630 each and lease for $65/mo, plus maintenance.

Three Models

The Input 80 OCR unit is available in three basic models – A, B and the recently introduced lower-priced Model C.

Cost of the Model C with a single-font recognition capability is $259,000 with a lease price of $6,275/mo, plus maintenance. The Model C with a multifont capability costs $296,000 and leases for $7,175/mo, plus maintenance.

First deliveries of the total system are scheduled for June 1973 from P.O. Box 22307, 75222.

Off-Line Printer Shown by MDS

HERKIMER, N.Y. – Mohawk Data Systems is closing the gap between its present 15 char./sec and 300 line/min off-line printers with a new offering rated at 100 char./sec.

The MDS 1310 is a fully buffered matrix printer operated off-line from one of several Mohawk data recorders, a firm spokesman stated.

The unit features a 64-character print set, 132 char./line capability at 10 char./in. and can accommodate 1- to 6-part forms from 4 in. to 14-7/8 in. in width.

Data is transferred from the data recorder to the 1310 by a cable connection with an out-of-forms detection feature of the system, he continued.

The off-line printer requires no user programming, and is compatible with magnetic tapes generated by most computer systems, the spokesman added.

The 1310 is equipped with all necessary operator controls for form adjustment, print density and system operation, he concluded.

Printer price is $7,400 with a lease charge of $185/mo. The data recorder is priced separately. Deliveries are set for April 1973 from Corporate Highway, 13350.

Process Control Mini Repackaged

IRVINE, Calif. – Microdata Corp. has repackaged its Micro 400 mini into a lower-cost machine designed mainly for process-control applications.

The 400/10 includes several standard features that were previously options, including powerfail/autorestart, real-time clock, hardware-priority interrupt, DMA channel and hardware index register.

The 8-bit core memory has a 1.6-μsec cycle time and is expandable to 65K bytes. Optional interfaces and peripherals are also available.

A typical system, including the CPU, 4K of memory, deskmount enclosure, power supply, system control panel and supporting software, costs $3,200.

Delivery is 60 days from 17481 Red Hill Ave., 92705.

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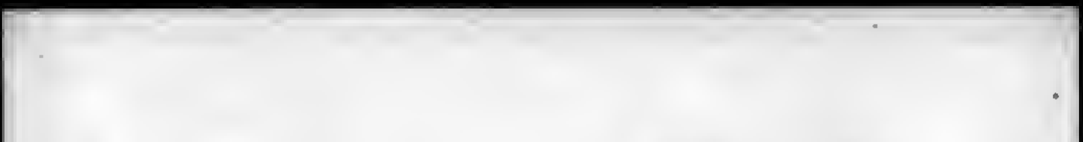

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The Computer Caravan/73

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Conference, Seminar Aimed at COM Users

NEW ORLEANS – The Fourth Semiannual Computer Micrographics Technology (Comtec) conference, Feb. 7-9, will focus on the impact of computer output microfilm (COM) on users.

In addition, newcomers to the COM field may attend a two-day educational seminar Feb. 5-6 at the same location as the conference, The Fairmont Roosevelt Hotel. This seminar is designed to give the novice a basic understanding of concepts of COM, for a cost of $10. Discussions will focus on installation and operation considerations, systems analyses considerations, and applications.

Conference Sessions

In the leadoff conference session, Bert Frawley of Information International, Inc. will speak on the "History of COM." Paul Wailes of Computer Systems Inc. will discuss "the image of microfilm," after which the conference will split into two groups, those interested in scientific and graphics applications and those interested in commercial uses of COM.

Among the topics to be discussed in the scientific area are: graphic art forms, design and editing, by Gene Reese, Aerojet Nuclear Corp.; and device-independent graphics software, by Glenn Stith of the Amoco Research Center.

In the commercial group, Ken Kopald of U.S. Microfilm Sales Corp. will discuss "duplication in the COM environment," and Rodd Exelbert of *Information and Records Management Magazine* will look at "COM and its relationship to the end user."

Speakers will discuss what impact COM has had in such areas as banking, manufacturing, petrochemicals, aerospace and service bureaus. Other topics include implementing COM systems, film-quality control, system-design considerations and how to maximize cost savings associated with COM.

In a "Vendor Carnival," member vendors may explain their products. Rick Cooper, Comtec program chairman, may be reached through Pertec Corp., 235 W. MacArthur, Oakland, Calif. 94611.

Societies/ User Groups

CAI Group Sets Winter Meeting

SAN FRANCISCO – The Association for the Development of Instructional Systems (Adis) will hold its winter meeting here Jan. 30-Feb. 1.

Adis is an independent organization of about 400 members concerned with computer-assisted instruction (CAI) in all its ramifications.

Registration is $15 for members, $20 for nonmembers. For more information contact: Adis, P.O. Box 1403, Los Gatos, Calif. 95030.

Societies Have Integrated Plan To Upgrade DP

HUDSON, Mass. – An integrated plan to upgrade data processing practice over the next five years has been announced by the Society of Certified Data Processors.

The plan calls for separate upgrading of DP practitioners, standards, services, suppliers, schools and DP societies.

Each of these various areas will be reviewed at a separate annual public conference. All the comments and complaints from the previous year will be considered.

Any action or recommendation proposed by conference attendees will be published immediately after the conference. The appropriate societies can then implement the recommendations or take time to study the proposals further.

The integrated plan evolved at an August meeting in San Diego between the representatives of a number of DP societies including the Society of Certified Data Processors, the Society of Professional Data Processors and the Society of Data Educators, and some individuals.

At that time a "Declaration of DP Dependence" was drawn up and adopted. It calls for all professionals in DP to work together to improve the quality of data processing in the U.S.

The American Institute of Data Professionals, currently operating as a subcommittee of the Society of Data Educators (SDE), has been suggested as the implementor of the plan.

The institute would be comprised of DP professionals, rather than computer equipment manufacturers and other industry groupings. Dr. Enoch Haga, executive director of the SDE, is acting president of the institute.

Comments on the plan are invited. Copies of the whole plan or of any section (schools, services, societies, supplies, practitioners, etc.) are available for $2 for the complete plan and $1 for any specified section from Ken Lord, Society of Certified Data Processors, 38 Main St., 01749.

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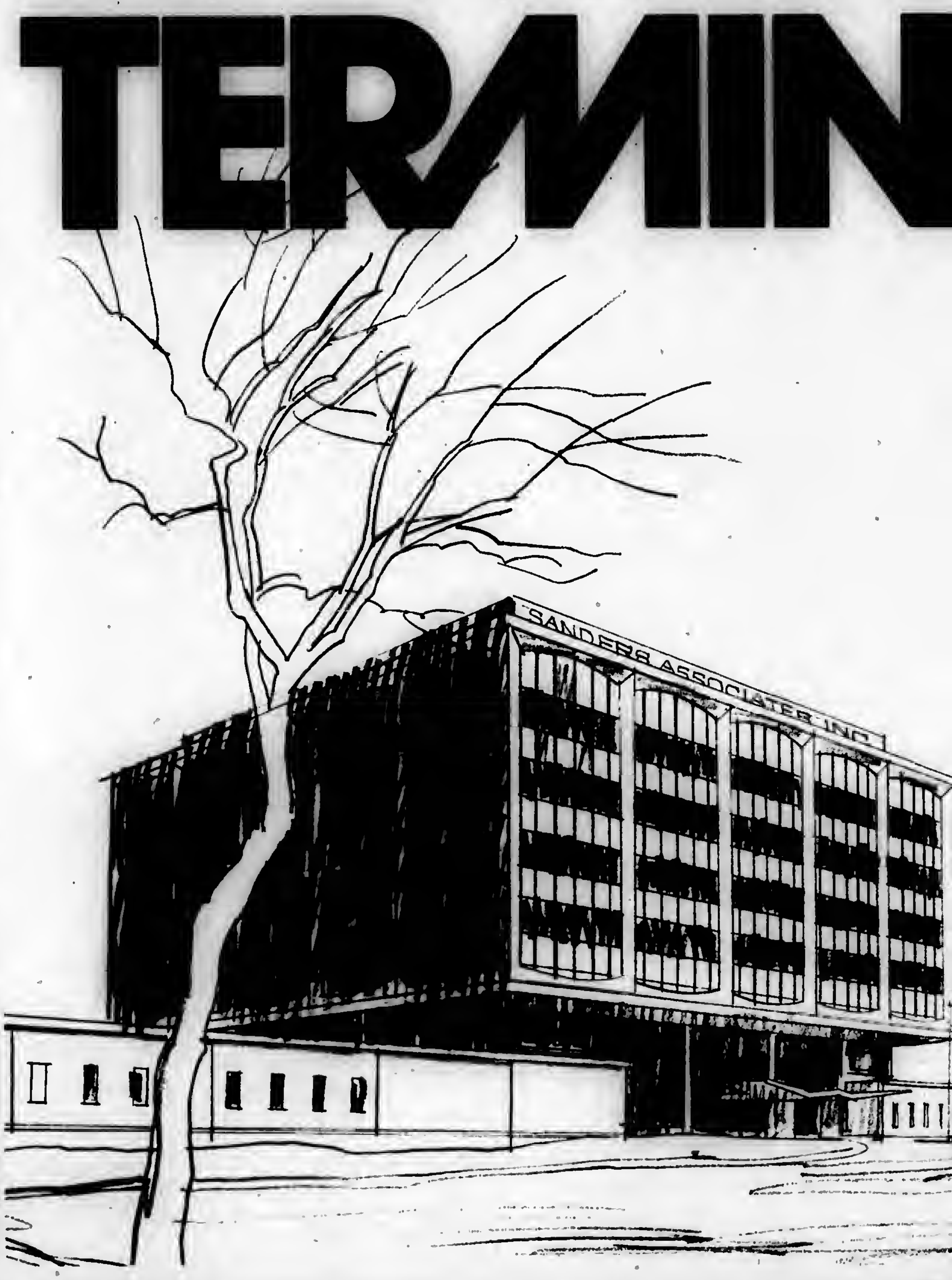

No Place to Call HIIS Own

WELLESLEY, Mass. – The Honeywell Institutes of Information Science (HIIS), like so many programming schools before them, are being phased out of operation as current classes come to a close.

By mid-year, all of the Institutes – in New York, Los Angeles, Boston, Detroit and Chicago – will be shut.

Enrollments have picked up in the past year, but Honeywell now plans to market classroom materials to colleges, junior colleges and high schools, instead of teaching courses commercially itself, according to Robert Mose, director of marketing education and services.

The institutes have had three separate curricula: one for college graduates; the other two for high school graduates seeking a start in programming or operator training.

Mose and other Honeywell spokesmen stressed that the institutes are separate from the educational support provided as part of Honeywell computer sales support. Neither the classes available to users nor their bundled status is affected by the HIIS closings, the firm said.

PCC Uses Free-Style Tabloid Format To Jolt Student, Teacher DP Thinking

By Don Leavitt
Of the CW Staff

Education

MENLO PARK, Calif. – In contrast to many slick-paper pedagogical journals, *People's Computer Company* is a free-wheeling, tabloid-size newspaper that could be mistaken for junk mail at first glance.

But the contrast is perhaps more apparent than real. Sprinkled liberally with stars, arrows, fanciful calligraphy and cartoon figures, PCC (vol. 1, no. 2), still has a substance that belies its "underground" appearance.

The paper was started last fall by Dymax, a teaching and software firm, to help readers learn how to use computers, and how to buy minicomputers. It also lists books, films and music and "tools of the future," all with some relationship to computers.

But more than anything else, "editor" Bob Alhrecht explained, PCC is a newspaper about having fun with computers. They needn't be, and shouldn't be, objects of fear, especially to the eight- to 18-year-old students, and their teachers, to whom PCC is primarily addressed.

PCC and Dymax generally advocate the use of Basic for the youngsters and several game-type programs are in the current issue. The authors indicate what mini the programs run on and, in some cases, what changes would be required to put it on a different machine.

As long ago as 1965, Dymax organized a group to protest oversophisticated programming for schoolagers, and the Society to Help Abolish Fortran Teaching (Shaft) is still active. A major portion of the current issue is, however, devoted to a serious if somewhat rambling "polemic" explaining what author Marc LeBrun sees as flaws in Basic, both as an educational tool per se and as an example of "computer science."

Detailed Pricing

Continuing a presentation started in the first issue, on the Huntington Project funded by the National Science Foundation and conducted at State University of New York at Stony Brook, PCC provides a detailed price list of the simulation programs and related manuals, now being distributed by DEC.

The editors also provide a page of terminal terminology, distinguishing between hardwired, single-user "dial-up," and multiple-user "multiplexed" terminals. But they also illustrate a storage cabinet from Sears which they use for paper-tape storage, and they describe (tongue-in-cheek) how a movie projector reel can be used as a paper tape winder.

Mixed in with such patent nonsense, PCC notes that in the next few issues space will be given to discussions of how to write bid specifications for minicomputer systems for classroom use. The editors intend to describe some of their own experiences in this area, but they are seeking contributions from others.

They are interested in both hardware and software specifications, and expect to identify equipment or programs by name if that is deemed appropriate.

Dymax will publish PCC five times a year, and it is available on a $4 subscription, from P.O. Box 310, 94025.

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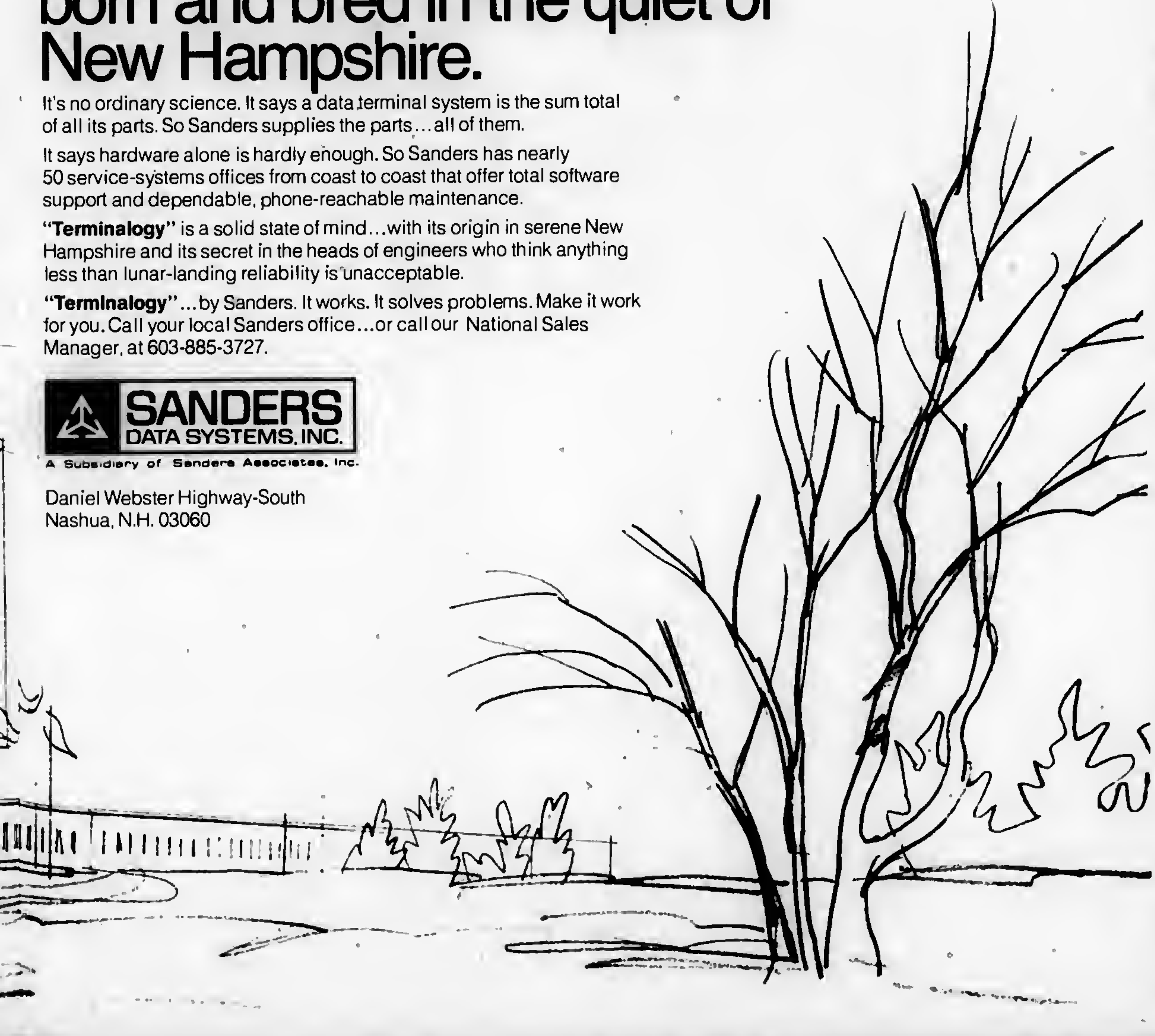

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Honeywell's Multics System hardware is based on Series 6000 technology. The executive software for the system originates from software that evolved through seven years of development and testing under a joint project with the Massachusetts Institute of Technology. It has been fully operational for three years. This software for interactive processing is distinct from the widely acclaimed GCOS operating system which best serves a mixed processing environment of batch, remote-batch and time-sharing operations.

If you'd like to see Multics demonstrated, arrangements can be made through your nearest Honeywell office. Or for more information write:
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No later than February 9, 1973.

Mini Plots Furniture Part Cutting

RALEIGH, N.C. – A minicomputer is making calculations that will help furniture manufacturers get more usable wood from the hardwood planks they cut into furniture parts.

The mini is part of a lumber-scanning system developed jointly by North Carolina State University's School of Forestry and Technology Unlimited Inc., a Raleigh-based engineering firm. The work was done under a grant from the International Research Institute of the National Furniture Manufacturer's Association.

"When hardwood comes into a furniture company's rough cutting mill, a cutter looks at each board and in a few seconds tries to determine the best way to cut it to get the greatest number of defect-free pieces," A.G. Mullins of NCSU said. "Because he has so little time, he probably does not get the maximum yield from that piece."

Spotting Defects

With the computerized systems, an inspector circles defects in the wood with fluorescent paint and clamps it into a scanning bench. A scanning head with 128 photocells travels the length of the board and transmits an image of the board and the location of the defects to a Data General 800 mini.

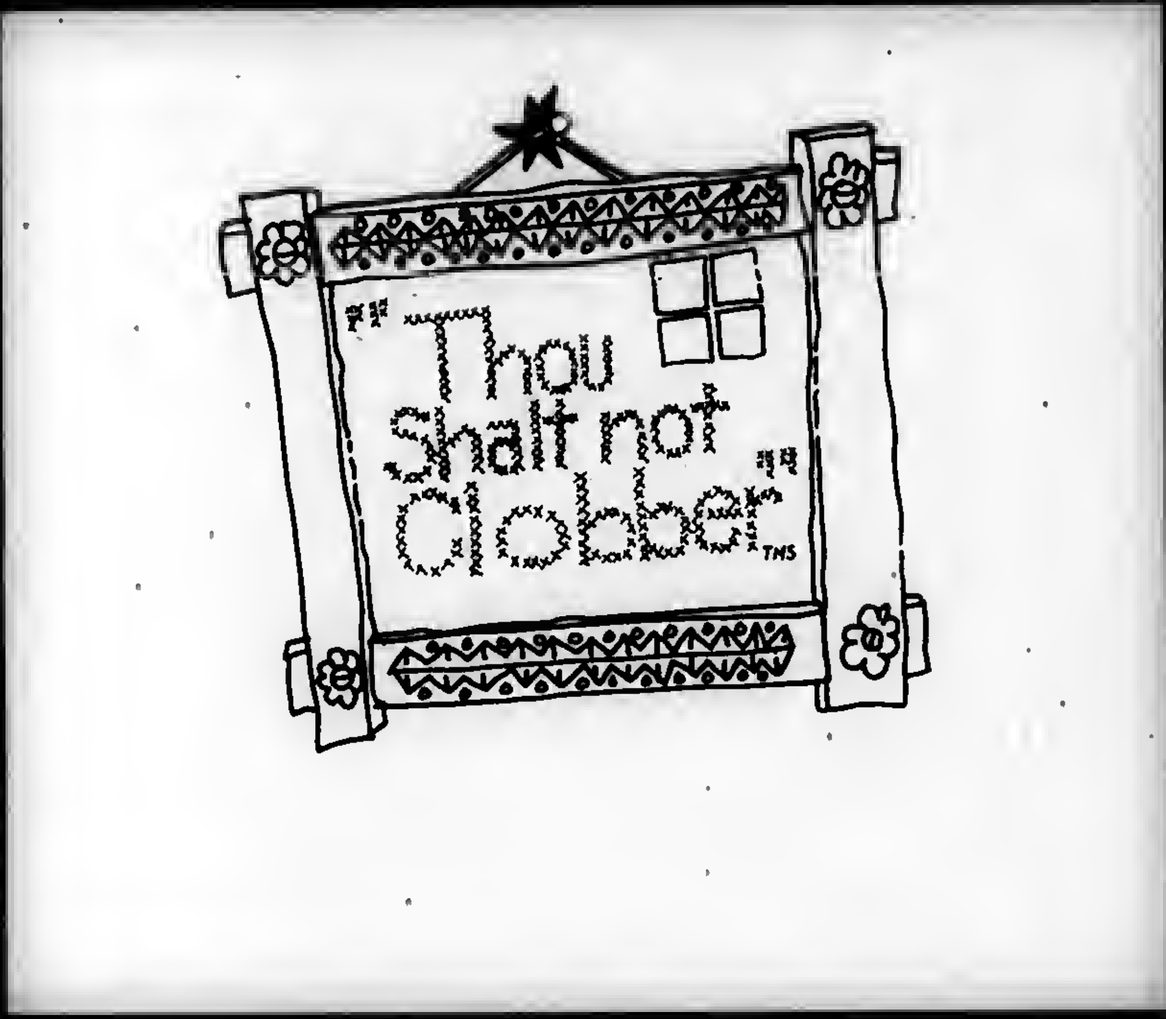
When the scanning head reaches the end of the board, the mini computes the cuts that will get the most usable wood from the plank. The computer considers only sizes previously entered by the mill foreman. "The company using the system makes up a cutting list and enters it into the system," according to David Cox, Technology's president.

Cox said that after the computations are done, the scanning head returns to its original position, spraying the cutting lines as it travels. The marked plank is then cut manually.

Significant Saving

Mullins said the system can give furniture companies a significant cost saving. "For instance, if a company is cutting 20,000 board feet of wood per day, it probably is spending about $6,000 daily for wood," he said.

"Half the wood is usually unusable, which means the company actually is paying $600 per 1,000 board feet for the final parts. By increasing the yield from 50% to 55% with the computerized system, a company can save $600 per day, or $3,000 per week. This adds up to a saving of $156,000 per year," Mullins said.



The computer room creed is now a software package.

Tape Management Software (TMS) is a new package that protects all of your valuable data automatically.

It was developed to make sure that tapes couldn't accidentally be clobbered. But it does much more.

With TMS your operator doesn't get any "E" messages that ask him to reply "U" to write on an unexpired data set. Instead, a rejected volume will unload, the operator will be told the volume isn't a scratch, and he'll be asked to mount a scratch. It's not a suggestion; it's a commandment.

That's not all, either. TMS virtually eliminates the paperwork your operators do now. So tapes get mounted faster, there's much less chance for error, and you get increased throughput as the benefit.

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University Centers Becoming Outdated, NSF Seminar Told

RICHMOND, Va. – A university computer center may be as outdated in a few years' time as a university electric power plant is today, according to some of the participants in a recent National Science Foundation (NSF)-sponsored seminar here.

Dr. Walter F. Freiberger, professor of applied mathematics at Brown University, was one of some 40 computer users, scientists and administrators who attended the two-day meeting organized by the Interuniversity Communications Council, Inc. (Educom).

Freiberger said present university computer systems could become outmoded as a result of an expanded research program conducted by NSF. These studies, he said, could lead to the development of a National Science Computer Network linking universities, colleges and other institutions in support of research and education.

To get advice on the technical and organizational problems which would have to be faced before such a network could become a reality, the NSF asked the Educom group to prepare a report to be published this spring.

"This report," Freiberger said, "will study the many considerations involved in the establishment of a linking computer network."

"It is likely," the Brown professor concluded, "that the new NSF program will lend new impetus to such experiments, which may lead to more versatile computer services as well as economics in computing costs for the participating institutions."

Aussie Builders Solve Problems Quicker

SYDNEY, Australia – Builders at the University of New South Wales School of Building can use a time-sharing terminal connected to a central computer for quick solutions to everyday problems like tender evaluation, cost control, resources scheduling, job-supervision, feasibility, accounting and planning.

The head of the School of Building, Professor Emery Barlint, said the minimum cost to the builder of using the terminal probably would be around $3,125 a year, half for rental and half for computer time.

On these figures, he pointed out a builder could solve quite a few problems. "You would have to set this cost against the savings – not only in manpower but in time," Barlint said.

CI Notes

IBM Readying New Memory?

NEWTON, Mass. – Several industry sources indicate IBM is about to announce a major new peripheral, either an extra-high-speed disk or a more exotic storage device. The device apparently will be compatible with the 360 line, as well as the newer 370 CPUs.

One user reported his IBM salesman told him to "sit tight" rather than make any decision on what current peripherals to get to upgrade his 360.

When the user protested he would need the additional storage within six months, the salesman persisted in refusing to give any advice on current equipment, the user said. "Just wait," he said, "we'll be able to take care of you."

Guesses are that something faster than 3330 is in the offing, but that it is unlikely to be a drum, which tends to be too big for the amount of storage it provides. At least one user feels the new unit will be a mass storage device utilizing laser or optical memory technology.

CIA Comes Up With IBM Plan

WASHINGTON, D.C. – The Computer Industry Association has agreed on a plan for early relief in the government's case against IBM.

The plan agreed on here recently has been submitted to the Justice Department which is studying the proposals. Details will be publicly released later.

Supershorts

Memorex has started volume shipments of the Memorex 3670 Disk Storage Subsystem. First installation of a 3670 has been made at Reserve Life Insurance Co. in Dallas.

– – –

Computer Usage Co. has signed an agreement with the Fireman's Fund American Insurance Companies under which the two companies will continue to cooperate closely in applying their joint experience "to the accelerated development of information systems technology" at Fireman's Fund.

– – –

Logicon, Inc. has announced formation of a new subsidiary, Logicon Computer Products, in which all of Logicon's commercial computer product development, manufacturing and marketing operations will be concentrated.

– – –

Computer Sciences Corp. has signed an agreement in principle for the sale of Commonwealth Services, Inc., its wholly owned consulting and engineering subsidiary, to Gilbert Associates, Inc. of Reading, Pa.

– – –

Signetics Memory Systems, Inc. has decided to lease its integrated-circuit manufacturing facility to Signetics Corp. and to focus primarily on its systems business.

Industry Wonders

How Will Other IBM Suits Be Affected?

By E. Drake Lundell Jr.
Of the CW Staff

MINNEAPOLIS – After the initial surprise, industry reaction to the Control Data-IBM out-of-court settlement of their antitrust action was mixed last week with most sources agreeing that Control Data received a "good deal," but wondering what the move would mean to the government and Telex suits still pending aginst IBM.

"Receiving over $60 million in cash and the Service Bureau Cnrp. is not a bad deal," according to Dan McGurk, president of the Computer Industry Association.

Pressure on Government?

But, he noted, the dropping of the Control Data action will "place more of a burden on the government in their suit," since the government was relying heavily on Control Data to turn over documents it had gathered.

The separation of the service-bureau business, he added, was only one of the remedies sought by Control Data in its original suit, which had also sought to have IBM divest its peripherals operations and its software business.

Because of this, he said, Control Data must have thought the government would have a good chance of getting these actions through its suit so CDC could reach a settlement on favorable terms.

McGurk also said IBM "couldn't have been terribly confident of the outcome" if the suit had gone to trial or it wouldn't have given away so much in the settlement.

"It looks like they want to settle all of the suits against them out of court," he stated, noting the IBM lawyers have said in court several times that they had hoped to negotiate a settlement with the Justice Department.

He also noted the settlement would allow Judge David Edelstein, who is hearing the government's case against IBM, to set an early trial data in that action.

Before, Edelstein had to worry, McGurk said, about the conflicting dates with the Control Data action which was being heard by Judge Philip Neville in Minneapolis and which was scheduled to start Nov. 5.

"Now they are free to concentrate on the big one – the government's case. And at the same time, the government's major ally in the antitrust actions has dropped from the field," he added.

Tom O'Rourke, president of Tymshare and of the time-sharing section of the Association of Data Processing Service Organizations (Adapso), said he was surprised at the settlement, indicating Control Data accepted a lot less than it had originally sought.

But he stated the CDC action had seemed to get the government more interested in the case and had served to alert the computer community of the issues involved.

He did not think the tie up of SBC and CDC would change the business environment that much, noting the two organizations served different markets when separate.

"But it will be interesting to see how they put the two together," he noted.

A competitor to the newly emerged leader in the service-bureau business (see box) was a little more cautious.

"This obviously means IBM will be free to train all of its legal guns on the Justice Department and Telex suits," he claimed.

"This will definitely put more of a burden on them," he added. "It makes the government's case more managcable."

A lawyer active in the computer field agreed: The IBM legal team has been trying these cases all over the country, which has definitely made it hard for them to be as effective as possible in all of them.

Linkup Has $95-Million Value

MINNEAPOLIS – The linkup of the data-services business of Control Data with the Service Bureau Corp. has clearly resulted in the largest service-bureau company, a new entity that will probably be 50% larger than its nearest competitor, GE's Information Services Department.

The Service Bureau Corp. had revenues of $63 million last year, and the revenues for the Control Data Corp. entry into this market segment were set at $32 million during 1971 by International Data Corp., a market research firm. This means the combined operation has a value of around $95 million to $100 million yearly.

GE is estimated to have had revenue of approximately $60 million to $70 million – virtually tied with Service Bureau Corp. for leadership in this market segment before the IBM-CDC settlement.

However, in the growing time-sharing segment of the service-bureau business the new firm may be in a tight race with GE.

Industry sources indicated that revenues from time-sharing have passed the $50 million mark at GE, while Service Bureau had less than half that and CDC even less than that in this segment.

SBC, Cybernet Services Expected To Fit Together Especially Well

MINNEAPOLIS – Control Data emphasized last week that the tie-up with Service Bureau Corp. would complement its present service-bureau business – and many industry figures agreed.

"Not only will this be a substantial increase in our total data-services revenues, but the various kinds of data services offered by SBC nicely complement those offered by our Cybernet services," William Norris, CDC president, told stockholders.

"This means the individual segments of our total data-services business, such as time-sharing, local and remote batch and transaction-oriented software will each be at more balanced as well as at more profitable levels," he added.

Industry figures agreed, pointing out that SBC had a strong foothold in the local batch and time-sharing markets, particularly in the business DP arena. On the other hand, Cybernet services were more oriented toward remote-batch processing and found their greatest strength in scientific and engineering applications.

"SBC and our Cybernet services also fit together particularly well in market areas served. There is a relatively small amount of overlap in the type of applications processing offered by SBC and Control Data," Norris noted.

"On the other hand," he added, "our basic customer profile is quite similar as to size and nature of corporations served. This means in combination that we will offer more complete service or 'product line' to all customers."

Economies of scale and resource sharing "will benefit both Cybernet and SBC operations," Norris added, noting that "a prime example of this would be sharing of communications costs which are a major expense item in any network."

Norris also said the take-over of SBC would double the number of salesmen in the field selling data services.

Other industry sources said they felt that if Control Data can successfully integrate the two service operations into one unit it could achieve the economies of scale mentioned by Norris.

But, one warned, "it will not be an easy job to tie the two together. They have a different orientation and serve different markets, not to mention different hardware."

If the move is successful, however, he said the combination could result in a firm much stronger than the two individual parts.

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Poland Plans Nationwide System, and Singer Helps

Special to Computerworld

WARSAW – Consumers in Poland may be getting major breaks in coming years through an on-line nationwide data system designed to streamline that country's bureaucracy and economy.

Some of its planning may reflect experience gained by Sam Harvey, a veteran systems designer, in creating a similar data network for the Singer Corp.

Harvey, Singer's systems vice-president and director of retail information systems, was invited to come to Warsaw by the National Office of Informatics to help plan the system's conceptual design. When completed, the "Infostrada" network will link all Polish computer installations into a single multiprocessing network.

The National Office of Informatics is Poland's top EDP organization. Staffed by 120 young technicians, it has ultimate authority over all computer operations, planning and procurement. Its director, Dr. Andrzej S. Targowski, is the country's leading writer on the uses and potential of automation.

130 Computers Installed

Targowski's subject is still new in Poland, which has less than 130 computers installed. Most are used for scientific and engineering computing and, until recently, all but one, an IBM 1400, were of Polish or Russian manufacture.

However, several U.S.-made third-generation systems have since been installed. A growing number of orders for Western equipment, including at least one for an IBM 370 configuration, have been placed, are being negotiated or are at the proposal stage.

Among them is one for Singer MDTS retail terminals and a Singer System 10 computer for a Warsaw department store, the first such system in Eastern Europe.

It will take five to 10 years to complete the Infostrada network, but each of its segments will go on the air separately as soon as possible – starting with the government batch-processing centers now serving local industry and administrations in 17 major Polish cities.

The basic system from the very start will deliver more computing power than would the sum of its parts, Targowski stressed. It will thereafter be expanded in modular phases to support progressively greater complexity.

Targowski has symbolically capped his continuing drive for government support and cooperation by placing a computer terminal on the desk of Polish Prime Minister Anton Gierek.

Change Desirable

Change is also the goal of the young Polish planners. They do not share the fears of automation frequently held in the West.

Instead, Targowski sees in the ready availability of detailed and accurate data a force for liberalization and efficiency in a society where the government is the only employer.

Extensive, easily accessible data files will, he believes, help make the five-year plans which govern the nation's economy more realistic and, hence, have a positive effect on the well-being of Polish citizens.

Orders & Installations

Plymouth Shops, Inc. has ordered a CS-1400 Credit Authorization System from Datatrol, Inc.

Ingersoll Milling Machine Co., Rockford, Ill., has installed a Xynetics, Inc. 1100 plotting system linked to an IBM 1130. The system draws tool layouts and checks prints and finished drawings of gear trains.

The City of Jackson, Mich., has ordered a Univác 9214 B system to handle water and sewer billing, property tax calculations, cash-flow analysis, police accounting and income-tax preparation.

The National Aeronautics and Space Administration has ordered a Xerox Sigma 5 system, valued at $955,000, for use in its Atmosphere Explorer satellite program.

Optimum Systems, Inc., Palo Alto, Calif., has leased two IBM 360/65s, each with 2M bytes of core, from Datronic Rental Corp.

Westinghouse Electric Corp.'s Marine Division has installed a Burroughs B6700 to handle engineering and business applications in the production of propulsion equipment.

Goldman's, Inc. has ordered 69 point-of-sale terminals and an NCR 725 in-store computer from NCR.

PHI Computer Services, Inc. is installing a second 1M-byte LCS Ampex core module to its existing 1.5M-byte IBM 360/65.

Daycon Management Consultants has installed a Burroughs B1700 to handle trade-union bookkeeping and fund accounting, as well as bond-market analysis and other applications.

Itel Corp. has replaced the IBM memory on an IBM 360/67 at Bell Laboratories, Naperville, Ill., with 1M-byte of monolithic main memory.

Auto-Data Services, Inc. has installed an AU 150 Data Entry System from C3, Inc., for use in school surveys and payroll maintenance.

The Maine Medical Center has installed an NCR Century 200 for accounts payable, labor-distribution accounting and payroll as well as patient billing.

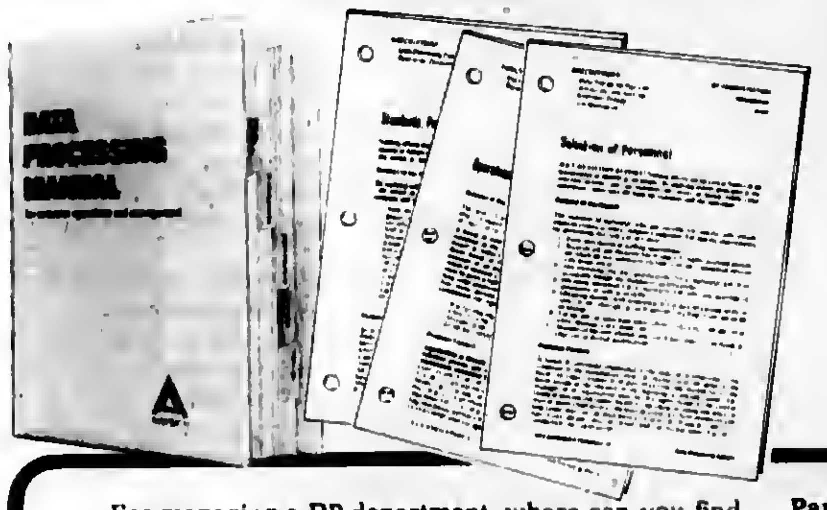
Trans World Airlines, Inc. has ordered a Voice-Activated Encoding System from Threshold Technology, Inc. The system will be used for baggage handling.

The Data Processing Department of the City and County of San Francisco has ordered a dual Comten 45 computer communications message-switching system. The system will be used with the Computer-Assisted Bay Area Law-Enforcement System (Cable) and will also handle inquiries to local and national law-enforcement systems.

Jockey International, Inc. has installed a Burroughs B3500 system to handle sales reports, shipment statistical analysis, inventory control, credit analysis and general accounting.

Northwestern Steel & Wire Co. has installed a Univac Series 70/2 computer for applications including an open order master file, accounts payable, inventory control and management information.

The City of Louisville and Jefferson County, Ky., have jointly ordered an Ampex Videofile information system to handle the consolidation of city/county police files.



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Independent Maintenance Industry Seen Surpassing $2.4 Billion Mark by 1980

NEW YORK – Revenues in the independent computer/communications maintenance business should increase from $160 million in 1972 to over $2.4 billion by 1980, according to Frost and Sullivan, an industry research firm here.

The report, which noted independent maintenance is presently "an industry in formation," said that if all computer communications maintenance is considered, the total comes to $14.4 billion in 1972 and will grow to $26 billion by 1980.

Of course, most of the market is dominated by IBM and AT&T, the firm noted, so the share available to the independent firms will account for less than 10% of the total by 1980.

Waiting to Jump In

All together there are approximately 40 firms now in the independent maintenance business in both the computer and communications fields, the firm said, adding that around 30 more firms are "poised on the brink of possible involvement."

Presently, independent maintenance on computer systems is valued at $28 million, Frost and Sullivan said, but it predicted this would grow to $500 million by 1980.

Terminal maintenance by independents accounts for $28 million of the present independent business, but this will reach $190 million at the end of the decade.

Communications equipment now accounts for $100 million of the independents' business and is expected to grow to $1.6 billion during the same time span, Frost and Sullivan said.

Local Business Makes Good

But the study noted "the major business potential for the independents is derived at the local level," indicating localized operations are perhaps the best for firms entering the business.

The firm also noted that since the maintenance business is complex this could cause severe problems for firms just getting into the market if they do not prepare well for the move.

But the drawbacks to the firm entering the field are more than offset by the expected large growth, the firm indicated.

The Computer Caravan welcomes

AT&T

as an exhibitor in the 1973 Spring Caravan.

AT&T will feature the high-speed "dataphone 4800", first in a new family of data sets from the Bell System. The 4800 data set was designed for economical transmission at 4800 b.p.s. over basic unconditioned private line facilities.

Also on display will be the Bell System's 85 A-1 Selective Calling System for polling applications. The system is a quiet, efficient way of information movement, generating management advice and systems reports in real time.

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Contracts

Computer Sciences Corp. has been awarded a $2.1-million Air Force contract to provide systems engineering and hardware and software to integrate the World-Wide Military Command and Control System (Wimmix) with the existing system at Strategic Air Command Headquarters, Offutt Air Force Base, Neb.

Mohawk Data Sciences has received a $4.3-million contract to supply the Atomic Energy Commission with terminals for the Secure Automatic Communications Network (Sacnet). Mohawk will provide site-maintenance support for the system until 1980.

TRW Inc. and its Swedish partner, Asea, have been awarded a $3-million contract by the Swedish State Power Board for a Totally Integrated Data System for electrical power production and power system control. The system will involve computers at 20 locations, linking 150 power stations and transformer substations.

Systematics, Inc. has agreed to provide facilities-management services to the National Bank of Ypsilanti (Mich.) and the Owosso Savings Bank.

Health Central, Inc. has contracted with the Standard Register Co. to install a hospital information system.

Infodata Systems Inc. has been awarded a contract by the U.S. Office of Education for computer production control and systems-engineering services.

R-T-W Computer Network Corp. has signed a three-year renewal contract with Catalina and Cole of California for DP services.

Eastern Airlines has leased IBM 370 equipment valued at $17.5 million through Management Data Corp.

Data Architects has received a $650,000 one-year contract for facilities operation and management of the Criminal History Record Conversion System for the Commonwealth of Massachusetts.

University Computing Co. has signed a six-year facilities-management contract with Security Bank & Trust Co., Michigan.

Chilton Corp. has been selected by the Credit Bureau of Baton Rouge, Inc. for a five-year contract to automate the bureau, train bureau personnel and provide necessary DP services.

The U.S. Environmental Protection Agency has awarded a $67,000 contract To Systems Control, Inc., Palo Alto, Calif., for a nine-month study to model the Spokane River in western Idaho and Washington.

If your company has an IBM 370 computer system on order or is considering ordering one in the near future, explore the leasing terms available from DPF.

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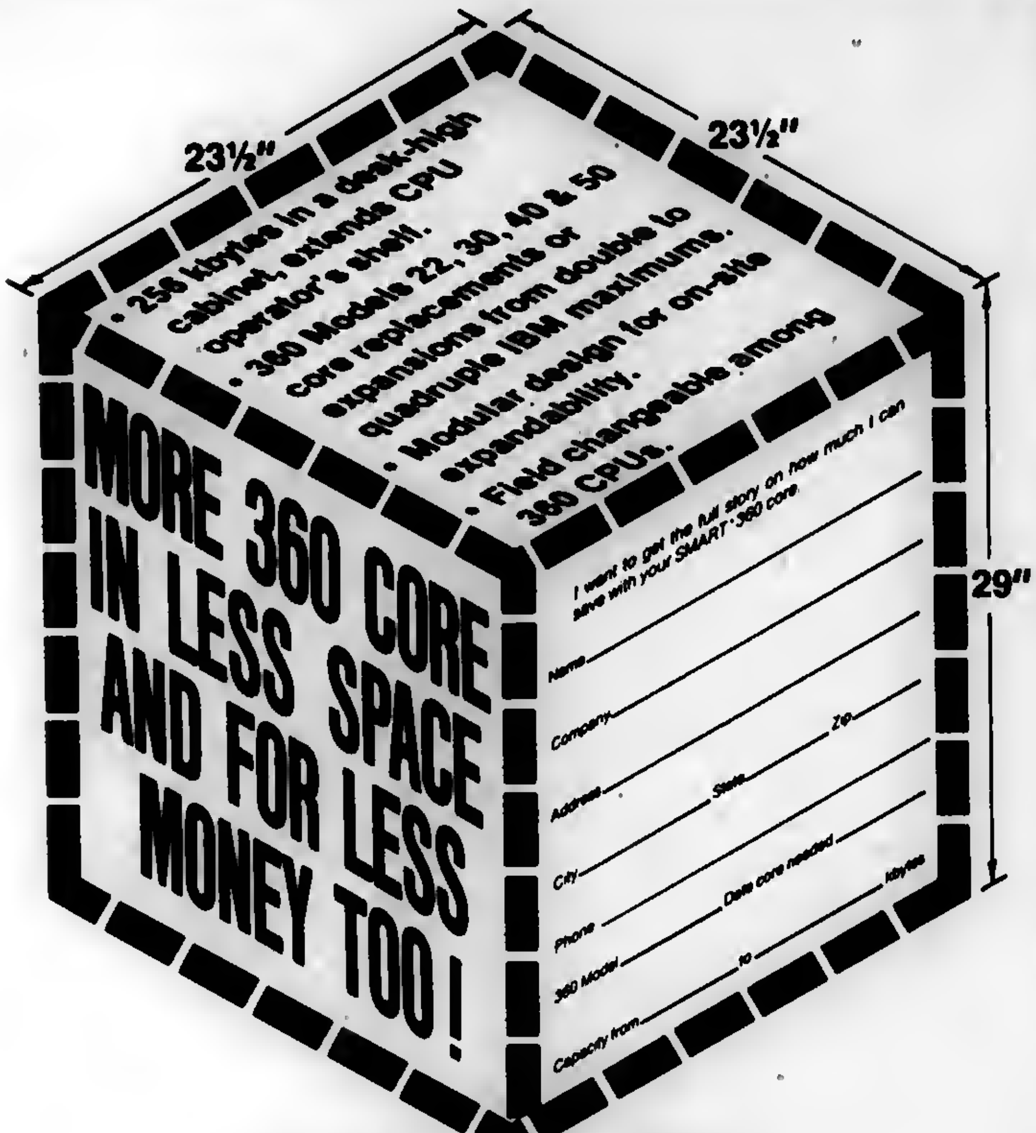
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Disk System Field-Expandable

SANTA ANA, Calif. – Remex has introduced a series of 300M-bit memory systems for the small-systems designer.

The field-expandable 3320 disk systems, are available in four configurations: the 3320-1 in 87.5M bits, the 3320-2 in 175M bits, the 3320-3 in 267.5M bits and the 3320-4 in 350M bits.

The 3320 systems feature 192 track/in. and an average head-positioning time of 30 msec. Average rotational latency of the unit is 8.3 msec, with data throughput rates of up to 6.45 Mbit/sec.

Delivery is scheduled for June from 1733 Alton St., 92705.

New OEM Products

Microdata Offers Two Disk Drives

IRVINE, Calif. – Microdata Corp. has announced a series of disk drives for the minicomputer market. A newly developed positioning system combines with simplicity of design and modular construction to produce a mean time between failure of 5,000 hours, the firm claimed.

Two models are available. The Microdata Disk 8100/5 uses a single removable disk with 25M bits and costs $2,800 in OEM quantities. The Microdata Disk 8200/5 uses one removable and one fixed disk with a combined capacity of 50M bits and costs $3,100.

Track-to-track data-access time for both models is 10 msec maximum. Random move is 35 msec. Dimensions are 19 in. wide (standard Retma) by 25-1/2 in. deep by 8-3/4 in. high.

Computer on Chip Is Faster

SANTA CLARA, Calif. – Intel Corp. has introduced a monolithic 8-bit parallel central processing unit with a 12.5-μsec instruction cycle, a faster version of the Intel 8008 CPU introduced early this year.

Designed especially to handle large volumes of data, the Intel 8008-1 CPU can directly address as many as 16K 8-bit bytes stored in Intel RAMs, ROMs and shift registers. Combined with the memory devices, it forms MCS-8 microcomputer systems.

The CPU is a P-channel silicon-gate MOS chip containing an 8-bit parallel adder, six 8-bit data registers, an 8-bit accumulator, two 8-bit temporary registers, four flag bits and eight 14-bit address registers. It operates under a set of 45 instructions, has interrupt capability, operates asynchronously or synchronously and can perform as many as seven nesting subroutines.

Price is $90 in quantities of 100, and delivery is immediate from distributor stock, according to the firm at 3065 Bowers Ave., 95051.

Other OEM Products

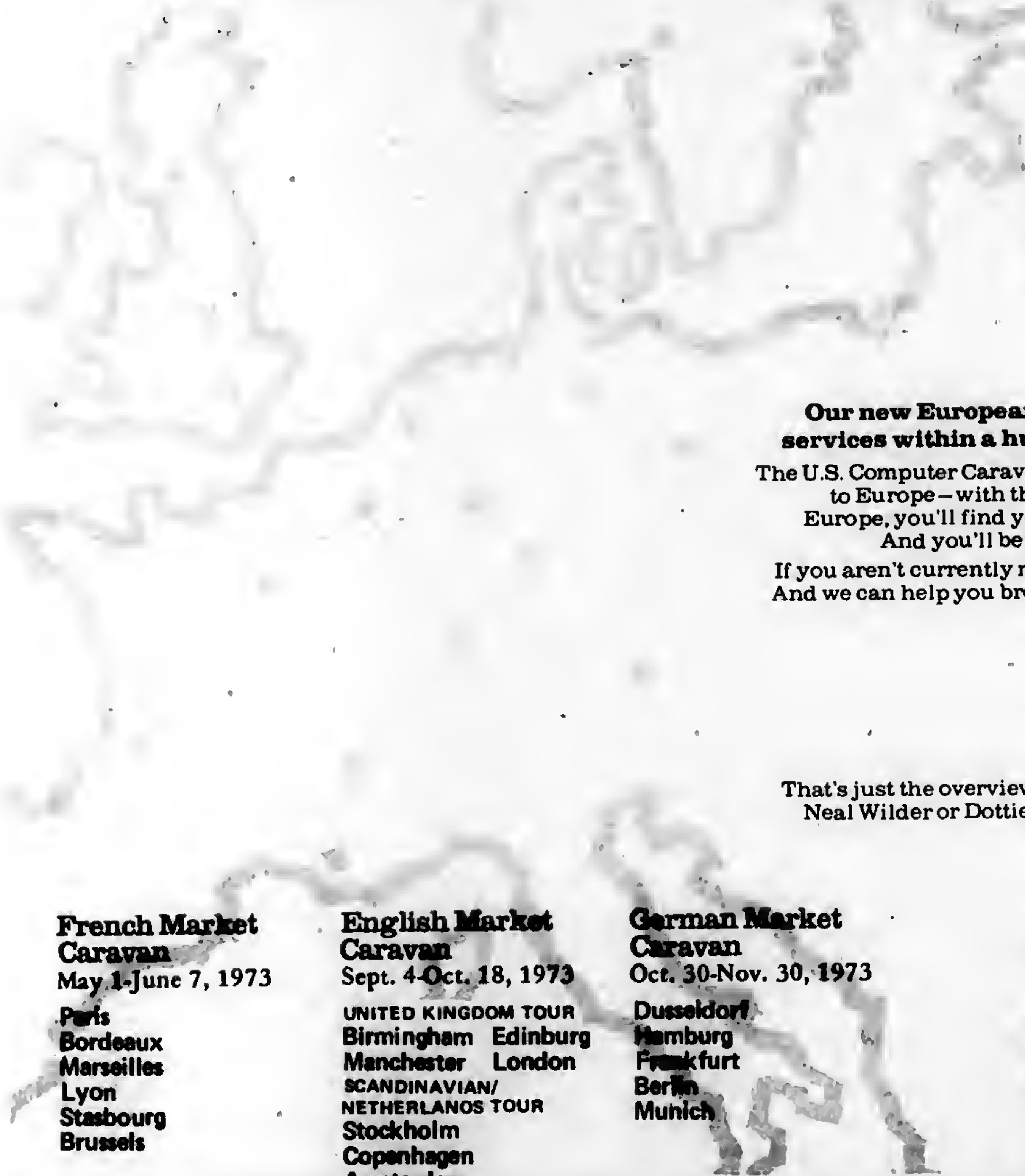
Creative Magnetics, Inc. has a new line of 1/4-in. format read/write magnetic tape heads, available in eight different models ranging from one to four channels.

– – –

A new solid-state serial MOS delay line with a memory in excess of 20K bits in a 4-1/2-in. by 6-in. package is available from Melcor Electronics Corp., Farmingdale, New York, with a price of less than 1/2 cent per bit. The Model 2261 has data input and output compatible with DTL/TTL. The unit requires only a single clock and NRZ data.

– – –

The T-ACM, a Time Division Multiplexer channel card designed by Timeplex, Inc., Norwood, N.J., performs the functions of a standard asynchronous data channel card and also contains a complete 103 or 202 typé modem. Prices start at $300.



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Boothe Loses $12.3 Million

SAN FRANCISCO – A $13 million depreciation charge on 360 equipment taken in the third quarter was just one factor contributing to the $12.3-million nine-month loss at Boothe Computer Corp.

The loss for the quarter totaled $13.6 million or $6.38 per share compared with the year-ago period when earnings were $680,000 or 32 cents a share. Revenue for the quarter declined, to $12.7 million from almost $15 million in the comparable 1971 period.

Boothe also wrote down in the quarter $950,000 goodwill for Systems Analysis & Research Corp. and $197,000 in research and development of Courier Terminal Systems. Boothe Airside Systems and Courier Terminal Systems sustained operating losses for the period.

Courier shipments for the first nine months of 1972 were 1,500 units compared with 939 units in all of 1971. But "since practically all deliveries are on one-year lease contracts, and cannot be recorded as sales, the company's monthly rental base of units delivered to date is not sufficient to allow profitable operations," Boothe continued.

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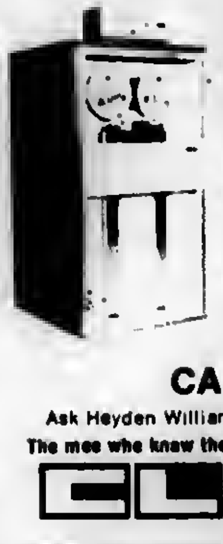

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It Was an IBM Kind of Year–Records For Earnings, Revenues and Quarters

ARMONK, N.Y. – At the same time it was settling its antitrust lawsuit with Control Data Corp., IBM last week announced another record year for earnings and revenues.

The fourth-quarter income was up 11.2%, the firm said, on a rise in revenues of just 6%. Both marks set a record for any quarter in the firm's history, topping off another record-setting year.

The earnings were $340.4 million or $2.93 per share, up from $306 million or $2.66 per share the year before in the fourth quarter. Revenues in the quarter reached $2.52 billion, an increase from the $2.38 billion registered a year before.

Net income for the entire year was a record $1.28 billion or $11.03 per share, up 18.6% from the year-earlier figure of $1.08 billion. Revenue for the year as a whole reached $9.53 billion, up 15.2% from the $8.27 billion registered in 1971, the firm said.

The year-end figures showed that earnings from its foreign subsidiary rose to $686.6 million, a 20.7% increase over the 1971 figures of $568.9 million, IBM said.

The foreign operations accounted for 53.7% of the firm's total profits and its revenues of $4.15 billion accounted for 43.6% of the firm's total.

President Frank T. Cary said revenues from rentals and services rose over 9% during the year as compared with the figures for 1971.

This figure was due to "a continuation of a relatively high rate of discontinuances of leased equipment," Cary said.

In addition, Cary said the first full year of the delivery of the 370 system helped the firm set records for the amount of equipment delivered.

"As might be expected early in the life of a major product . . . a relatively high proportion of these installations was made on an outright purchase basis, as opposed to rental, contributing significantly to the increase of 15.2% in gross income," he added.

The firm also said it had made appropriate provision for the settlement of the Control Data suit in the fourth-quarter figures.

Burroughs Revenues Top $1 Billion Mark

DETROIT – The ninth-consecutive record-breaking year in earnings and revenues at Burroughs Corp. saw the firm top the $1-billion revenue mark for the first time in history, according to Ray W. MacDonald, president.

And with the current "strong backlog" position and a "rising trend" in incoming orders, MacDonald predicted "continued good growth" in earnings and revenues in 1973.

For the year, the firm earned $87.5 million or $4.71 per share, an increase of 18% over earnings of $74.2 million or $4.03 per share registered in the 1971 year.

Revenues from worldwide operations reached $1.05 billion, a 12% jump over the $943.3 million in revenues registered last year.

MacDonald said revenue growth came both in the firm's overseas and domestic markets and the computer-equipment revenue was the fastest-growing product category, increasing 21% over the revenues from this category in 1971.

The growth in equipment rentals was up 19%, he said.

The fourth-quarter revenue, however, was up only 12% over the same year-ago quarter, due principally to a fourth-quarter charge against earnings of $4.8 million after taxes in connection with the settlement of the TWA suit, the firm said.

In the quarter, revenues were $330 million and earnings were $38.7 million. On a per-share basis, that amounted to $2.08, compared with 1971's $1.82 per share.

Macdonald said worldwide incoming orders in 1972 ran 33% higher than in 1971, with computer equipment a particularly strong category, rising 39% over the orders registered in 1971.

Worldwide backlog at the end of the year was also at record levels, according to MacDonald.

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EXCH		PRICE			
		1972 RANGE (1)	CLOSE JAN 18 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	2	- 1/8	-5.8
A	APPLIED DATA RES.	3- 7	3 5/8	- 1/8	-3.3
O	APPLIED LOGIC	1- 4	2 3/4	0	0.0
N	AUTOMATIC DATA PROC	72- 99	92	-2	-2.1
O	BRANDON APPLIED SYST	1- 2	3/4	- 1/8	-14.2
O	COMPUTER DIMENSIONS	4- 14	4	0	0.0
O	COMPUTER DYNAMICS	1- 4	1	0	0.0
O	COMPUTER NETWORK	3- 7	3 1/4	- 3/4	-18.7
N	COMPUTER SCIENCES	4- 10	5 1/8	+ 1/8	+2.5
O	COMPUTER TASK GROUP	1- 2	1 1/4	0	0.0
O	COMPUTER TECHNOLOGY	3- 8	2 1/2	- 1/8	-4.7
O	COMPUTER USAGE	7- 14	8 1/2	+ 1/8	+1.4
N	COMPUTING & SOFTWARE	12- 28	13	- 3/4	-5.4
O	COMRESS	1- 3	1	- 1/8	-11.1
O	COMSHARE	5- 10	8 3/8	+1	+13.5
O	DATATAB	4- 9	3 7/8	- 3/8	-8.8
O	EDP RESOURCES	2- 8	2 1/2	- 1/4	-9.0
A	ELECT COMP PROG	1- 5	1 5/8	- 5/8	-27.7
N	ELECTRONIC DATA SYS.	43- 65	53 1/8	-1 3/8	-2.5
O	INFORMATICS	5- 11	5 3/8	- 1/4	-4.4
O	I.D.A. DATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	11 3/4	+ 1/4	+2.1
O	LOGICON	4- 9	4 1/8	- 3/8	-8.3
A	MANAGEMENT DATA	4- 10	4 3/8	- 3/8	-7.8
O	NATIONAL CSS INC	8- 36	35 3/4	+5 1/4	+17.2
O	NATIONAL INFO SRVCS	1- 5	2 1/8	+ 5/8	+41.6
P	ON LINE SYSTEMS INC	8- 28	26	+2 5/8	+11.2
N	PLANNING RESEARCH	5- 17	5 1/8	- 7/8	-14.5
O	PROGRAMMING METHODS	20- 25	24	0	0.0
O	PROGRAMMING & SYS	1- 2	1	0	0.0
O	RAPIDATA INC	5- 27	24	+1 3/4	+7.8
O	SCIENTIFIC COMPUTERS	2- 4	1 1/2	- 1/8	-7.6
O	SIMPLICITY COMPUTER	1- 5	3 1/8	- 3/8	-10.7
O	TBS COMPUTER CENTERS	3- 6	3 7/8	- 1/8	-3.1
O	TCC INC	1- 3	5/8	0	0.0
O	TYMSHARE INC	7- 11	10 5/8	+ 7/8	+8.9
O	UNITED DATA CENTER	5- 8	6	+ 1/4	+4.3
N	UNIVERSITY COMPUTING	8- 26	8 3/4	- 1/4	-2.7
A	URS SYSTEMS	6- 10	7	- 3/8	-5.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	28- 49	30 3/8	-1 1/2	-4.7
O	ADVANCED MEMORY SYS	12- 23	22 5/8	+2 5/8	+13.1
N	AMPEX CORP	5- 15	6	- 1/2	-7.6
O	ANDERSON JACOBSON	4- 8	4 7/8	+ 3/8	+8.3
O	BEEHIVE MEDICAL ELEC	1- 8	7 1/4	+ 3/4	+11.5
A	BOLT,BERANEK & NEW	5- 21	10 7/8	+ 1/8	+1.1
N	BUNKER-RAMO	9- 14	9 3/8	- 5/8	-6.2
A	CALCOMP	9- 25	11 1/4	- 3/8	-3.2
O	CAMBRIDGE MEMORIES	9- 15	13	-1 3/8	-9.5
O	CENTRONICS DATA COMP	6- 28	23	+2	+9.5
O	CODEX CORP	6- 25	17 3/4	+ 1/2	+2.8
O	COGNITRONICS	2- 5	2 1/4	- 1/4	-10.0
O	COMPUTER COMMUN.	1- 7	3 1/4	- 3/8	-10.3
A	COMPUTER EQUIPMENT	2- 4	2 5/8	- 1/8	-4.5
O	COMPUTER MACHINERY	7- 13	12 1/4	- 3/8	-2.9
O	COMPUTER TRANSCEIVER	2- 9	4 7/8	- 1/2	-9.3
A	COMPUTEST	3- 9	4	- 1/8	-3.0
N	CONRAC CORP	24- 39	28 3/8	-1 7/8	-6.1
A	DATA PRODUCTS CORP	3- 7	4	- 1/4	-5.8
O	DATA RECOGNITION	1- 5	1 1/4	0	0.0
O	DATA TECHNOLOGY	2- 5	3 5/8	+ 3/4	+26.0
O	DI/AN CONTROLS	0- 8	4	- 1/8	-3.0
N	ELECTRONIC M & M	3- 8	4 3/4	- 3/8	-7.3
O	FABRI-TEK	2- 5	4 3/4	+1 1/8	+31.0
O	GENERAL COMPUTER SYS	6- 16	7	-1	-12.5
N	GENERAL ELECTRIC	59- 74	71 7/8	-1 5/8	-2.2
N	HAZELTINE CORP	7- 13	7 5/8	- 3/8	-4.6
O	INFOREX INC	20- 36	19 5/8	-2 1/8	-9.7
O	INFORMATION DISPLAYS	1- 5	1 1/8	- 1/4	-18.1
O	INFORMATION INTL INC	8- 25	13 1/2	0	0.0
A	LUNDY ELECTRONICS	8- 14	8 1/2	- 3/8	-4.2
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	22 1/2	+2 1/4	+11.1
N	MOHAWK DATA SCI	9- 27	10 5/8	- 5/8	-5.5
O	ODEC COMPUTER SYST.	6- 12	4 3/4	- 1/4	-5.0
O	OPTICAL SCANNING	5- 16	5 1/4	- 1/2	-8.6
O	PERTEC CORP	7- 17	7 1/4	0	0.0
O	PHOTON	5- 15	5 5/8	- 1/8	-2.1
A	POTTER INSTRUMENT	7- 21	7 5/8	- 1/8	-1.6
O	PRECISION INST.	3- 13	3 1/4	0	0.0
O	RECOGNITION EQUIP	5- 15	7 1/4	- 3/4	-9.3
N	SANDERS ASSOCIATES	13- 21	15 3/8	-1 1/4	-7.5
O	SCAN DATA	4- 13	4	- 5/8	-13.5
O	STORAGE TECHNOLOGY	17- 39	29 1/4	-2 1/4	-7.1
O	SYCOR INC	7- 11	10 3/4	+1	+10.2
O	TALLY CORP.	8- 15	12 3/4	- 1/8	-0.9
N	TEKTRONIX INC	34- 64	51	-1 1/8	-2.1
N	TELEX	5- 15	5 7/8	+ 1/4	+4.4
O	WILTEK INC	10- 26	15 1/2	-1 3/4	-10.1
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	7 1/2	-1 1/4	-14.2
A	BARRY WRIGHT	9- 14	11 1/2	+ 1/8	+1.0
A	DATA DOCUMENTS	17- 26	21	- 5/8	-2.8
O	DUPLEX PRODUCTS INC	8- 16	9 1/2	0	0.0
N	ENNIS BUS. FORMS	6- 10	7 7/8	- 3/8	-4.5
O	GRAHAM MAGNETICS	15- 27	19	- 1/2	-2.5
O	GRAPHIC CONTROLS	11- 15	11 1/2	- 1/8	-1.0
N	3M COMPANY	76- 88	86 5/8	+ 3/4	+0.8
O	MOORE CORP LTD	42- 57	57	+ 1/4	+0.4
N	NASHUA CORP	48- 62	55 1/8	- 3/8	-0.6
O	REYNOLDS & REYNOLD	37- 77	47 1/2	-1 1/4	-2.5
O	STANDARD REGISTER	14- 20	19	- 1/2	-2.5
O	TAB PRODUCTS CO	14- 23	21 3/4	- 3/4	-3.3
N	UARCO	21- 28	21 1/2	-1	-4.4
A	WABASH MAGNETICS	6- 11	6 3/4	- 1/8	-1.8
N	WALLACE BUS FORMS	21- 26	25 1/2	+ 3/8	+1.4
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-230	228	+ 1/4	+0.1
N	COLLINS RADIO	14- 27	22	- 3/8	-1.6
N	CONTROL DATA CORP	43- 78	56 3/8	+ 3/8	+0.6
O	DATA GENERAL CORP	56-130	127 1/2	+2	+1.5
O	DIGITAL COMP CONTROL	5- 25	5 1/2	- 1/4	-4.3
N	DIGITAL EQUIPMENT	72-101	98 3/8	+1 1/8	+1.1
N	ELECTRONIC ASSOC.	6- 13	9	+ 1/2	+5.8
A	ELECTRONIC ENGINEER.	6- 14	8 5/8	- 3/8	-4.1
N	FOXBORO	23- 41	30 1/4	0	0.0
O	GENERAL AUTOMATION	13- 49	46 1/2	-1 1/4	-2.6
O	GRI COMPUTER CORP	2- 5	2 3/8	- 1/8	-5.0
N	HEWLETT-PACKARD CO	46- 94	90	-1	-1.0
N	HONEYWELL INC	118-170	133 1/2	+ 1/4	+0.1
N	IBM	333-429	428 7/8	+17 3/8	+4.2
O	INTERDATA INC	8- 16	11 3/8	-1 1/8	-9.0
N	MEMOREX	15- 38	17 3/8	- 1/2	-2.7
O	MICRODATA CORP	5- 10	9 7/8	+ 7/8	+9.7
N	NCR	29- 38	31 3/8	- 1/8	-0.3
N	RAYTHEON CO	27- 47	32	-1 3/8	-4.1
N	SPERRY RAND	30- 50	48 1/4	- 7/8	-1.7
A	SYSTEMS ENG. LABS	7- 16	7 5/8	0	0.0
N	VARIAN ASSOCIATES	14- 22	18 1/4	- 3/4	-3.9
N	WANG LABS.	23- 61	29 3/4	-1	-3.2
N	XEROX CORP	121-172	151 5/8	+ 3/8	+0.2
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3	- 1/8	-4.0
O	BRESNAHAN COMP.	1- 3	1 1/2	+ 1/8	+9.0
O	COMDISCO INC	3- 18	16 5/8	+ 3/4	+4.7
O	COMMERCE GROUP CORP	5- 11	5 1/2	- 1/2	-8.3
O	COMPUTER EXCHANGE	1- 3	5/8	- 1/8	-16.6
A	COMPUTER INVSTRS GRP	7- 14	7 1/4	-1	-12.1
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	8 1/8	+2 1/8	+35.4
M	DATRONIC RENTAL	2- 4	2 3/8	+ 3/8	+18.7
A	DCL INC	2- 10	2 5/8	+ 1/4	+10.5
A	DEARBORN-STORM	16- 26	23 1/4	-1 5/8	-6.5
A	DPA, INC.	5- 8	7 1/4	- 3/8	-4.9
A	GRANITE MGT	5- 11	5 3/4	- 1/8	-2.1
A	GREYHOUND COMPUTER	6- 11	5 7/8	+ 1/4	+4.4
A	ITEL	7- 12	11 1/8	+ 5/8	+5.9
N	LEASCO CORP	15- 24	15 3/8	-2 1/8	-12.1
O	LEASPAC CORP	6- 15	7 1/4	+ 1/4	+3.5
O	LECTRO MGT INC	1- 4	2	- 1/8	-5.8
A	ROCKWOOD COMPUTER	2- 7	2 1/2	- 1/8	-4.7
O	SYSTEMS CAPITAL	3- 20	12 1/8	- 7/8	-6.7
N	U.S. LEASING	19- 35	34 1/8	- 1/2	-1.4

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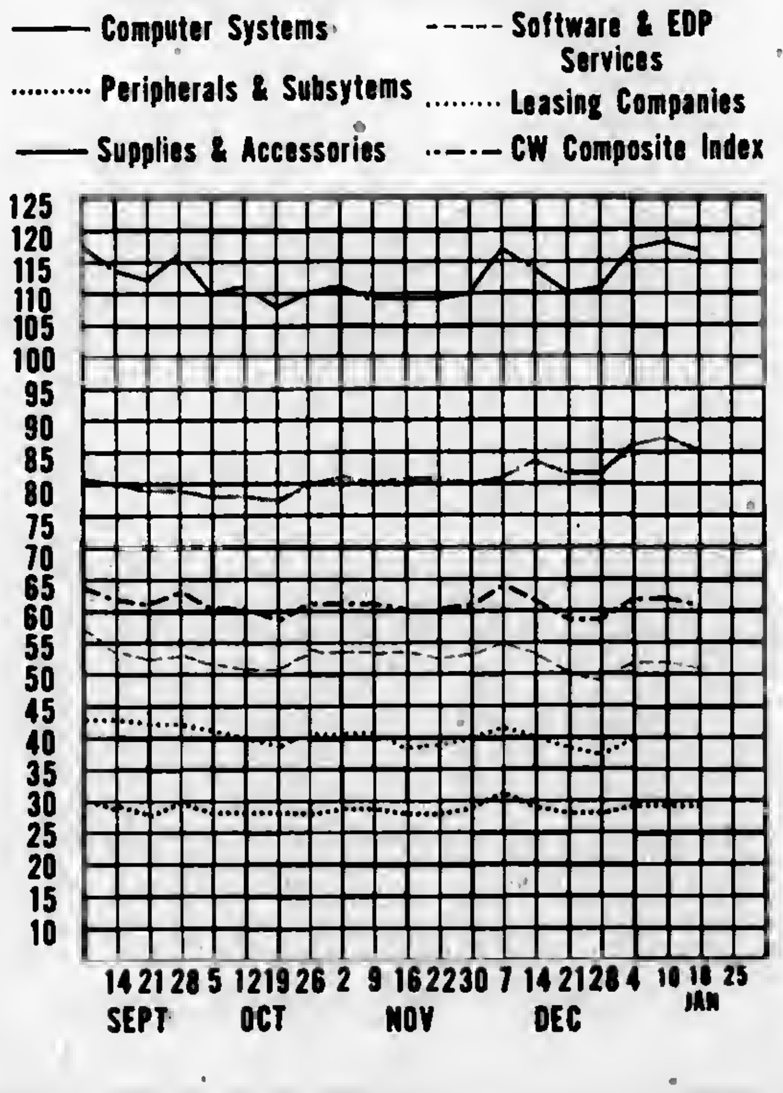
Computer Stocks Trading Index



Earnings Reports

COMPUTER DESIGN
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	.....	$.11
Revenue	$4,523,090	3,761,906
Earnings	(189,879)	136,121
9 Mo Shr	.....	.52
Revenue	11,289,717	10,614,552
Tax Cred	.....	79,000
Earnings	(431,874)	659,362

COMPUTER EQUIPMENT
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.03	$.03
Revenue	4,543,000	4,501,000
Spec Cred	a32,000	b86,000
Earnings	60,000	88,000
9 Mo Shr	.18	.16
Revenue	15,185,000	14,606,000
Spec Cred	a149,000	b264,000
Earnings	445,000	408,000

a-In the quarter consists of tax credit and in the nine months includes gain on purchase of debentures and provision for loss on investments. b-Tax credit and gain on purchase of debentures.

ADVANCED MEMORY SYSTEMS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.38	.....
Revenue	12,834,000	$2,217,000
Spec Cred	a287,000	.....
Earnings	607,000	(1,753,000)
3 Mo Shr	.28	.....
Revenue	5,043,000	1,175,000
Spec Cred	a210,000	.....
Earnings	451,000	(328,000)

DATA-CONTROL SYSTEMS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.05	.....
Revenue	5,191,502	$3,923,111
Spec Item	a14,500	b217,950
Earnings	44,386	(1,369,210)

a-Tax credit. b-Charge related to abandoned production facility.

DATA DOCUMENTS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$2.02	$.163
Revenue	28,952,350	26,641,527
Tax Cred	45,000	32,384
Earnings	949,867	764,704

ADDRESSOGRAPH MULTIGRAPH
Three Months Ended Oct. 31

	1972	1971
Shr Ernd	$.29	$.17
Revenue	106,036,000	94,477,000
Spec Cred	a830,000	.....
Earnings	2,357,000	1,383,000

a-From sale of surplus plant in Teterboro, N.J.

HEWLETT-PACKARD
Year Ended Oct. 31

	a1972	1971
Shr Ernd	$1.42	$.92
Revenue	472,389,000	375,088,000
Spec Cred	b1,201,000	c1,101,000
Earnings	37,552,000	23,881,000

a-Preliminary. b-Gain from change in method of valuing inventories. c-Gain from revaluation of various currencies.

ADVANCED COMPUTER TECHNIQUES
Six Months Ended Sept. 30

	1972	1971
Shr Ernd	$.07	.....
Revenue	1,705,151	$1,202,139
Earnings	51,407	(48,134)

COMPUTER TERMINAL
Three Months Ended Oct. 31

	a1972	b1971
Shr Ernd	$.04	.....
Revenue	2,832,000	$720,000
Tax Cred	50,000	.....
Earnings	156,000	(607,000)

a-Preliminary. b-Restated.

SCAN DATA
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.06	.....
Revenue	2,023,508	$1,049,202
Tax Cred	42,582	.....
Earnings	102,254	(210,033)

a-Restated.

COMRESS
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	.....	$.02
Revenue	$1,484,800	1,085,800
bEarnings	(3,300)	107,100
9 Mo Shr	.04	.03
Revenue	4,776,800	3,569,000
Spec Cred	.....	c173,900
Earnings	246,400	190,800

a-Restated. b-Includes equity in loss of affiliates. c-Gain on sale of securities.

DELTA DATA SYSTEMS
Three Months Ended Oct. 1

	1972	1971
Shr Ernd	$.02	.....
Revenue	625,100	$250,500
Tax Cred	5,500	.....
Earnings	24,800	(131,300)
6 Mo Rev	1,137,700	805,800
Tax Cred	200	.....
Earnings	1,000	(120,700)

MICROFORM DATA SYSTEMS
Three Months Ended Oct. 27

	1972	1971
Revenue	$380,463	$150,561
Loss	358,706	647,259

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January 31, 1973

Vol. VII, No. 5

NEWSPAPER

NEWS IN BRIEF

Index Erasure Saps Our Case: Justice

WASHINGTON, D.C.—Late last week the Justice Department acknowledged that the destruction of the computerized index of documents as part of the IBM/CDC settlement could seriously hamper the government's antitrust efforts against IBM.

In a brief filed last Wednesday in a federal appeals court in New York, the Justice Department contended that IBM had violated agreed rules in secretly negotiating to destroy the data and further, it said, this destruction was a deliberate attempt to hamper the government in its case.

The Justice brief stated that IBM did not inform the government of the destruction agreement with CDC in connection with the settlement.

CDC is expected to respond to the government's charges with the defense that the destruction of data was entirely proper and "involved laying down the weapons of war between Control Data and IBM."

IBM, in accordance with a pretrial order prohibiting comment on either side, was "unable to comment."

Application Filed For Arpa-Like Net

WASHINGTON, D.C. – The first application for a resource-sharing or "value-added" computer/communications network has been filed with the Federal Communications Commission by Packet Communications Inc. (PCI).

On the Inside This Week

IBM Sues Telex On Trade Secrets –*Page 21*

NBS Task Group to Study Benchmark Techniques –*Page 13*

Communications 15
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Systems/Peripherals 17

★ *The 360 Lives On* ★

His 30 Grows Old...Like Fine Wine

Don't scrap that 360 yet; there are ways to keep it going. See supplement following page 16.

By Ronald A. Frank
Of the CW Staff

TACOMA, Wash. – While most 360 upgrades involve the addition of on-line peripherals, some users find they can enhance the efficiency of their system with off-line equipment.

"We had a purchased Model 30," said Ed Decker, director of data processing and finance for Day's Inc., a clothing manufacturer headquartered in Tacoma, Wash. "We wanted to add a remote processing capability but we did not want to upgrade to a larger system," he said.

With a goal of minimizing the financial commitment, Decker wanted to get an "on-line, off-line system" that would be as close to being on-line as possible.

Day's acquired a terminal system configured with Datapoint 2200s which allows the firm's DP center to receive data on 9-track mag tape and transfer the reels onto the mainframe system tape drives for entry into the 360/30.

The terminals were part of a three-pronged upgrade of the 30 that had some important benefits for Day's.

"My biggest problem was that our purchased Model 30 was worth $150,000 while our books showed an amortized value of $220,000," Decker said. His goal, with minimum capital outlay was to increase the value of the system and thereby bring the Model 30 closer to its book price.

"If we had upgraded to a larger mainframe we would have had a replacement cost and also lost the amortization value," Decker explained.

"Our utilization of the 2200s has

(Continued on Page 4)

The 3742 dual data station contains two keyboards, two diskette drives and a shared visual display unit.

IBM Delivers 3740 Entry Unit to U.S.

By Michael Weinstein
Of the CW Staff

WHITE PLAINS, N.Y. – IBM's introduction of the 3740 Data Entry System into the U.S. is directed at users wishing to move data entry operations off-line and away from the central computing facility. The system was first introduced in Europe last September [CW, Oct. 4].

The basis of the system is the use of a floppy-disk storage media called "diskettes" by IBM.

Sealed in a plastic jacket, each diskette is 8 inches in diameter resembling a 45 rpm phonograph record and weighs a little over one ounce, a spokesman said.

The storage capacity of each diskette is 242K characters, or 1,898 128-character data records – roughly the equivalent of 3,000 80-column punched cards, the spokesman maintained.

Industry reaction on page 21

Mail the Data

After data is recorded on a diskette, the plastic jacket can be sealed and recorded data mailed to a central data processing facility, the spokesman said.

The difficulty in comparing the IBM 3740 to other available key-to-disk data entry systems is that presently there are no figures for average user throughput – i.e., keystroke/hr.

While these figures are not available, the

(Continued on Page 2)

Mini-Based Fortran 5 Steals Job From 370

By Don Leavitt
Of the CW Staff

SOUTHBORO, Mass. – A Fortran program took only 16% longer to run on a Nova 800 mini than on a 370/145 mainframe in a recent user-controlled benchmark of the newly announced Fortran 5 compiler from Data General.

Fortran 5 is a superset of Fortran IV and is compatible with ANS Fortran, IBM's Level H Fortran and Univac's Fortran V. It includes several language extensions and an object-code optimization process that is said to cut run times dramatically.

4 Vendors Selected

For his benchmarking, the user selected part of a large application and input the same source code to the IBM and Data General compilers, as well as those of two other vendors. The test program was typical of the entire application, he said, but was the most time-consuming part of the operation.

The user preferred anonymity in order to maintain a "competitive edge" in his industry.

The application handled production planning and optimization but the test portion involved only normal integer arithmetic. The floating-point capabilities of Fortran 5 were not tested.

The user had previously compiled the test program under Data General's Fortran IV and execution time then was 15 times as long on the Nova 800 as on the 145.

User Convinced

The Fortran 5 test results were dramatic enough so that the user now plans to move the entire application, including data communications support, from the 145 to the mini.

(Continued on Page 2)

Analysis: IBM/CDC

Why Was Index Destroyed?

By E. Drake Lundell Jr.
Of the CW Staff

MINNEAPOLIS – "IBM must have had something to hide."

That is the reaction of one person close to the antitrust actions against IBM on learning last week that an important computerized index of the documents in the Control Data/IBM case had been destroyed as part of the settlement agreement between the two.

And he was not the only one upset over the destruction of the index. Industry leaders and users both cried "foul," one industry organization called for a grand jury investigation of the incident and several people indicated the move might delay the government's case against IBM.

In addition, Telex filed suit in Federal District Court here asking that the entire settlement be overturned, claiming the records destroyed were supposed to have been made available to Telex for its suit against IBM [CW, Jan 24].

How Did It Happen?

None of the actual 40 million documents filed in the case was destroyed as part of the bargain, but the index that helped identify specific documents was

(Continued on Page 4)

IBM Delivers 3740 Entry Unit in U.S.

(Continued from Page 1)

other side of the trade-off is known – the cost of each keystation.

Compared to the earlier buffered IBM 129 Model 3, the 3741 key-to-floppy-disk keystation rents for $159/mo and the 129 rents for $150/mo.

Compared with other vendor units which use a shared processor to support satellite stations, the IBM 3741 is almost double the cost per entry station.

Of course, users must add the cost of the shared processor to the cost of other vendor systems; but even with this addition it appears that the IBM system using more than 10 stations costs more than an independent system.

For example, a system consisting of 10 IBM 3741s – each with one diskette drive and no communications capabilities – rents for $1,590/mo on a month-by-month contract.

A 10-keystation system from another typical vendor with shared processor – including communications and converter – rents for around $1,160/mo.

To support the user choosing the IBM key-to-diskette data entry approach, IBM announced the availability to domestic users of two data entry stations, a data converter, a printer and an I/O unit – for direct transfer of data to and from larger remote processors.

	1-mo rental	2-yr rental	purchase
3741 (1)*	$159	$135	$6,000
(2)**	224	190	8,430
BSCA***	194	165	7,250
3742	188	160	6,950
3747	465	395	19,560
3540 (1)	535	455	22,000
(2)	805	685	33,550
3713	159	135	5,400

Diskettes cost $40 for a quantity of five.
* with one diskette drive
** with two diskette drives
*** with communications capability

Prices for Equipment in the 3740 Data Entry System

The 3741 data station is designed primarily for stand-alone use, he noted.

The unit is composed of a microprogrammed control unit which contains all the logic for editing and inputting data, a typewriter-like keyboard, one or two diskette drives and a 240-character visual display in a format of 40-character lines.

Station-to-Station

When equipped with a binary synchronous communications adapter (BSCA), the 3741 can communicate with another 3741 having the BSCA, as well as specially equipped models of IBM 360 and 370 processors, he added.

The data station can also communicate with the 3747 data converter – another component of the 3740 Data Entry System – and can be directly attached to both models of the System/3 disk system via the local communications adapter.

The 3742 dual data station is essentially two single 3741 data stations grouped together with the option of permitting data to be copied from one operator's diskette drive to the other while records are merged into a single diskette.

The unit incorporates a visual display, designed with mirror optics, permitting half the display – containing 120 characters in three lines – to be visible to each operator, for editing and formatting.

The 3747 data converter is a stand-alone, off-line device for converting data from diskettes to standard 1/2-in. magnetic tape.

The 3747 can also be equipped with a BSCA allowing communications with other data stations or IBM 360 and 370 processors.

The 3713 printer is a 40 char./sec matrix optional printer which attaches to the 3741 data station.

To record data, the operator drops a diskette into the slot and begins keying.

Printouts can be produced from data recorded on diskettes as well as information transmitted to the data station with BSCA from a central computer.

The 3540, a syatems I/O device, communicates directly to IBM 370 models, by selector channel, byte-multiplexer channel or block-multiplexer channel.

The unit can read up to 3,600 diskette record/min into the processor and can write up to 2,200 record/min from the computer onto diskettes.

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Mini-Based Fortran Steals Job

(Continued from Page 1)

Fortran 5 runs under the Real Time DOS and uses a new floating-point processor that can be added to any Nova-line mini with room for an extra circuit board. Average add time is less than 8 µsec, the company noted.

The compiler uses a global approach to optimization, reading in the entire original object code and plotting complete tree structure of its logic before making any modifications. This is the first global optimizer on a mini, Data General said.

Fortran 5 language and processor extensions include multitasking, with 256 possible priority levels; optimized DO loops; and reentrant code that allows many users to share a single copy of a program. It also supports fully recursive routines and in-line subscript handling, the company noted.

A full battery of English language diagnostics is included for fast, easy debugging. Fortran 5 can use the flexible file system and foreground/background features of the Real Time DOS.

A minimum Fortran 5 system includes a mini with 28K of core memory, 512K words of disk storage, the floating-point processor, hardware multiply/divide, a magnetic tape transport and a console terminal. Configured around a Nova 800 jumbo, the system costs approximately $48,000. A Nova 1200 would drop the cost to about $42,000, Data General said.

The floating-point processor board is available separately for $4,000.

Name That Hit Tune! But Computer Can't

HOLLYWOOD, Calif. – Computers can create music, but they cannot determine what makes a hit record, according to Allen D. Allen.

Allen, a composer and a research scientist, worked extensively with computers trying to find technical parallels among hit songs.

"Initially I tried to find a correlation between melodies I like," Allen said.

"I took all the tunes – the chord structures, tendency toward intervals, surprise, tempo, time signatures and all the other elements. There was absolutely no correlation between the songs I like. So I thought that maybe I'm weird.

"Then we did a study with an IBM 1130 computer. This was to find what hit records had in common. We used all the same factors (as for tunes) plus tone colors, instrumentations, lyrics, bottom or high end, etc. We could find absolutely no mathematical formula for a pleasing melody or a big-selling disk."

House Says 'Aye' to Vote System

WASHINGTON, D.C. – The House of Representatives' electronic roll call system passed its first test last week – but it was only on a quorum call. Officials said the system worked very well but no actual voting on a bill is expected for several weeks.

Under the new system developed by Control Data, House members insert plastic identification cards in one of 44 voting stations scattered around the House chamber. Votes are channeled into a computer which produces a visual display of the vote for verification and produces a hard copy of the outcome of the vote.

Rep. Wayne L. Hays (D-Ohio), chairman of the administration committee, said the system cost $1.06 million but said the time saved would take care of the cost in one year.

The traditional hand-tallied roll calls take about 25 minutes just to call the roll, but the automated system will take only 15 minutes for a full House vote.

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Study Finds 40 Susceptible

360/30 Price Drop Seen

By a CW Staff Writer

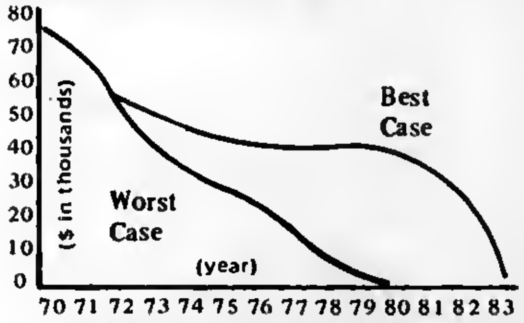
ELMSFORD, N.Y. – A 10-year price-level forecast of IBM 360/30s and 40s by Time Brokers, Inc. suggests that the Model 30 will slowly decline in price while keeping utility value and the 360/40 will be vulnerable to new IBM announcements which may affect its marketability in the 1976-77 markets.

During the last quarter of 1972, 360/30 sales were brisk, with demand slightly stronger than supply, the study stated.

30s Popular

This was most marked by an increase in the demand for smaller Model 30s. The study attributes the demand to users' acceptance of add-on memory – "a buyer will purchase a used 16K-byte machine, add 49K bytes of add-on and have a low-priced 65K-byte machine."

Presently many owners of 360/40s are reluctant to sell what they know is a "very solid system in terms of utility" for less than their idea of current market value, and thus, sales have been slow for all 40s, the study concluded.



Forecast of 360/40 Price Levels Expressed as a Percentage of List Price – 1973 to 1983

Those sales taking place are reported to be 5% lower than prices during the summer.

VS Upset Market

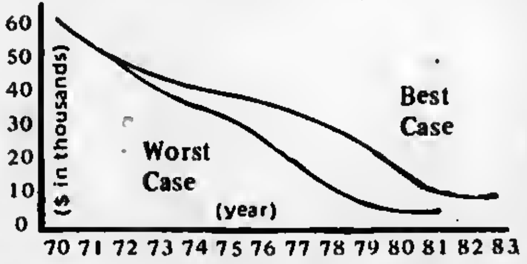
Model 50s and 65s have not fared well in the current market, the study maintained. "While there have been flurries of interest . . . . the big systems market has been upset by the introduction of virtual memory."

Many large system users are reportedly standing pat until they decide the best direction.

Another point of interest is the appearance of the IBM 370/145 on the used computer market. Prices are listed at about 85% of list when a user sells, and about 89% when a user buys.

This market is expected to intensify – i.e., the number of 370s offered will increase – but the price will remain fairly level for most of 1973, the study forecast.

A copy of the Blue Book of Used Computer Prices is free upon request from Time Brokers, Inc., 500 Executive Blvd., Elmsford, N.Y. 10549.



Forecast of 360/30 Price Levels Expressed as a Percentage of List Price – 1973 to 1983

City Cleared After DP Misuse Charge

Special to Computerworld

HONOLULU – Although Larry E. Stevens, who accused the mayor here of illegally using city computer services to promote his successful bid for reelection, is still missing since October [CW, Dec. 20], city investigators are certain his claims were fabricated.

Only two mysteries remain – where is Stevens, and why did he say what he did?

Stevens claimed that between "$50,000 and $100,000 of taxpayers' money" in city computer services were used for Mayor Frank F. Fasi's reelection bid.

Shortly after his October charge, police reported the Stevens car had been found at Honolulu International Airport with $75 in the glove compartment.

The widely publicized preelection allegations were investigated by the City Council which investigated many complaints of Fasi's alleged misuse of city employees and resources.

The city Department of Information Systems, which Stevens said illegally merged voter registration tape files and Hawaiian Telephone Co. tape files of telephone numbers and addresses for the Fasi campaign, came out of the City Council's hearings with a clean bill of health.

Gerald L. Mann Jr., director of the Department of Information Systems, told *Computerworld* that "if anybody looks at Stevens' figures, they look ridiculous. There's no truth in it."

Stevens, he said, had formerly been an analyst with the department, but hadn't worked there for "two and a half years prior to his announcement about our department. He couldn't have seen what he said he saw.

"I only wish," Mann said, "he would return to clear up the mystery."

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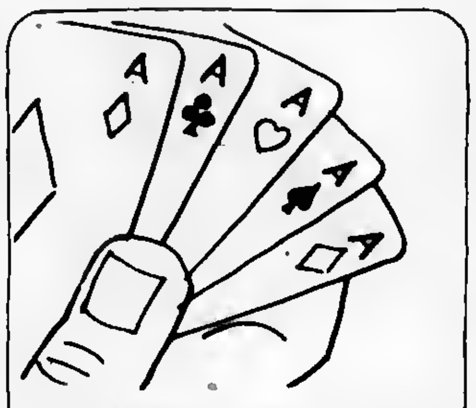

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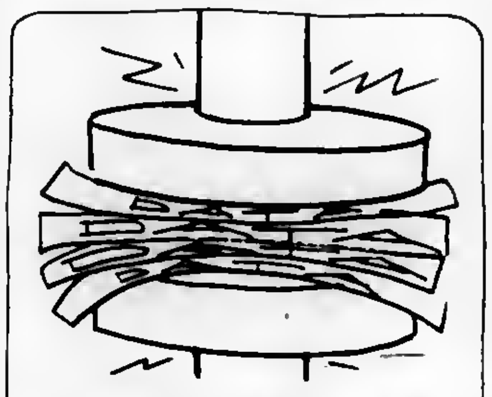

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Why Was Index Erased? What Effect Will This Have?

(Continued from Page 1)

erased, sources indicated last week.

Reportedly, the IBM and CDC board of directors met on Friday, Jan. 12 and approved settlement terms.

The lawyers for the two firms met the next day, in order to sign the settlement documents, but someone, apparently the IBM legal team, balked until the disk packs with the index/access method to the microfilmed documents were erased and degaussed.

The agreement was then signed.

Both IBM and CDC argue that the destruction of the records was customary procedure. Generally when cases are settled out of court, the "work product" of the lawyers is destroyed, they claimed.

In most cases this consists of tentative trial plans, notes made in court, miscellaneous doodlings, etc. However, in this case the argument was used to cover the computer-based index to the documents filed in the case.

Without the index and access method, sources said, the documents could be almost meaningless.

And, Telex argued, not only did the destruction of the index make the document collection meaningless, but it was also in direct violation of a court order.

The order issued last July by Judge Philip Neville stated: "It is further ordered that Control Data, based on its own counsel's statement of willingness to do so, will make available to the counsel for Telex all IBM documents in ita possession and its so-called data base or index."

The Telex motion to overturn the IBM/CDC settlement on these grounds was set for hearing late last week.

In addition to the Telex action before the court, the Association of Data Processing Service Organizations (Adapso) last week called on the Justice Department to convene a grand jury to investigate whether the IBM/CDC deal did in fact violate the law.

In a letter to Attorney General Richard Kleindienst, the group indicated that "the destruction of materials . . . would have the effect of delaying the government's antitrust litigation against IBM for a substantial period of time."

In addition, Adapso said: "There seems no apparent purpose to this surreptitious, clandestine action except to preclude our government and others from asserting rights to such materials."

Adapso also noted that "depending upon the precise nature of the conduct involved and the accompanying intent, such conduct may be a violation of criminal law, a contempt of existing court orders, and to the extent that attorneys participated, a breach of the disciplinary rules governing the professional conduct of counsel.

"We request that you exercise your power and responsibility as attorney general of the U.S., to conduct a grand jury investigation into this matter so that appropriate remedial action may be taken," the letter concluded.

Analysis

It is hard at this time to assess the overall effect of the destruction of the index to the documents, according to most sources.

It is known that Telex maintains its own index for the documents that it plans to use in its case against IBM, scheduled to start in April.

Sources close to Telex, however, indicated there may have been some documents it had overlooked in preparation for the case and that it would now be much harder to find them if needed.

"Without the Control Data index to the documents, it might take years to find a specific damaging document in the millions of papers filed with Control Data," a source said.

"There must have been something to hide or else they would not have been so concerned that the index be destroyed.

"Maybe there were some particularly damaging documents that Telex has missed. Now it will never be able to find them without access to the index."

At the same time, Telex officials indicated they were prepared to go ahead with their case and said they felt they had enough evidence to win.

The Justice Department has remained mum on the entire settlement agreement, but sources close to the department indicated it is maintaining its own index to the documents in the case.

"But their index is nowhere as complete and comprehensive as the one maintained by Control Data," a legal source in Washington said.

At the same time, he indicated the destruction of the index should not slow the department down greatly, even though it would have to add additional manpower to the case if it wanted to proceed as fast as would have been possible with the help of CDC.

Control Data President William Norris defended his company's actions.

In a letter to shareholders, employees and the press, Norris said: "In the first place, we were not forced to do anything. It is my firm judgment that disposing of the work product of our attorneys, developed at our sole expense (many millions of dollars) for use by us in our case, was the proper thing to do and was consistent with legal practice.

"Furthermore, having settled the litigation, it was proper and customary that our attorneys' work would not be made available to other plaintiffs, present or future. These are materials that no other party has any right to.

"I should emphasize that Control Data has been trying its own case, not the government's. While we have fully cooperated with all government requests for material from our data base, there has never been any understanding that our effort would continue after a settlement. The government's 25-man staff, headed by two distinguished trial lawyers, is fully capable of trying its own lawsuit."

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(Continued from Page 1)

added years of life to our present Installation," Decker said. "Without the 2200, we would have had to go to a larger system, probably a 370/135 and compatible remote job entry terminals, at a much greater cost and, we think, with less efficiency than with the leased 2200s."

In addition to the terminals, Day's increased the CPU memory with the addition of 32K from Cambridge Memories. The firm also replaced three IBM 2311 drives with three Potter 4314 double-density drives. "This allowed us to put our customer account master file on line, Decker said.

Ratio Looks Better

Now the "balance between the book value and the market value" of the Model 30 "is much closer," he said. Decker estimates the market value now is about $225,000 while the book value is about $250,000. But the ratio looks better than before the upgrade, he said.

"When we bought the Model 30, IBM recommended that we amortize the system over a certain period of time. They showed us the payback using one of their famous charts," Decker said.

The system was amortized over a nine-year period, and when IBM announced the 370, the 360 was devalued, and its market price dropped, he said.

Decker determined the price of his 360 by putting out bids and investigating the possibility of upgrading to a 360/40. Based on responses from potential purchasers of his Model 30, Decker arrived at an average market price for the system.

While he elected to keep the Model 30, he did sell three of his initial six IBM 2311s and replaced them with the Potter drives.

The key to increasing the value of his system was the use of non-IBM equipment, Decker said.

Bonus for User

"We purchased the Potter drives for $40,000 while IBM wanted $96,000 for a three-stack 2314 system," he said. As an additional bonus, the Potter double-density drives have a greater capacity than the more expensive IBM units, he added.

The 32K of core from Cambridge resulted in a savings of $40,000, Decker said. "We would have paid over $50,000 for 32K of core from IBM but the Cambridge box cost only $17,000." Even IBM "second-hand core" would have cost about $29,000, he added.

With the 64K on the Model 30 the company has gone to a multipartition operating environment. "We wrote our own spooler which allowed us to get more time on the computer compared with IBM's Power, or the Grasp package from Software Design Inc.," he said.

Power allowed 16% "more time on the CPU" while Grasp increased efficiency about 18%. The in-house spooler, called Intercept, increased efficiency by 28%, according to Decker.

"We use our package to spool and we handle I/O in one partition and our regular processing on the other to get a much better utilization of the CPU."

Two Surfaces

Both Power and Grasp require a dedicated 2311 while the in-house software uses only two disk surfaces.

The in-house package developed by the firm's four-man programming staff has allowed Day's to go from a three-shift to a two-shift operation. The extra time on the 360 is used for "specialized management reporting," Decker said.

"Our in-house programming staff also created all the necessary programs for the terminal system in Databus, the Cobol-like processing language made available with the 2220," noted Decker. "We can make any change or alterations required in the system ourselves."

Quake Data Missing Because of Man

LA JOLLA, Calif. – The use of computer technology in earthquake prediction appears to be way ahead of man's ability to provide the computer with meaningful physical data.

A computer model describing the way rock formations dilate under stress, used in conjunction with laboratory observations of rock deformation, could provide "the place, time and even magnitude of an impending earthquake," according to J.T. Cherry, developer of the model and principal investigator in the geophysics and materials department at Systems, Science and Software Inc.

Digging Deep

However, "what is really needed," he said, "are methods for obtaining strain information well below the earth's surface, where the rock is firmly anchored and not moving."

No successful method for accomplishing that has been demonstrated, Cherry said, but meaningful data may be obtained from a technique which involves measuring the changes in the speed of sound at depths a few kilometers below the surface.

That data recorded over a period of years and analyzed with the computer "dilatancy model" could provide the first predictions of time, place and magnitude of future earthquakes, Cherry believes.

Camel Driver Finds Happiness in DP

ABU DHABI, the Trucial States – Once upon a time in the tiny shiekdom of Abu Dhabi, there lived a man named Ahab.

Ahab was a camel driver and most of his friends were either fishermen or pearl divers. Life was simple.

But soon oil was discovered and the magic black liquid brought many changes to the 50,000 inhabitants of Abu Dhabi and their neighbors along the Persian Gulf. Progress and development came in with a rush and, alas for Ahab, cars replaced camels.

The outlook for Ahab was bleak and the leaders of Abu Dhabi had trouble keeping track of their new-found wealth ($378 million/yr from oil alone).

But from across the waters NCR appeared with a small 500 computer. The magic machine paid the workers and kept track of the inhabitants and their money.

Since then, Abu Dhabi and neighboring sheikdoms have shed their status as British Protectorates and formed the Federation of United Arab Emirates. And the leaders have acquired an even bigger machine, a Century 200, so Abu Dhabi will be able to assist its neighbors.

Life has improved for Ahab, too. He has given up camel driving and learned to operate the magic machine and so far is living happily ever after.

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News Wrapup

County Hiring Biased, DPers Say

PRINCE GEORGES COUNTY, Md. – Two systems analysts in the county's data processing division have charged that the county denied them promotions and discriminated against them because they are not "retired military personnel."

In a series of hearings, Fern Lanthier and Michael Nugent claimed that eight of the 11 management positions in data processing were held by former Air Force personnel and that 10 of the county's 22 systems analysts are also former service people.

Lanthier and Nugent charged there is a "buddy system" among retired military personnel to keep civilians from being hired or promoted. They said retiring sergeants at nearby Bolling and Andrews Air Force bases are notified in advance of available positions.

A ruling on the charge is expected soon from the county personnel board.

Computer Spots a Hot Ticket at Races

SCHENECTADY, N.Y. – A computer has outwitted one man's attempt to beat the odds at the race track.

On Dec. 19, an unidentified man presented to the Schenectady off-track betting operation a ticket that read, "Monticello, Dec. 11, W-8-B-2." This identified a $2 win bet on a horse lettered "B" in the eighth race – in this case worth $73.

The ticket, however, also bore a computer-generated 15-digit alphanumeric identifier, which is used to check every winning ticket before payment is made.

When the computer terminal indicated the ticket was not a winner, the man argued the point briefly, then left his name (later found to be fictitious) and went away.

OTB officials, after lengthy examination of the ticket, established that the "W-8-B-2" had been peeled from the surface of another ticket and carefully pasted in place.

New Grading Set for Bar Exam Questions

SPOKANE, Wash. – Computer-graded, multiple-choice questions will constitute one day of the three-day Washington State bar examination starting Feb. 26, the State Bar Association's board of governors said.

The one-day computerized test is reportedly the culmination of many years of experiment and research by national bar examination experts and the Educational Testing Service of New Jersey.

The multistate bar examination is given on the same day in all states using it.

Life Not Quite Over for Life Magazine

NEW YORK, N.Y. – Life may end but the computer goes on. On Dec. 8, the directors of Time, Inc. announced the end of *Life* Magazine. On Dec. 20, Philip Dorf of Manhattan received a computerized "Dear Subscriber" letter saying that even though he is "a regular subscriber and friend" of *Life*, "we now have to drop your name from our weekly delivery rolls."

"Since we haven't received any renewal instructions from you," it continued, "we've had to stop sending you *Life.*"

Flying...but Not Off the Ground

At Lockheed-Georgia Co. a computer-controlled flight simulator is used to train pilots to fly C-5 Galaxy airplanes. An "in motion" cockpit and televised terrain are linked by a Lockheed Electronics MAC 16 minicomputer. Movement of simulator controls by the pilot (left) causes the television camera (middle) to display model terrain on an aircraft windscreen. Pilots "fly" across landscape creating aircraft movements similar to those experienced in normal flights. Here the camera is focused on an island airfield. Material surrounding the island undulates with illumination from a large bank of lights to produce water movement. Flight equations of motion are put into the minicomputer (right) prior to simulated runs.

Paranoid Programmers, You're Really OK

By Michael Weinstein

Of the CW Staff

"The average programmer is excessively independent – sometimes to the point of mild paranoia. He is often egocentric, slightly neurotic, and he borders on a limited schizophrenia," according to Dick Brandon at the 1968 ACM Conference.

Programmers and managers who were disturbed by Brandon's analysis and sought therapy as a result are advised to take heart since new data has been compiled that suggests that while some DPers may be paranoid or schizoid, the large majority is not.

Personality Profile

One test result cited by T.C. Willoughby of Penn State University is the Edward Personal Preference Schedule (EPPS) used by computer personnel researchers to measure personality variables or personal preference areas.

Results of this test indicated that good systems analysts and programmers tended not to need help from others, were insusceptible to opinions of others, liked things orderly, liked to see milestones tick off rapidly, liked to be the dominant person in a situation and did not like to be overruled.

While the EPPS results do not describe the average person, neither do they indicate evidence of the abnormal qualities described by Brandon, Willoughby noted.

Another study the programmer can cite when trying to get a refund from his analyst contrasts interest areas of programmers with the level of psychopathic deviation expected in these levels.

Programmers were found in the upper third of scientific, computational, mechanical and musical interests.

Since people with high scientific interests tend not to be paranoid, it follows that programmers should not as a rule be paranoid, Willoughby stressed.

The same lack of paranoia is found in persons with a high interest in computational and mechanical interests, Willoughby added.

Detracting from the programmer sanity theory is the fact that persons with a high interest in music are more prone to schizophrenia.

To counteract arguments based on the music-schizophrenia correlation, Willoughby pointed out that if programmers really were schizophrenic, they would also rank high in clerical interests since persons with such interests tend toward schizophrenia.

Tests show that programmers in fact rank very low in clerical interests – an insight that will not surprise those who have tried to get a programmer to document his work.

In explaining how the profession received this somewhat tarnished image, Willoughby pointed to the age difference between programmers and supervisors and suggested that supervisors have an "aggressive individualistic" nature of existence while the programmer may be a "pacifistic individual."

The evident frustration with the programmer could be due to the different value systems, not the supposed psychological aberrations of the individual, Willoughby stated.

A full report of Willoughby's study can be found in the proceedings of the tenth annual Computer Research Conference, available from the Association for Computing Machinery, 1133 Avenue of the Americas, New York, N.Y. 10036.

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We hope to see you at a Cullinane seminar to be held in conjunction with the computer caravan. We'd like you to meet our key staff members, such as Jim Baker, Ken Falor, Tom Meurer or Jerry Miller and question them directly about new Version III.

In the meantime, we'd like to ask you to read the following long (but important) list of new EDP-AUDITOR/CULPRIT features."

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- ☐ 8-character field names for improved data dictionary mnemonics.
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- ☐ All Assembly Language coding eliminates COBOL modules and reduces core requirements by 3K.

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- ☐ GE 400 Series tape read module for reading GE 400 tapes directly on IBM computer.
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- ☐ Information available from the Control, DATA, and XREF portions of RDAM records.
- ☐ Automatic expansion of compressed format data fields to any size desired by the user.
- ☐ Employs cataloguing feature eliminating need to define logical fields in report parameter cards.
- ☐ Processes a virtually unlimited number of strings through the data base.
- ☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
- ☐ Direct reads can be based on keys submitted by user and/or keys read from a non-RDMS file.
- ☐ Chaining across files through XREF entries handled automatically by the system.
- ☐ Handles single file record cross referencing techniques (e.g., Bill of Materials organization).
- ☐ Includes all features listed under CULPRIT sections.

TOTAL/CULPRIT

- ☐ Information available from the entire TOTAL record including root and linkage segments.
- ☐ Employs a cataloguing feature eliminating the need to define logical fields in report parameter cards.
- ☐ Processes a virtually unlimited number of strings through the data base. Each string may be several files long.
- ☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
- ☐ Direct reads can be based on keys submitted by users and/or keys read from a non-TOTAL file.
- ☐ Linking between files and reading of variable chains handled automatically by the system.
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- ☐ Access all types of files.
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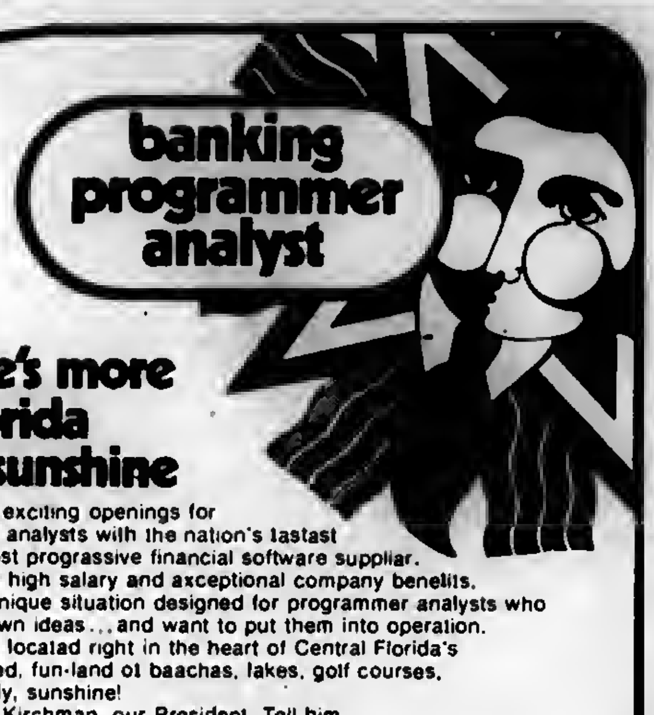

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Computers and the DP Employee – Part II

Trainees? There's No Shortage in the UK

By Joseph Hanlon

Special to Computerworld

LONDON – DP employees are identifying more with DP than with their firms and are finding their career prospects primarily within DP. Thus the chances of moving out of DP into company management are diminishing.

These conclusions come from a report entitled "Computers in Offices," released by the UK Department of Employment. It is based on information from 86% of British office computer users.

According to the report, the spectacular demand for DP staff that characterized the computer boom will never return, despite the end of the recession. There is still a shortage of trained staff and it will get worse, but there is no shortage of trainees.

In the typical user installation, the staff ratio for each DP manager (or assistant) is 3-1/2 systems analysts, five programmers, four computer operators and 11 data preparation employees.

In service bureaus, software houses and manufacturers' customer service departments, the proportion of programmers and analysts is considerably higher. The ratio will remain about the same for the rest of the decade, the report said, except for data preparation staff which will slowly increase.

The growth of DP office jobs will be a steady 17,000/yr, including 1,000 additional DP managers, 8,000 programmers and analysts and 4,000 operators.

Data preparation personnel now outnumber DP managers, systems analysts and programmers combined, but because of key-to-tape, key-to-disk and OCR, the number of data preparation employees will increase only by 2,000/yr, the report predicted.

Staying in DP

The internal growth of DP jobs will be the main opportunity for advancement, the report said. There will be a 60% increase in DP jobs at all levels in the next six years, and most of these jobs will be filled either by promoting people already in DP or by moving up staff now in the firm but not yet in DP.

On the other hand, the chance of moving up and out of DP is shrinking: two-thirds of all DP installations reported that DP staff had either a "poor chance" or "no chance" for career opportunities outside DP.

One reason cited by the report for the lack of people moving into management is that DP salaries are still relatively higher than those in the rest of the company. "To be moved from DP to an executive post outside, an individual might need the equivalent of two promotions to retain his current salary scale," the report declared.

Source of Staff

The report also discussed the source of new DP employees.

Of newly appointed DP managers, 28% moved up to the job from within the firm's own DP department and 29% came from elsewhere in the company; the remainder came from DP departments of other companies, the survey showed.

Of newly hired systems analysts, 41% were already fully trained and came primarily from other firms. The remaining 59% were hired as trainees, with two-thirds of that group coming from within the firm and the rest from college.

Newly recruited programmers were divided equally into three groups: programmers from other firms, trainees from within the firm and trainees from outside. Computer operators were hired almost entirely as trainees, slightly more often from outside than inside the firm, the report stated.

New DP managers were trained mostly by the computer manufacturers. Programmers and analysts were trained by manufacturers almost as frequently as they were trained in-house. Operators were usually trained in-house.

Commercial computer schools provided virtually none of the training, according to the survey.

Despite the large number of trainees hired, the report warned that there was "no general shortage of trainees." The relatively long time it takes to train staff – nine months to two years for a programmer or analyst, according to the survey – means many firms are looking for trained staff.

The report said there will be an increase in the demand for trained staff, resulting in a "shortage of highly skilled experienced personnel. What is especially important is that computer users should continue to foresee their needs and recruit and train staff in good time."

In an effort to get the most out of expensive hardware, both computers and people are being used more intensively, the report said. Of computer operators, 82% are on shift work and 55% work overtime.

Sixty-nine percent of all installations have programmers on overtime, and 1% of all installations (3% of the large ones) have programmers doing shift work.

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Editorials

Part of the Pattern

The acquisition of the Service Bureau Corp. by Control Data was one of the most unexpected computer community events of the decade. The news of the transfer, as a part of the settlement of the suits between IBM and Control Data, was mostly greeted with shocked silence.

The differences in style of business, in the equipment used, and even the nature of the business thrust of the two corporations seemed about as far apart as is possible for two firms in the same computer community.

Yet, the pattern can be seen emerging even before the lawsuits were filed. Control Data, during its decade-plus of existence, has always had an interest in acquiring companies that seemed a little far afield of its immediate operations.

In the early days this involved technical companies dealing with the peripheral units that would surround the mainframes it was building — Rabinow Electronics, for one.

Then came the jump into computer schools, and scientific computer use, with the Ceir merger which also brought the Automation Institutes under the Control Data banner. The Commercial Credit acquisition a few years later also was part of the pattern — and also was a little far afield.

Looked at this way the acquisition of the Service Bureau conforms to the Control Data philosophy and history. Strange today, it may well appear to be the most natural thing in the world tomorrow.

Fearing the Computer

Retailers are moving further and further into the computer world — fortunately confined to business applications. Those retailers who have harnessed the computer are grateful for the contributions to profit made by a good system.

But, they must also look at the bad that can be done with a computer. Nobel created the Peace Prize because he hated the thought of the damage that could be done by his invention, dynamite. We may some day have a Thomas J. Watson Peace Prize.

Key men in the U.S. Department of Housing and Urban Development recently raised the question of the application of computers to projecting the social conduct of individuals — and the impact that such a development could have on our justice system.

They point out that our justice system is based on the concept that the individual has will power, so that if deterred, punished and rehabilitated, he will no longer conduct himself as a criminal. But these two men, James W. Evans and Robert A. Knisely, claim that computer profiles will soon predict "with startling certainty" which criminals are unlikely to respond to any rehabilitation effort.

They say: "By examining the records of many prisoners and habitual offenders, the computer may make it inescapably clear that although one cannot predict with total certainty the fact that any individual will remain a criminal, the probabilities are so high as to raise a presumption that he will."

Thus, they are pushing predictive analysis by computers to identify criminals before they commit the crime — and to identify those whose profiles indicate that they cannot be rehabilitated. Society, they say, should isolate such people before they do anything wrong!

(Reprinted by permission from Retailing Today, December 1972)

Letters to the Editor

Recognize Individual's Wants Before Group's

I have followed with mixed feelings Alan Taylor's attempts and those of others to force recognition of groups. These groups run the gambit from anti-war to pro-religion. I am astounded that the simple powers of observation are not utilized.

The DP person has been compared to lawyers, doctors of medicine and other comparable professions, but apparently no one has canvassed the layman to find his opinions of the value of CDP, SCDP, ACM, AMA, AFL-CIO, etc.

I personally believe the layman of today selects his services, products, entertainment and the like based on the individual, quality and price instead of the organization(s) that support these services. Since all of us are laymen to some degree, hasn't the time come to pull our heads from the sand and consider these realities?

H.L. Robinson

Dallas, Texas

SS Number Abused By Administration

A Social Security Number XXX-XX-xxxx could be used as an identifier, except that the numbers have been abused, even by the Social Security Administration which never seems to check to see if a person is entitled to a new one.

Just as two digits, "XX," give $10^2 - 1 = 99$ permutations, the nine-digit Social Security Number possibilities = 999,999,999. But this is not enough for the U.S. population if we all ask for seven different social security numbers in the hopes of increasing our benefits, and lowering the Internal Revenue bite. And, therefore, *Computerworld* ought to expect that there may be three or more people holding the same Social Security number.

It might not be enough to suggest an alphabet sort, nor even one according to address (we are somewhat free to use as many names and addresses as seem to be needed). I am afraid the Social Security Number will have to go on the butt at birth (or with immigration). But we will have to agree on which side it should be, so that nobody can show but one when he has two.

Richard H. MacCutcheon
Cleveland, Ohio

Software Vendors Get No Revenue

Alan Taylor's statement [CW, Dec. 27/Jan. 3] that because of spooling there is "no excuse" for forcing a single form to serve multiple purposes is theoretically correct. A practical consideration, though, is that the IBM-supplied DOS spooling package does not support multiple printers (real or virtual) from a single partition.

Whether this was a design oversight or a design objective to ensure that the sale of additional printers and control units was not impacted is certainly an interesting question.

The fact remains that non-IBM spooling systems support multiple printers from a single partition — and the vendors of this software get no revenue from printers.

Kenneth W. Kert
Vice-President
Software Design Inc.
Burlingame, Calif.

Government Has No Place in Industry

It's getting near the time when responsible members of the DP industry had better wake up to the consequences of the policies being advocated by some of our "spokesmen."

The pages of the DP trade publications have contained, in recent months, an astonishing number of articles, letters and news reports concerning the need for more and more regulation of our industry by government.

We're not meeting our "social" responsibilities, says one; our antitrust laws are inadequate says another; let's get the UN involved (God forbid!) says still another. In the Jan. 10 *Computerworld*, Messrs. Gilchrist and Wessel suggest that "perhaps the best way the *country* can *manage* the computer Industry and hence make sure it is used for the *public* good is to . . . . ." (italics mine).

The way is unimportant considering the much more fundamental issue involved in their bland assumption that it is the country's (i.e. the Federal Government's) proper function to "manage" (i.e., regulate, control) our industry.

It is a fundamental precept of our American way of life that government exists solely to protect the rights of individuals. To protect our individual rights to life and property, not to abridge them or regulate them, is the essence of freedom. The "public" or "society" is a non sequitur, a non-entity, since it is, in reality, a collection of individuals. In short, the government has no right to manage our industry in any way, shape or form.

Robert L. Sullivan
Cambridge, Mass.

Bad News for Cobol

This January I'll be starting an informal newsletter devoted to the question of a Cobol replacement language. Anyone who would like copies should send me his or her address and the number of copies desired.

I would also like articles or letters of comment that anyone will be willing to send to the newsletter. It is informal and materials do not have to be thesis-level things. Just things that you'd like to get out for brain-storming and playing with.

The title of the monthly is *New Business Language*. Subscription is free, until further notice, but a bunch of stamps will be appreciated.

Joe Celko
Box 11023
Atlanta, Ga. 30310

Bits, Bytes Revisited

In the Aug. 16 issue of *Computerworld*, a letter by Tom Gilb, entitled "Byte vs. Bit Controversy: Rules of Thumb Inadequate," referred to "Record Compaction Techniques," 8582 IBM Form E20. IBM states there is no such form.

A.B. Tonik
Sperry Univac
Blue Bell, Pa.

The correct identification should be E20-8252. According to Gilb, this publication was obsoleted in 1969. Ed.

Learning to Read Printouts

DPers Would Do Well to Set Up Quality Control Plan

The Taylor Report

By

Alan Taylor, CDP

Computer printouts can be very confusing, particularly when they contain information with which the reader is not familiar. This fact probably explains why many data processing managers shy away from using printouts to obtain information about their systems.

These managers do not realize, however, how easy it can be to learn to read a printout to obtain information about the quality of their equipment and the standard of maintenance it receives.

The cost in computer time is about 5 min/day, and the results can be simply graphed to show trends of failures.

Setting up the quality control system is quite simple. With the cooperation of an operator and a maintenance engineer it takes about one hour.

If the maintenance man is uncommunicative – or worse, if he is too verbose and tries to blind you with figures – you may have to dig into the manuals, or find someone else who has a background in the maintenance area. This is not more than a half-day investigation.

The place to start is in the diagnostic programs – and with a clean set of tapes. (This is important. I recommend keeping one set of tapes particularly for this operation, and having them numbered so you always know what tape is on what drive.)

Run the diagnostic, generally until the first break in the program. This usually takes about three minutes. Now, unless a bad problem has been found you can unload your tapes, put them away, cut one small table from the operator's log and paste it into a book.

The daily work is over. You now have all you need for complete quality control.

In the case of many DOS users, the table will often look like Table 1.

For the Common Man

Most of the information is not necessary to the quality control system. The first column is simply the reference number of the various units written in hexadecimal. (Don't expect these printouts to be written for the DP manager. These are written in maintenance man's jargon which isn't really too hard to learn.).

Hexadecimal is simply based on a count of 16, instead of 10, so that 100_{16} is around 250 – and eight (not five) is the half-way point. (That's all I remember and I get on fairly well.)

The second column shows an abbreviation for each of the various devices – RD being the read unit, PU the punch unit, etc.

Now we get down to business. The next two columns under the word BLOCK should be taken together. The set of numbers on the left under OPER (number of operations) is filled in *only* if any failures have been noted. The second set of numbers, labeled FAIL, indicates the number of failures.

Again the figure is in hexadecimal. Sometimes you do not have to bother to convert the numbers – since the numbers are the same in hexadecimal as decimal. The reader had four failures in three minutes of operation, while tape 181 had seven. Tape 280, however, had 16 errors – although it's printed as 10.

One problem with many diagnostic aids is that they only count up to "FF" and then give up. FF is a code meaning "more than 256" but really indicates how badly the device has responded to the testing.

Testing Report

By now it can be seen that the word BLOCK really means "groups of tests performed." It comes from the number of times the program has passed through the block of coding which sets up and evaluates the tests.

There are three more columns to be examined. The first, headed ACUM STAT (Accumulated Status Report – not Accumulator Status), is simply a 16-bit report of the superimposed status words that were sent back hy the unit when it reported an error.

With the aid of a reference pamphlet, you can discover that tape unit 181 reported the "Device End" status on at least one of the seven times it failed, and that it reported "Channel End" at least once. But you cannot tell whether or not it ever reported both Device End and Channel End at the same time.

In fact, only one of the bits is important for quality control purposes. This is the second bit of the left-hand byte (0200). This bit indicates there has been a unit check and that is all you really need to know. In fact, you will find that you do not even have to bother about that bit.

The last two columns are important, however. Blank entries regarding the number of test cycles run and the numbers of errors reported always mean there were no errors reported.

But this can occur because the units were not tested, as well as when the tests were successful! The last two columns differentiate between the two situations. Units that are marked by "X's" in the NOT RDY column haven't been tested at all.

Flags Make It Easier

The final part of the printout is the flagging asterisks on the left. These indicate the units which were tested and which produced failures. These are effectively equivalent to the one out of the 16 bits in the Accumulated Status item. So we need only look at the asterisks and can ignore the ACUM STAT figure.

In fact, with a bit of reorganization, we now have a list of units tested and a list of errors found in a three-minute test. The three minutes, of course, do not represent continuous operation, any more than normal operations are continuous.

The test, however, does represent roughly between one-quarter and one-half of 1% of a day's operations. Therefore the estimated number of daily errors can be calculated by multiplying the number in the FAIL column by 200 if you have a one-and-one-half-shift operation, or hy 400 if you have a round-the-clock installation.

Now you have your quality-control figures ready for graphing. As IBM says in its publication, the *Midas (Modular Isolation Diagnostic Analysis System) Self Study Seminar:* "Through the periodic use of Midas . . . . unit degradation can he spotted prior to its becoming a major problem."

Of course, it is talking about the amount of time its CEs will take to handle the eventual breakdown, but the users' problems begin before that.

So the advice is just as good and perhaps needed more by user management than the CEs.

So why not give it a try? It will help you, your staff and your management.

And it only takes five minutes a day.

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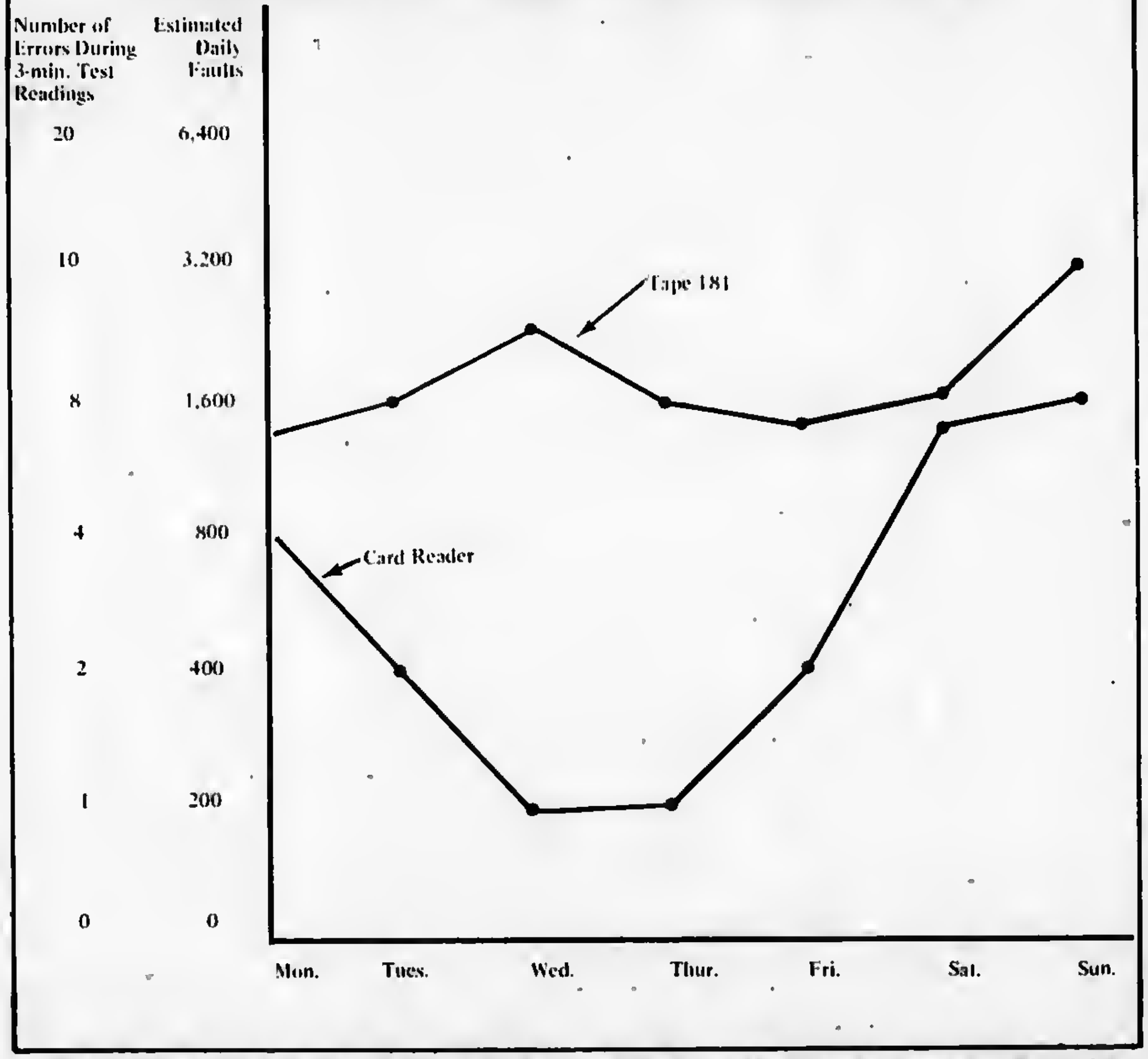
	I/O ADDR	UNITS CLAS	BLOCK OPER	BLOCK FAIL	ACUM STAT	NOT RDY	RDY
*	OOC	RD	OODF	04	OEOO	X	X
	OOD	PU				X	X
	OOE	PR					X
	O1F	TY					X
	130	DS					X
	131	DS					X
	132	DS					X
	133	DS					X
	134	DS					X
*	181	TP	OO2E	07	OE40		X
	182	TP				X	
	183	TP				X	
	184	TP					X
*	280	TP	OO6D	10	OE40		X
*	281	TP	O2B8	FF	0200		X
*	282	TP	OO2E	07	OE40		X
	290	C.U.				X	

The Diagnosis Is Clear

Table 1. The table represents the results of a diagnostic routine after a three-minute test. It lists the number of fault conditions noted in each of the system units during the test period. The contents can be used to provide the DP manager with a graph of the probable number of faults per day, and readings from the graph can indicate the cases of gradual degradation of performance quality.

Simplified Estimated Fault Log



The figure shows a simplified estimated fault log of the type that can be used by DP managers to keep track of the quality of their installations. All the information is obtained from the type of information included in the diagnostic record printout, illustrated in the table. The figures on the left show the hexadecimal number of errors which appear on the printout, while the figures alongside show the decimal equivalents, multipled for a 10-hour daily running time. The multiplication factor used was 200. Entries are made for each day, with the Monday figures coming from Table 1.

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Carefully Planned Computer Selection Was Sandbagged on Corporate Ladder

By Miles Benson

Special to Computerworld

Company T had a problem.

The old computer, one manufactured by a well-known company which dominates the computing field, was scratched. There was no way it could solve the corporate problems in the months ahead. It was time to replace the current hardware.

The firm decided to do the job right. It picked a team of technical people to make the new computer selection. To emphasize the breadth of the project, it adopted a more inclusive name – Computing Moves Ahead (CMA). And the selection team had full rein.

How to Select

How does one go about the task of computer selection? Every installation – and every manager – has tried to do the job the way he thinks it should be done. And very few have come up with the same solution.

The CMA team decided to cover all the parameters and spend as much time as necessary to do a thorough job. With several million dollars of expenditure ahead, spending a little extra on selection seemed prudent.

First, the team analyzed the work load and determined what kinds of jobs it had, which were I/O bound, which were core bound and what that meant in terms of requirements.

Then the team surveyed the future work load and polled current users, and potential users, trying to get a handle on projected requirements.

It studied the impact of conversion, and possible aids for conversion, based on where they were and wanted to be. The team analyzed software requirements, extrapolating present language usage to future language usage, and present utility program usage to future utility usage, and defined those needs.

The team looked at computing trends and research-produced predictions for future developments, and added those requirements to the total picture.

With all of this survey material in hand, the team defined the CMA needs. Out of the needs came a specification of what kind of computing facility would satisfy those needs.

The specifications were then exposed to the Company T world. Management and technical people alike got a chance to examine the specifications and criticize them, and bend them to be more realistic. And out of this test bed came a more sound, more real set of specifications.

The time had come to move CMA outside of Company T into the competitive world. The specifications were sent to various vendors and bids were invited. And the CMA team sat back to await the responses.

Something Happening

Viewpoint

But something unusual was happening here. The CMA team did not study available hardware and confine its requirements to what was available in the marketplace. It concentrated on requirements and left it up to the vendors to decide what to pull off the shelf or the drawing board to statisfy those requirements. In some ways this seemed idealistic. But *that* part of the CMA project worked.

Each vendor who responded picked something from his real-world offerings, or soon-to-be real-world offerings. And although the offerings didn't satisfy all the requirements, they struck an optimum compromise between requirements and reality.

Rating the Requirements

As the bids came in, the CMA team shifted gears and devised an elaborate evaluation scheme for breaking the bids down into some measurable results. It assigned weights to the various requirements and devised equations for aggregating weighted scores into hopefully meaningful totals.

Many people pointed out that weighting schemes often turned out to be supersensitive to the arbitrary weights assigned. And so the CMA team conducted dry runs on their weighting and scoring scheme, checking it out for stability.

Finally, all the bids were in, and all the evaluations had been run. And a clearcut winner had been established.

The CMA team made a formal presentation to management. It described the approach, reviewed the analysis and proclaimed the winner.

And then a funny thing happened. CMA's choice, a brand B computer from a company just breaking into the large computer field, didn't get ordered.

Cost-Conscious?

For a while, nothing got ordered. The CMA team rationalized that the delay was simply corporate bureaucracy mixed with cost-conscious caution.

But then an order *was* placed. Not for the brand B machine. But for the latest giant from the well-known company which dominates the computing field.

It never was fully explained to the CMA team why the carefully created advice was ignored. Something about compatibility, and vendor reliability, and some other factors which the team though it had covered in its analysis. But nothing satisfying to the team.

Only the nagging feeling that the issue had really been resolved, somewhere up the corporate ladder, *before* the work had begun.

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SOFTWARE & SERVICES

Random Notes

DOS/360 Utilities Updated To Run With 370 and 3330

LOS ANGELES – DOS/360 users moving over to 370 systems with 3330 disks can utilize updated versions of two packages from Associated Computing Services Inc. (ACS) on their new equipment.

One, still labeled Relo/360, enables DOS/370 users with 3330s to store their application programs in relocatable form. The updated DOS/Audit package, on the other hand, inserts a date field in the source statement library whenever a change is made in a program.

Each of the new 370 packages is installed by mail, ACS noted. Each costs $1,200, and can be ordered from 12011 San Vicente Blvd., 90049.

Nova, SPC-16 Cross-Assemblers Set to Run on Many Mainframes

SAN DIEGO – Programs for Data General Nova or General Automation SPC-16 minis can be developed on various full-scale CPUs with one of two cross-assemblers just released by Decision Science Inc. (DSI). DSI-Nova accepts basic Nova Assembler Language while DSI-CAP-16 works with CAP-16 source code, for the SPC-16.

Each is in Fortran IV and can be installed on any Fortran-supporting mainframe. The 360 version should fit in 32K bytes, DSI said. The Nova package costs $1,500 and the SPC-16 $2,500, from 4508 Mission Bay Drive, 92109.

User Shapes Ledger Reports

BURLINGTON, Mass. – Users of Software International's General Ledger system, previously limited to a set of "hard-coded" reports, can now specify both the content and format of their printouts, at execution time, with a control-card-driven report writer feature added to the system.

The parameter options include layout of both columns and rows of information headings, titles and types of calculations to be performed on data before it is reported. The enhanced ledger system, in ANS Cobol, operates under DOS, OS or IMS/360, and is available from 279 Cambridge St., 01803.

Loan System Extended

CHERRY HILL, N.J. – Loans made on a simple interest basis can have interest calculated on daily outstanding balance with an optional subsystem now available as part of the Bankserv Installment Loan System from Arthur S. Kranzeley & Co.

Written in ANS Cobol, the complete system, including the simple interest process, can be installed on IBM, NCR or Burroughs CPUs. The 360/370 implementation requires 120K bytes of storage. The system costs about $35,000 depending on customization needs. Kranzeley is at 1010 S. Kings Hwy., 08034.

Standards Doubtful

TG 13 to Study Benchmark Techniques

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – Better understanding of methods to define workloads, benchmarks and test procedures, rather than standards to be followed in those areas, are the likely results when a still-forming task group completes its basic work for the National Bureau of Standards.

Task Group 13 is being organized under the Federal Information Processing Standards (Fips) Coordinating Committee, but experience may show that required standards of operation "simply are not suitable" in the areas to be studied, according to TG 13 Chairman Oliver Kinney of Mitre Corp.

Since benchmarking "does not have the outside commercial support that is available in the simulation systems and hardware and software monitor area, it appears deserving of a dedicated work group within the Federal Government," Kinney was told in his preliminary instructions.

Though TG 13 will, in part, serve as an interagency "forum and central exchange" of methods and problems, both Kinney and Dr. Joseph Harrison, chairman of the NBS Fips Coordinating Committee, expect the group to seek relevant information from users both in and out of the government and, similarly, to make its findings available to the broadest range of interested users.

The precise "charter" for the new task group is still being written, but Kinney has been asked to gather material on the problems of workload definitions and descriptions and of benchmark/workload representations "including synthetic programs."

NBS has also said TG 13 should identify and design "technically accepted methodology, criteria and procedures" for benchmark execution in the measurement of both computer systems and time-shared services. That part of the work should include test data and monitoring requirements, according to Kinney's instructions.

Finally, TG 13 should prepare federal uniform "practices or standards" for Fips Coordinating Committee consideration, Kinney was told in early December.

Some Definitions

Workloads are just that – that actual work a computer system is to perform, in terms of instruction mix and the like. Benchmarks are tests in which workloads in one form or another are put on actual computer systems to see how they perform, and these tests are often used to compare two or more proposed configurations.

Synthetic programs, Kinney explained, are nonproductive patterns of instructions which represent in miniature the instruction mix within a workload. They are not simulation models although they share with simulation the ability to get results quickly. At Mitre, Kinney noted, a synthetic program representing a month's work on a mainframe ran in three seconds, with worthwhile results.

Inclusion of concern for methodology to test the cost-effectiveness of time-shared services has been cited by one industry observer as potentially one of the most significant elements for the new task group study, especially in view of users' growing interest in the lack of understanding of what some of the available services really offer, and what they actually cost.

Kinney's detailed definition of what TG 13 will do should be ready for review by the Fips Coordinating Committee at its February meeting, he said.

$49 Modules Save Record Space, I/O and Data Transmission Time

SOUTHFIELD, Mich. – A pair of 360 Assembler Language modules, called Squeez/Unsqueez, costs only $49 but may save users considerable space on disks or tapes and time in I/O or data transmission operations.

The modules compress and expand character data containing strings of three or more blanks. They are available from Computer Service Corp. (CSC) which claims a 42% savings in space needed, after it applied the Squeez operation to its own Cobol source statement library.

The logic of the modules can handle individual records up to 35K bytes long, and individual strings of blanks as long as 256 bytes within each record

Compressed records not only take less storage space, the company noted, but can be passed through I/O and data transmission operations faster than full-length records. Some processing time will be required, however, to perform the compression and expansion operations.

The modules can be accessed through CALL statements in the user's Assembler, Cobol or PL/I application program. The same parameters are passed for both modules and include a count field to show the length of the data in the sending field; the name of the sending area; and the name of the receiving area.

Data is compressed by the Squeez module whenever more than two blanks are found. At that time a flag value of hex 'FF' is inserted in the outgoing data, followed by a one-byte count indicating the number of blanks (minus two) eliminated.

Squeez will not perform compression if it finds a hex 'FF' already in the incoming data. Conversely, Unsqueez reverses the Squeez operation as it finds the hex 'FF' flag.

The combined modules require only 1,200 bytes of storage for coding. I/O area size is determined by the user.

The package is available from 23225 Northwestern Hwy., 48075.

'Pass' Adds Personnel Process To User's Own Payroll System

KING OF PRUSSIA, Pa. – IBM 360 users currently operating with simple payroll systems can extend their operations with the Personnel Accounting and Skills Search (Pass) system from International Systems Inc.

Pass is used to create and maintain a data base of personnel records, including current status and history of all employees. An interface between preexisting payroll systems and Pass will be provided by International, a company spokesman said.

Continuing Story

Current status fields within the Pass files are updated, through the interface, whenever a change is made in the payroll files. Pass also provides for the insertion of narrative comments which become part of the history segment of the Pass file.

The personnel system produces a variety of management reports including salary/performance review notices, seniority listings, status and history, sick days register and Equal Employment Opportunity (EEO) reports.

Two levels of search are provided by the system, according to the company. One level allows a search of the data base for single- or multiple-skill codes. The second allows a comprehensive search based on various parameters such as education, salary range and years of service.

The Pass logic is written in Cobol and source code is distributed so users may make modifications. As shipped, it requires a minimum of 20K bytes of core, but may gain in efficiency if more core is available, the company said.

The system operates under either OS or DOS and utilizes three tapes or two disks. The package costs approximately $10,000, depending on the complexity of the programming needed to interface Pass with the user's payroll system.

International Systems Inc. is at 150 Allendale Road, 19406.

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____ Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
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____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

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☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

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FORUM TOPICS

Day 1 – Data Entry
Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 – Communications
Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management
Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Forum Attendance is limited
In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

COMMUNICATIONS

Data Briefs

Western Telecommunications Starts Its Data Service

DENVER – Western Telecommunications Inc. has become the second specialized common carrier to offer data services. The firm's first circuits provide high-speed data links to Cubic Corp. for a classified government project.

The circuits, operating between San Diego and Yuma, Ariz., include a 100 kbit/sec channel and a 50 kbit/sec channel. The higher-speed facility is "believed to be the first 100 kbit/sec service on a common carrier system, according to Western Telecommunications.

Cubic Corp. is utilizing only a portion of the Los Angeles to El Paso, Texas, route which the FCC recently approved for the specialized carrier.

Century 50 Gets RBE

DAYTON, Ohio – NCR has developed a Remote Batch Entry (RBE) package to allow the Century 50 to operate as a satellite processor to larger non-NCR systems which use binary synchronous communications.

RBE will allow the 50 to operate with mainframes supplied by IBM, Univac, Burroughs and CDC, the company said. In a network operation the 50 will "retain its independence as a separate processing system handling local applications when necessary, NCR said.

The software is loaded via a card deck and control is exercised through inquiries printed on an I/O writer. The package is free to Century 50 users.

CSMA Seminars in Five Cities

WILMINGTON, Del. – The Communications Systems Management Association is planning a national series of seminars dealing with user selection techniques of data and other communications equipment.

The one-day sessions will be presented in New York, Philadelphia, Washington, Chicago and San Francisco between June 25-29.

A package of speeches from the CSMA conference held last year in Chicago is available for $10 from the association. Information on CSMA activities is available from Suite 1003, 1102 West Street, 19801.

Terminal Combines Visual, Inquiry

COLMAR, Pa. – The CSI Model 180B Visual Display/Data Inquiry terminal from Credit Systems Inc. is designed to replace teletypewriters or CRT terminals at a lower cost.

The $250 CSI terminal features a 16-key data entry and inquiry keyboard, an 8-character display screen for verification and responses to inquiries, and nine back-lit panels for frequent responses.

Delivery is 90 days from Route 309 and Advance Lane, 18915.

First Users Say

3705 Application Software Inadequate

By Ronald A. Frank

Of the CW Staff

NEWTON, Mass. – First users of IBM's 3705 programmable front-end processor are finding software implementation often takes considerably longer than expected.

The amount of time required to integrate a 3705 into a teleprocessing installation is apparently related to the amount of field-engineering support which local IBM branches can provide for the user.

Pending availability of the Network Control Program (NCP) for the 3705, present users are operating their front ends in 270X emulation mode. But many users will not be able to switch to the NCP, unless IBM announces NCP support for applications software.

"We're in the throes of getting the 3705 off the ground," one user with a 370/155 said. "Up to now we are not too happy about the support," he said. The field engineers are trying to help us but I am not sure they have all the answers.

"I didn't really think the education was what it should have been. We went to a one-week 3705 emulator class and the available documentation was inadequate," he said.

"The 3705 is not as reliable as the 2701," according to Bruce Armour, systems analyst at the University of Southern California. "We have had channel interface problems which cause checks on the multiplexer channel," he said. It took IBM about three weeks to correct the problem.

The front end is connected to a 370/155 and the channel checks occurred when the 3705 was interfaced with the mainframe. A field modification had to be installed, he said, to eliminate the channel checks.

USC is running binary synchronous devices on the 3705 at speeds up to 50 kbit/sec, Armour said.

At Mitre Corp. a 3705 has been operating with a 155 since last July, according to Jim Hanks, systems programmer. "The thing has been incredibly reliable. We did have some minor 'glitches' in the implementation process but we were in production the following morning."

The 3705 replaces a 3702 and "for the same money we have also been able to implement two high-speed RJE lines with Hasp, he said. This was done just by "genning in" the 2701 characteristics into the 3705. It would have cost about $800/mo more to have the same capability without the 3705, he said.

The 2702 was handling about 23 lines of 2741 terminals and TTYs. These were all switched to the 3705 in one evening. At first the TTYs did not work correctly. "When we typed in Log On, Carriage Return, the line would drop," he noted.

The reason was that TSO issues a Read chained to another Read instruction, he said. It does a Halt I/O to stop the second read when it is ready to write back the response to the second read.

"But their logic was, given a Halt I/O, the intent of the host CPU was to hang up the phone line," he explained. But IBM experts figured out a correction in about an hour.

The 3705 emulator also mishandled the Attention Interrupt and was feeding two Attention instructions into TSO. But IBM field engineers fixed this "non-crippling" problem in about a month.

The NCP will require "a substantially larger" 3705 than the 16K model now installed, Hanks indicated. "A casual IBM estimate at a recent Guide meeting indicated about 90K would be required to allow adequate buffering," he added.

This would make the 3705 about twice as expensive.

"We've had far worse support from IBM in Raleigh with Tcam than we have with the 3705," Hanks said. "We were running level 1.1 Tcam and in going to release 21.6 of OS, we put in level 4 Tcam, and that was terrible. We had to back up to level 2 to run TSO, and they haven't fixed the problem yet."

The university has no plans to switch from emulation mode to the NCP because IBM has not announced any applications programming support, he added. At present the NCP can support only the Telecommunications Access Method.

"There is no way for us to go to NCP," Armour said, "because we want to run TSO under NCP." But that means we have to go to VS2. The university is planning to upgrade to a virtual memory 370/158, but in order to use the NCP the present jobs would have to run under Tcam.

"We are stuck because the 3705 can run only with NCP or the emulator," he said. But USC also runs Hasp and APL and these are not supported under the NCP. The only thing that will work with the NCP is Tcam, so only the programs that interface with that access method will operate with the NCP, he added.

One West Coast user is seriously considering replacing its 3705 with an independent processor. "We're keeping the 2703 we use to run production jobs because we are a little queasy about the reliability of the 3705," he said.

"All IBM has done so far is bring up a few ports at night to try out the Tcam. That seems to work okay but most of the problems have been with the Administrative Terminal System (ATS), which is so very primitive in the way it handles communications," he said.

The independent front end being considered is the Comten 3670, which is 3705-compatible, the user said. "They will have emulation, NCP and an operating system that will allow the two to coexist," he said. This will be extremely useful for users who can run ATS under emulation, and TSO under NCP, he said.

New Carriers Hit AT&T's DDS; MCI Schedules Intercity Charges

WASHINGTON, D.C. – Competition between AT&T and the specialized common carriers appears to be heating up. The specialized carriers recently filed vigorous objections to Bell's application to introduce its Digital Data Service (DDS) and Microwave Communications Inc. announced intercity prices that average up to 40% less than comparable AT&T rates.

Six specialized carriers have filed objections to AT&T's DDS applications – led by Datran which told the Federal Communications Commission that Data Under Voice (DUV) and DDS are designed "to extend Bell's monopoly into the field of data communications."

'Damn the Public?'

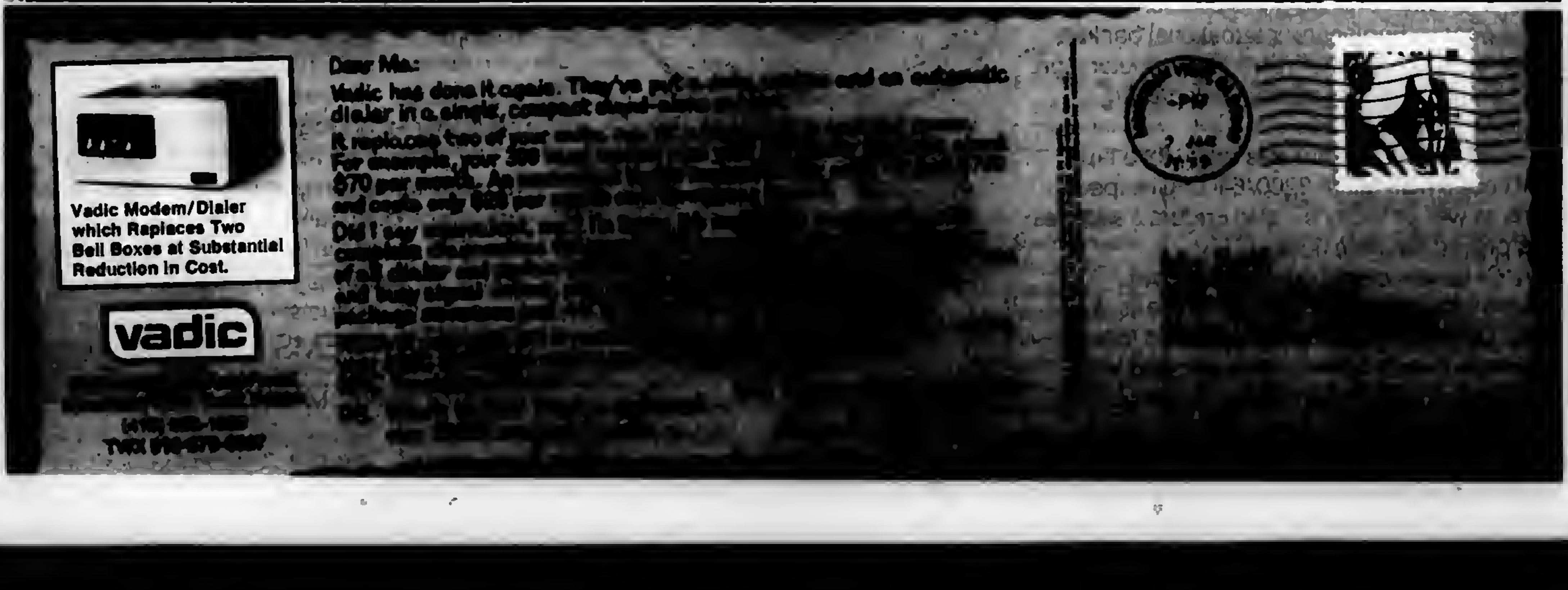
The parameters and services proposed by AT&T are nearly identical to Datran's plans and are an attempt by Bell "to enter the data market before the specialized carriers, regardless of the public interest . . . to preclude competition in the data communications" area, Datran told the commission."

In addition to Datran, MCI, Southern Pacific Communications Co., Western Telecommunications Inc., Eastern Microwave Inc. and the independent Data Communications Manufacturers Association all filed objections with the commission.

In a related area, MCI said it would offer "4K plus" services to its customers, Each 4K plus channel will provide users with a 4-wire balanced and equalized transmission pathway, MCI said. The specialized carrier will assume "management responsibility for end-to-end service," according to an MCI spokesman.

The rate structure announced by MCI includes five data offerings ranging from 300- to 9,600 bit/sec serving 21 major cities. A comparison of the MCI prices with comparable Bell offerings shows users can save from 28% to 44%, depending on speeds and options, MCI claimed.

An independent comparison of AT&T and MCI rates by the Center for Communications Management shows that at 4,800 bit/sec MCI will be 10% to 20% below Bell, and at 2,400 bit/sec, the new carrier will be 30% to 40% below AT&T. The comparative study is available from Box 324, Ramsey, N.J., 07446.



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COMPUTERWORLD

CW Supplement

★ The 360 Lives On ★

January 31, 1973

"The 360 is not dead – long live the 360!" That's the battle cry of many users who are continuing to enhance their "obsolete" systems and who have given these independently "souped-up" 360s a new lease on life.

This supplement describes the enhancements, looks at the trade-offs and discusses why users are still finding their 360s cost-effective.

From New...to Old

Computer Research Co. replaced its 256K 370/145 with a 512K 360/50 (right). Diane Morris, vice-president, Madansky & Assoc. enters a job on the "new" 360.

Firm Swaps 145 for 360/50 And Users Share Happiness

> *"The real savings are in comparing the 370/155 with the 360/65. It is possible to get equal throughput on the Model 65 and save $10,000/mo." – a user*

There is no doubt that for certain applications an IBM 370 system is the most cost-effective mainframe, but more and more users are discovering a surefire way to retain a solid niche for their 360 mainframes.

In most cases the decision to stay with a 360 is based on careful trade-offs and evaluations. The comparisons are usually made between an all-IBM 370 and a 360 obtained on third-party lease and enhanced with independent main storage and peripherals.

The Computer Research Co., which provides machine time to users who need access to specific types of systems but can't justify such a capability in-house, replaced its 370/145 with a 360/50.

"We had 256K on the 145," explained Ron Ellis, president, "and our customers were looking for core and a 2314 disk capability." The company considered expanding the 145 to 512K but such an upgrade was "absurd based on costs and the fact that real throughput on the 145 "was just not realized."

CW Photo by Ronald A. Frank

Ron Ellis, Computer Research president, checks on some third-party lease prices.

"I am certainly not anti-IBM," Ellis said. "We have a 155 which is serving us well and we plan to install a 135," he said. "But the 145 was just not the right machine for the RJE customers that were buying time on it," he explained.

After extensive evaluation, Ellis and his company decided that a 512K Model 50 was cheaper and more cost-effective than the 256K Model 145.

"You have to determine what you can buy for about $15,000/mo," Ellis said. While the 145 was faster than the 50, this was not an important criterion for the RJE customers accessing the 370 system. An upgrade to 512K was definitely indicated.

The decision to go to a Model 50 has saved Computer Research about $85,000/yr, Ellis estimated. And that has allowed the company to drop its rates about 10% for users who now access the Model 50.

"Most customers were I/O-bound and were not hurt one bit by our switch to the 50," Ellis said. One user was compute-bound when he switched his jobs from the 145 to the 50, and that customer was provided with time on the 155, Ellis said.

There were some inefficiencies with the Model 50. About half of the 512K was taken up with the OS MVT, but this still left customers with another 256K they could use, Ellis said.

Calculating the net effect of running jobs on the Model 50, Ellis said customers experienced "zero degradation" on I/O-bound jobs. On compute-bound jobs there was a "50% degradation" on some jobs, but these users were just switched to the faster 155, he added.

The $85,000/yr savings were not just based on one specific configuration – they were based on a 256K 145 compared with a 256K Model 50. But savings of $45,000/yr were still possible when comparing a 512K Model 50 with the 256K 145, Ellis said.

"But the real savings are in comparing the 370/155 with the 360/65," Ellis said. "It is possible to get equal throughput on the Model 65 and save $10,000/mo over the 155, he added.

Based on this comparison of 512K systems, Computer Research recently installed a Model 65 as added backup for its 370/155. Asked why his firm did not replace the 155 if the Model 65 was more cost-effective, Ellis stressed that the 370 was a purchased machine.

But the company was able to achieve some cost-effective upgrading by expanding the 155. "We managed to expand the system from 1M bytes to 1.5M bytes with no increase in costs," he said.

The earlier 1M-byte system included 512K of purchased IBM core and 512K of rental core from IBM which cost the firm substantial overtime charges based on the 500 hr/mo average operation of the system. An upgrade to 1.5M bytes would have required the purchase of an $83,000 storage adapter from IBM before the system could be expanded to 1.5M bytes, Ellis said.

Instead, Computer Research replaced the 512K memory on IBM rental and installed a 1M-byte memory box from Cambridge Memories, Ellis noted. While he admitted this comparison was based on IBM charges with overtime rates, a

(Continued on S/Page 2)

'Replaces' Dual 135s

Edos Helps Boost Model 40

In many cases, the choice of a 360 over the installation of a 370 involves cost performance trade-offs measured according to hardware capabilities.

But as more meaningful independent software becomes available, some users can enhance their CPUs and increase the efficiency of their installations by carefully selecting non-IBM software.

One of the most ambitious 360 software systems now available is Extended DOS (Edos) from The Computer Co., Richmond, Va. First announced in the spring of 1972. Edos has proven an effective 370-stopping enhancement for several users.

"We will be able to do the same work on one 360/40 that we previously had allocated to two 370/135s," said Owen McBrien in describing the value of his independent operating system, plus some independent peripherals. McBrien first began using Edos last year at Media General Inc. where he is director of data processing. He had a jump on other innovative users since his installation served as a test site for much of the Edos software, but he is quite willing to share his results with others.

Just the Basics

"We experienced a 13% to 15% increase in processing throughput with just basic Edos," McBrien said. The comparison was based on earlier operation on the same mainframe using IBM's DOS.

"The improvement was based on the same machine with the same programs," he said. In the first month Edos was monitored, the company had 10% increase in workload volume, McBrien estimated.

The execution time of individual programs was not affected by Edos but the "job set-up time" and the "program load time" were improved. The reasons for this increased efficiency are the relocatability of all programs, regardless of language, to any partition; and the block fetch feature which makes the "loading program much more efficient than IBM's," the user said.

The major operating advantages of Edos, which are similar to OS/MFT include automatic volume sensing, partition load balancing and volume dump restore. These Edos features "reduce the amount of operator set-up time/job and therefore they reduced the time the system was sitting idle between jobs," McBrien said. An optional Edos feature provides six-partition support.

The introduction of Edos has reduced the operations overhead and freed up CPU time, he said. "With an increase in workload we had a decrease in meter hours during the first month," he said. From this we calculated that we had about a 15% increase in processing," he said.

More Savings in Sight

Media General is operating with a rental IBM Model 40 so the reduction in operating hours meant a savings of about $600 for the first month, McBrien said. But the firm is replacing its rental machine with a similar configuration from a third-party leasing company. And when the third-party Model 40 is installed, there will be no overtime charges at all, he said.

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DAT Box Coming?

Independents Ponder Virtual Storage for 360s

By Ronald A. Frank
Of the CW Staff

It is certainly not unusual for a 360 user to consider acquiring a 370 system. Undoubtedly the user's local IBM representative has more than once described the added capabilities, and perhaps even status, involved with the operation of "this year's model instead of last year's model."

But most users no longer accept the status symbol approach. And few IBM people try to appeal to the user in this way. So the trade-offs boil down to a dollars and throughput comparison.

In the technical area the user has to consider the impact of a virtual operation on his shop. In almost every other area, the independent suppliers can duplicate (and often surpass) IBM product offerings.

Memory expansions to almost unheard of limits are becoming routine, faster tapes and disks often outperform the IBM units they are designed to replace, and independent terminal equipment is normally faster and cheaper than IBM's. But the advantages virtual memory will bring to the user are still relatively unknown.

Only as IBM begins to provide software enhancements and new releases to its various VS operating systems will the real impact of virtual memory operation become apparent to the user.

And if it turns out that this software support offers really valuable capabilities to users, the independents have some interesting options available to them.

DAT Box

Probably the most glamorous possibility will be the addition of the Dynamic Address Translation (DAT) to the 360, a capability that has been attracting the interest of users and vendors alike [CW, Nov. 15, 1972] for some months.

This feature will be installed on purchased 155s and 165s by IBM to convert these systems into 158 and 168 configurations.

But one crucial event holding back a DAT box for the 360s is that the first IBM feature for the 155 is not scheduled for installation until the second quarter of this year. Presumably any independent version of a DAT feature will be based on the IBM device which it described last August as a "hardware facility."

"The problem with developing a DAT box is that we really don't yet know much about them," according to one independent vendor's marketing man.

Nevertheless, most experts agree that a virtual-type feature will be available for at least some 360 models before the end of the year.

"Some vestige of virtual storage for the 360" will be available soon, according to Edward O. Boutwell, Jr., executive vice-president at Compata Inc., a consulting firm.

Several Options Available

A virtual memory feature could be implemented on the 360s in several ways, according to Boutwell. The options include hardware, software or microcode. And almost any version will require modifications in at least two of the three areas, he said.

The Models 50 and 65 will be the first 360s to get the virtual capability, he predicted.

One of the major incompatibilities between the 360 and 370 is that there are a small number of instructions that can run only on a 370. But these instructions which can be executed only on the 370 are not a major headache to most users.

But this 360/370 compatibility gap is bound to widen as more details of the IBM VS operating systems become known. Some experts see the IBM DOS stabilization as an indication that significant enhancements will soon be announced for the 370 software.

Despite this stabilization, however, the opportunity for independent software development on the 360s seems better than ever. "Users are really beginning to focus on the weaknesses of OS and DOS," Boutwell said. Among the areas that can stand improvement by the independents, he predicted a new scheduler for OS and improved job management packages and language translators for DOS.

One of the more intriguing approaches to enhancing the 360 predicted by one consultant involves the use of simulation. Non-compatible 370 instructions could be "executed" on 360s using independent emulation software, the consultant suggested. The emulation method might also be a feasible way to add virtual memory capabilities to the 360 line, he added.

Firm Trades In 145, Users Reap Benefits

(Continued from S/Page 1)

50% increase in memory was achieved without any increase in costs, Ellis said.

In attaining the throughput of a 155 on the Model 65, Ellis has made some significant independent peripheral enhancements. The 65 now includes one 3330-type disk system from Storage Technology Corp. and two 2314 systems. In addition, the 65 has 1M byte of Ampex ECM core storage. Computer Research plans to add Ampex core with the cache memory to the system soon and with this added capability Ellis believes he will reach a performance level just "as fast as native core."

Souped-Up Model

"This combination on the 65 will make it comparable to the 155 at about half the cost," Ellis said. To be more specific, a Model 65 with 512K third-party leased main memory, a 1M-byte Ampex core box with cache memory and 3330-type disks from Storage Technology Corp. will provide the performance of a 370/155 with 1.5M bytes of core and IBM 3330s. The Model 65 will also save $185,000/yr, Ellis said.

But despite the savings Ellis is not ready to abandon his 155. "There are some instructions that our customers use that can only be executed on a 370 and not a 360," Ellis said. In addition, the Model 65 does not have a hardware emulator to allow customers to run DOS under OS, he said.

Computer Research also has two 360/30s. One of these will be replaced with a 370/135 early in 1973, Ellis said. The 135 will be a good bargain for Model 30 users, he believes. "These users will be able to go to a 135 and get the throughput of a Model 50," he predicted.

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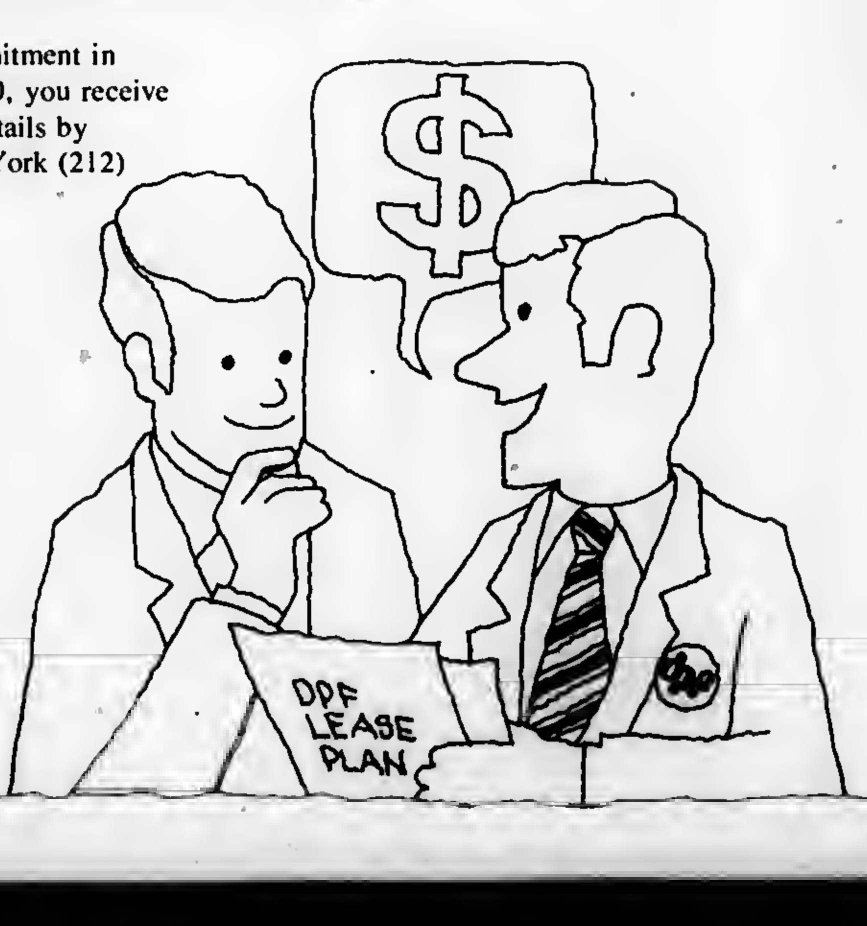

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Five Months of Benchmarking Convinced User to Stay With 50

For most users, the comparison of mainframe systems is based on cost and throughput timings of a few jobs run on several systems. But one midwestern company conducted an intensive five-month study during which it benchmarked a known job mix from its 360/50 at various outside locations, including sites made available by IBM.

The benchmarks were designed to evaluate the relative throughput capabilities of 360 and 370 systems. Included were comparisons of virtual and non-virtual operations.

The benchmarks convinced the user to stay with his independently-enchanced Model 50, with a future upgrade to a Model 65. This conclusion was based on relatively small throughput improvements from the 370s tested. And in some cases the 360 was actually faster.

The jobs used in the benchmark evaluation were based on the firm's Model 50 which has 768K of core including 512K of native memory from IBM and 256K of AMS core supplied by Itel.

The in-house configuration includes 16 Telex 2314-type disks on selector channels 1 and 2; four 2403-1 Telex tape drives on selector channel 3; and the remaining I/O peripherals including printer, card reader, etc. on the multiplexer channel.

The user also has an in-house Model 65 with 512K of native IBM core and 1M byte of IBM 2365 LCS storage. Both systems are leased from Dearborn Computer Leasing.

One of the most interesting benchmark results demonstrated that the 370/145 with an IBM 2305 fixed head disk ran no faster than a system with just 3330s and 2314s. (see chart 3)

Among the problems encountered in running the benchmarks was the inability to get Bdam to work under VS1. A great deal of time was devoted to debugging because it was not possible to debug under paging. "Each time something went wrong, it was already destroyed in memory," the user said.

Many patches or modifications to VS1 were required to get the benchmarks to run. When a tape or disk was not ready, the 370 would not give out a message, the user said.

"Everything would just hang up," he said, "without getting any communications back under the VS paging system." On the 360, a message would be generated to flag a peripheral that was not ready, the user explained.

In the paging environment of VS 1, if two partitions were allocated to terminals, the system might encounter delays up to 12 minutes when both partitions "would seek access to the same file," he said.

These delays were based partly on joint usage of I/O handling and coding in different programs, he added. The 370 sorts under VS1 were also a problem and ran much less efficiently than Sort II under OS.

System	Size	Time
360/30	64K	35 min
360/40	256K	28 min
370/145	256K	20 min
370/135	256K	20 min 20 sec
360/30	256K	26 min

Chart 2. In one "screened job mix" the Model 30 with 256K was faster than a Model 40 and almost as fast as a 135 and 145. The software included IBM's CS 30 and 40. An IBM 1400-type job was also run "for curiosity."

"The Model 65 with Telex peripherals ran as fast as the 145 with 3330s," the user said. "So we still have the upgrade potential of going to the 3330-type devices."

After careful evaluation of all the benchmarks, the company decided to go to dual Model 50s instead of going to the 370/145.

A later upgrade to a 360/65 is planned, with independent 3330s. The 65 will not only improve on the 145 but probably will have better throughput than the 155, the user said.

System	Peripherals	Operating Software	Time
360/50	Telex tapes, disks	Release 20.6 OS/MFT	1 hr 58 min
360/65	Same	Same	1 hr 18 min
370/145	IBM 3330s	Same	1 hr 12 min
370/145	IBM 3330s, 2314 and tapes	OS/VS1 Virtual = Virtual	1 hr 3 min
370/145	Same	OS/VS1 Virtual = Real	1 hr 17 min
370/145	IBM 3330s, 2305, 2314 on IFA and tapes	OS/VS1	1 hr 3 min

Chart 3. The above results were obtained using the five-partition job mix in Chart 1.

Partition	Size	Software
1	40K	In-house "writer" called Modular Teleprocessing (Motel). Packs data for transmissions. Handles tape, disk and printing jobs.
2	60K	IBM's General Inquiry Control System (Gics) super-modified so IBM no longer supports it. Handles teleprocessing with 21 2780 terminals, and five 360/20s used as satellite CPUs.
3	60K	Gics used to control Bunker Ramo CRTs
4	140K-160K	Production jobs, file administration program, sorts and stock status.
5	140K-160K	Manufacturing Records Processing (MRP), application package not-supported by IBM.

Note: Jobs were run with the IBM Advanced Multiprogramming Analysis Procedure (Amap).

Chart 1. Mix of Jobs Run on Each Partition

System	Peripherals	Operating Software	Time
360/50	Telex tapes, disks	Release 19.6 OS/MFT	1 hr 27 min
360/50	Same	Same with Hasp	1 hr 6 min
360/50	IBM tapes, disks	Same with Hasp	1 hr 17 min
360/65	Telex tapes, disks	Same with Hasp, all jobs in native core	48 min
360/65	IBM tapes, disks	Same with Hasp, all jobs on LCS storage Release 20.1 OS/MFT, split native and LCS	57 min 51 min
360/65	Telex tapes, disks	Release 19.6 OS/MFT with Hasp	49 min
370/155	IBM tapes, 2314 disks	Release 19.6 OS/MFT with Hasp	49 min
370/155	IBM 3330 disks	Release 10/1 OS/MVT	33 min

Chart 4. An additional group of tests was run using an abbreviated job mix on two partitions. Partition one included the file administration, stock status, and back-up files. Partition two included the MRP program, program testing, payroll and a data retrieval system.

Edos Helps Enhance Model 40

(Continued from S/Page 1)

The total yearly savings resulting from the switch to a third-party Model 40 is estimated to be $127,000, "and you hardly argue with those numbers," he added.

"And you also can't justify a 370 when you're looking at that kind of savings. The 370 would have increased our costs by about $70,000/year," McBrien said.

Edos was hardly added into a simple operating environment, McBrien said. "We use almost all available programming languages including Cobol, PL1, RPG, Alogol and some TP work. So we had a real good mixture," he said.

Edos gives my batch-oriented shop all the operating advantages of OS without the tremendous cost of the core for the supervisor. We increased the supervisor by 2K to install the software, he said, but Edos operated with a 24K supervisor compared with a 92K supervisor for OS.

As an additional benefit, Media General plans to install the Edos spooling feature [CW, Jan. 24]

The spooling capability has been tested for some months at Media General and McBrien said he "will eliminate seven to nine hours of operations time each day." This means the company will eliminate an entire eight-hour labor shift," he said.

"We have proved in controlled tests that compilations can run 60% faster with the Edos spooling feature compared with direct printing under IBM's DOS," he said.

McBrien said he "discarded" IBM's Power spooling package about two years ago "because of the size of the Power partition. It was going to have to be a 38K partition, while the Edos spooling utility operates in the minimum partition size of 16K.

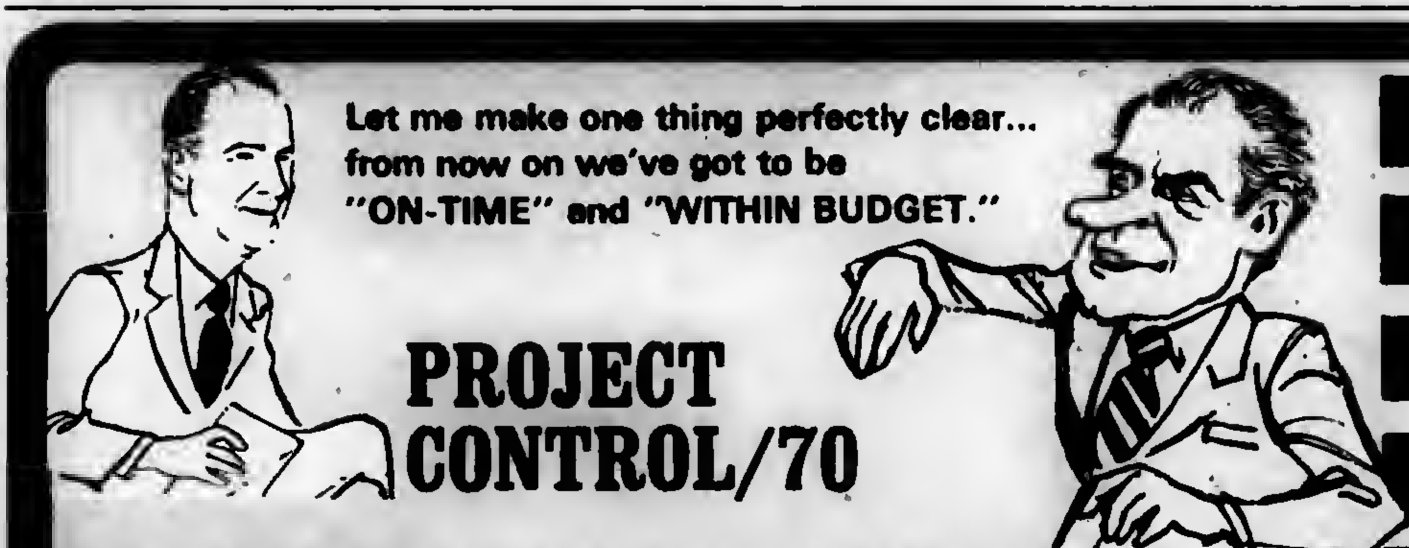
"We intend to operate the spooling utility, which retrieves the output files from the disk buffer, in foreground 1 of system B which is really the fourth partition that the user can get under Edos, he said. So we will not take away from the major problem program partitions. We will run this as a subsidiary partition," he said.

Media General uses its Model 40 to publish a statistical reference publication called *Financial Weekly*. The publication is "totally produced" on the 360 in about three and a half hours for a "92-page paper that includes "semi-log graphs," McBrien said.

The Model 40 is connected to a Harris Intertype Fototronic/CRT which produces "totally paginated pages." The only thing not done is the pasting up of art work, he explained. The system sets type at a speed of about 2,000 char./sec, he said.

The extra time freed up by Edos has allowed the firm to shift all classified ad production away from "a series of minis" onto the Model 40. In addition more management reports, another publication and some experimental work can now be added to the 360, McBrien said. All this will be added while the work hours are reduced, he said.

"We would have been forced to go to a 370 without Edos. And now with spooling we really don't need a second CPU because we have enough available time," McBrien said.



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DOS Stabilization Helps

Independent Software Emphasizes Value of 360s

By Don Leavitt

Of the CW Staff

For all the advances in hardware now available to the 360 user, it can still be justifiably argued that software is what makes the system work; and software is what is keeping users (especially those operating under DOS) linked to their equipment.

Ironically, perhaps the most important software announcement of the past year was not of a new product at all, but rather IBM's "functional stabilization" of DOS for the 360.

Some users thought this meant IBM was pulling the rug out from under their systems to get them to move up to OS (with its greater appetite for core) or to the 370 equipment.

In fact, it meant that IBM was doing exactly the opposite. IBM was renouncing its "right" to modify the basic system software any further, even if it felt a functional enhancement would be beneficial to the users. It was therefore saying to users and independent software houses alike, "OK, here is a firm base. Go ahead and build on it as you wish and we won't come along later to make your work redundant or inoperative."

Some vendors had foreseen that DOS would never develop in certain directions and had offered enhancements to the available system even before the "functional stabilization" announcement. Since the announcement, however, the number of packages has increased and the number of users of the packages has jumped even faster.

More currently available enhancement packages offer a combination of features to extend IBM's DOS facilities – usually to make it more like the more complete Operating System (OS). The independents have worked to improve I/O speeds, to provide more effective program development tools, more effective system resource utilization and to give the user a better appreciation of what cost was incurred by individual jobs.

Efforts to improve the I/O speeds have generally centered around the concepts of spooling, or moving data destined for a relatively slow printer or punch to intermediate storage on disk or in core. Once that transfer takes place, the generating application program can immediately return to its processing.

IBM itself recognized the possible value of spooling and has long offered the Power spooling package without apparent cost to its users. Independents such as Boothe Computer note, however, that their spoolers use far less core than Power.

In many cases independent spoolers also allow the stored I/O data to be moved out to the appropriate peripheral when that device becomes available, while the application program continues execution. Some spoolers support shifting card images to disk for faster processing of input as well as output.

Independents have always been stronger than IBM in providing support for source program libraries under DOS, to eliminate unnecessary handling, and perhaps mishandling, of card decks.

Current library systems tend to go even further, allowing the storage of several identifiable versions of individual programs. And vendors have begun to stretch the basic program library concept to include languages other than just those provided by IBM.

Library support for Job Control Language (JCL) statements is also available from some vendors, again to provide the DOS user with the same "proc lib" type of facility IBM has included under OS for some time. Complete job streams can be cataloged and invoked later on demand.

Some of the packages support the creation of totally new job streams at execution time, by allowing the user to "pick and choose" then which of the cataloged JCL statements he wishes to use.

The independent vendors have also attacked one of the basic limitations of DOS/360: the fixed program partitions and the assignment of programs to specific partitions. Several packages work with the standard compilers or link-edit routines to store object programs in relocatable form with addresses that allow the programs to be used in any available partition.

Without this capability, users who foresaw the possibility of running a program in more than one partition had to store separate images of the program for each partitltion, adding immensely to the disk space used by the libraries. With relocatability, a single image is moved into whatever partition is then available.

Still another facility many independents have included in their DOS enhancement packages, and which relates neatly to relocatability, is load balancing, whereby the system determines the most effective use of partitions regardless of what the user may have specified in his JCL statements.

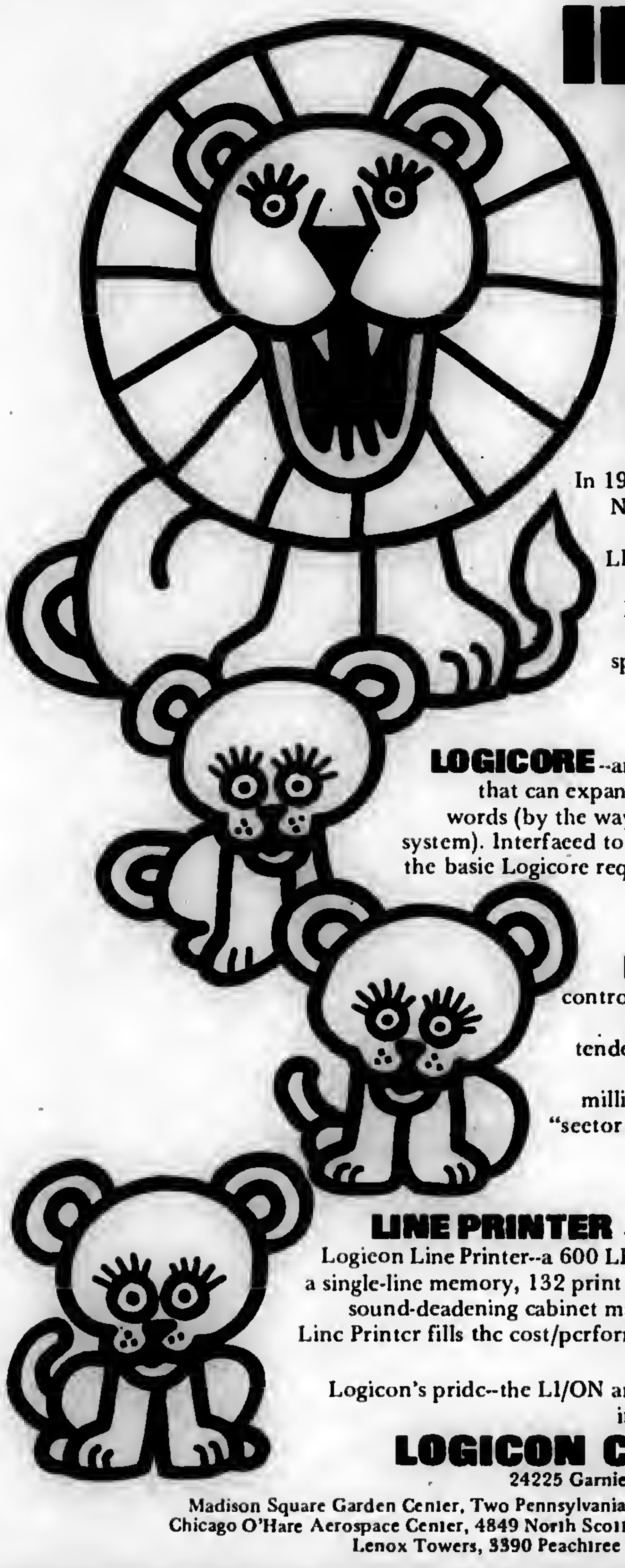
One vendor, The Computer Company, attacked the partition problem from a different angle. With an option available under the company's Extended DOS (EDOS), users with enough core can have six partitions, instead of the normal maximum of three.

Job accounting, by which the computer itself reports how it is being utilized, came into its own in the past year or so. IBM included a module in DOS Release 25 to create accounting records, but left it to the users or independent vendors to capture these records and to summarize and report the accumulated data.

Several vendors answered this challenge and, in some cases, anticipated it by programming the complete accounting logic, from creation of the data records through report generation, without reference to any coding provided by IBM.

While job accounting provides a means of billing user departments for system resources used in their behalf, another range of packages – program run-time anatyses – enable the programmer to get a better picture of what his product was actually doing, and how it could be modified to do the job better.

> *"Ironically, perhaps the most important software announcement of the past year was not a new product at all, but rather IBM's 'functional stabilization' of DOS for the 360."*



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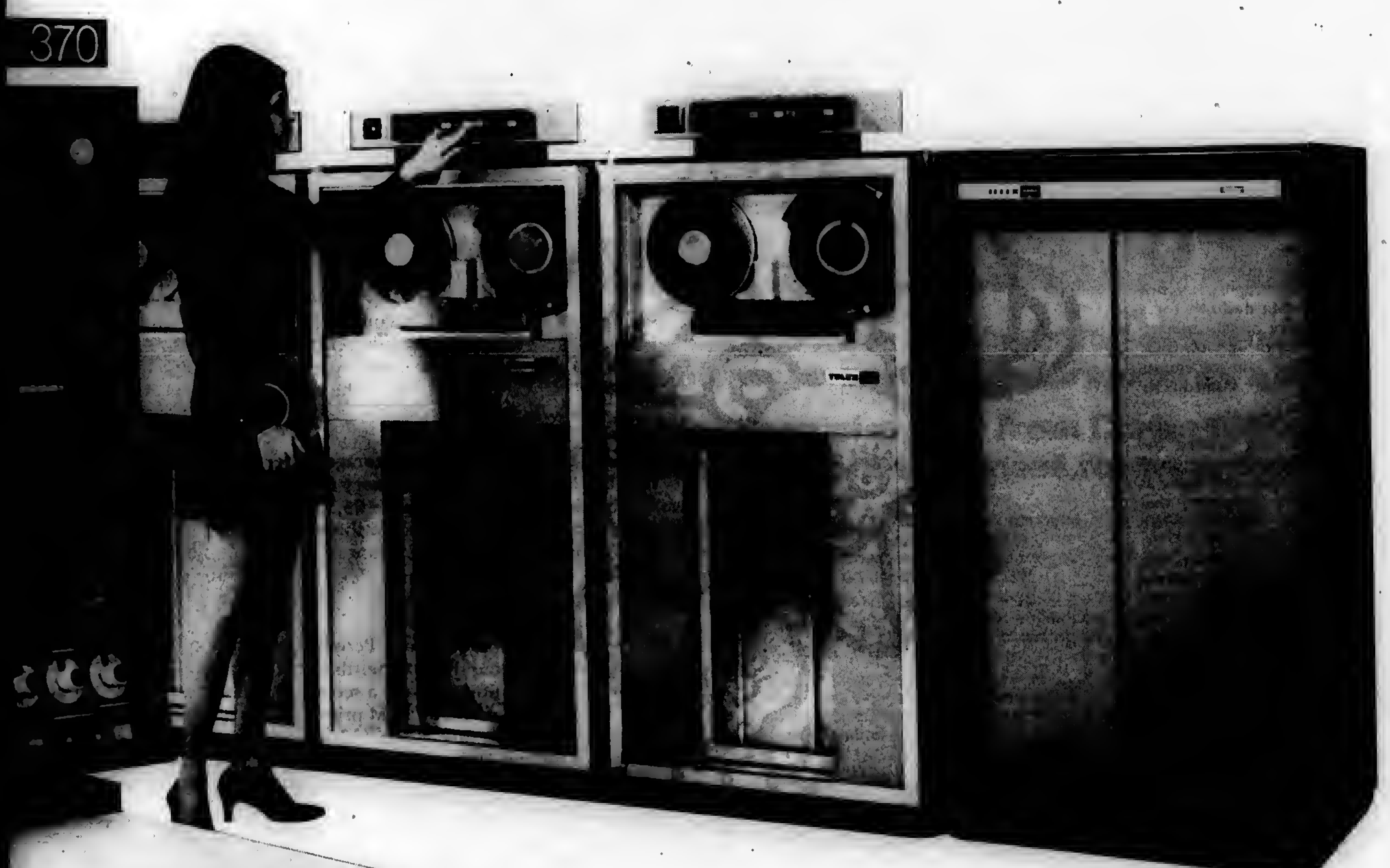

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Smaller 360s Are Not Forgotten

- **Add-on Memory**
- **Accelerator**
- **Disk Devices**

While independent enhancements for 360 systems are nothing new, most of the initial products concentrated on the "large ticket" systems such as the Model 50s and 65s.

But the enhancement suppliers now appear to be setting their sights downward to the smaller systems. One large group that will undoubtedly benefit is the Model 30 users.

The 360/30 is not exactly a newer model in the 360 line. The first system was delivered in 1965. But the number of Model 30 users is large, probably the largest with the exception of the 360/20. According to figures compiled by International Data Corp., more than 4,780 Model 30s are operating at users' installations.

More than 20% of these systems are on third-party lease with less than half on straight IBM rental. Presumably the remainder are purchased machines. But regardless of their origin, these users probably can expect increasing support from the independents.

One of the first Model 30 enhancements was the expansion of memory beyond rated IBM limits. And some users are pushing their systems to exotic memory sizes.

The Greyhound Computer Corp. data center in San Francisco has a Model 30 with 256K. This expansion has allowed the installation to operate in a partition environment using Grasp independent software and DOS.

With jobs such as sorts, the expanded system "has picked up about 18% to 20% in throughput," according to a Greyhound spokesman. This estimate was based on a "before and after" benchmark of one particular job. "You can get longer strings in core and can do more core sorting than disk sorting," he said.

The Greyhound Model 30 includes one eight-spindle 2314 and five 2311s plus eight 2401-3 tape drives all on third party lease, the Greyhound spokesman said.

The large configuration has been operating for about six months and additional upgrades are being planned. The most important will be the installation of the new 360/30 accelerator [CW, Jan. 10] which will allow the 30 to operate with throughput similar to a Model 40, according to the developer, Computer Hardware Consultants and Services Inc. (CHCS).

New Maintenance Problems?

The accelerator feature promises to add some new dimensions to the already-sticky maintenance problem. When the independents began to push their add-on memories beyond the limits specified by IBM, the mainframer balked at maintaining such systems. And the accelerator, according to CHCS, will go even further to alter the microprogramming on the Model 30. What effect this will have on IBM's diagnostics and maintenance is not known.

But CHCS spokesmen are prepared to maintain these Model 30s and anticipate that IBM will refuse to maintain even the "native portions" of these CPUs.

Early in 1972 the Model 30 became the focus of a maintenance problem between IBM and Data Recall. The situation was apparently resolved when the independent modified some portions of its add-on configurations.

At present IBM does maintain independently enhanced memories on 360s including the Model 30 but the decision is made on an individual basis for each installation.

Based on a judgment handed down by the U.S. District Court in California in March 1972, IBM will maintain "unaltered portions" of Model 30 CPUs on a "best efforts" basis. This decision resulted from a suit brought by Itel and Advanced Memory Systems Inc. against IBM.

While the court decision applied only to the two indepen-

(Continued from S/Page 11)

Want a Used 'New' 30?

For users who want a "new" Model 30 from IBM the machines are available. While it is possible to order a 30, according to an IBM spokesman, the machine will not be new. In such cases, barring unacceptable independent enhancements, IBM will maintain these systems on an "as new" basis. For the customer this means the company will provide maintainence even though part of the system has been refurbished or replaced after being returned by another user.

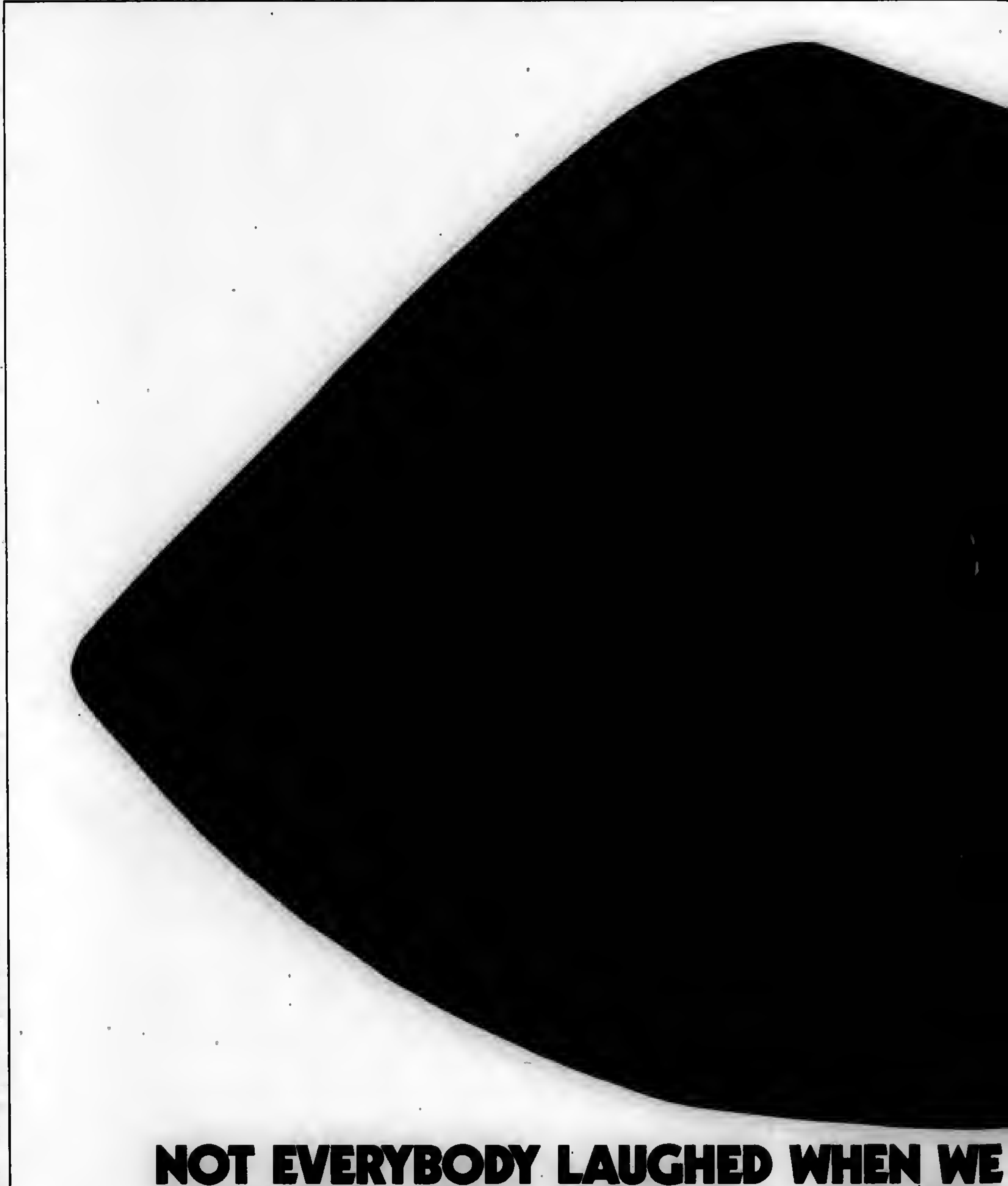
At present, 16K and 24K Model 30s are available in six months while 32K and 64K configurations are supplied on an "as available" basis, according to the IBM spokesman.

An IBM spokesman said Model 30 "machines assembled from serviceable used parts and machines previously installed will at the time of shipment meet product functional specifications currently applicable to new machines." And this includes the one-year warranty normally provided for new equipment, he said.

Officially, IBM supplies Model 30 configurations up to 64K with 96K available on a Request for Price Quotation (RPQ) basis.

About the Editor

This supplement was prepared under the direction of CW Technical News Editor Ronald A. Frank. Frank has also been responsible for the communications section since 1969.



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Smaller 360s Aren't Being Forgotten

(Continued from S/Page 10)

dents involved, it apparently applies to other independent equipment as well. IBM will not comment on a blanket policy for providing maintenance to independently enhanced Model 30s, but says each case is decided separately.

3330-Type Device

Another potentially interesting Model 30 enhancement is the addition of a 3330-type device. While some experts argue that this type of device is too fast to be supported by a Model 30 processor, others see a buffer device being introduced by an independent supplier.

A buffered controller for the Models 30, 40 and 50 was announced last year by Computer Investors Group. Production of this device, to be handled by International Peripherals and Computer Corp., has apparently been delayed until later this year, according to a CIG spokesman.

If the buffer principle works, the addition of a 3330-type unit would further enhance the 30 to a point where an upgrade to a comparable 370 such as the 125 would become less appealing to users.

One midwest DP manager facing the 30 versus 125 decision sees very little contest between the two systems. He now pays $4,800/mo for his Model 30. To "upgrade" to a similar 125 with independent peripherals would cost at least $8,000/mo, he estimated.

The user is planning to carefully evaluate the performance of a 30 with expanded memory and other independent options. "With this type of price spread, I can afford a lot of enhancements before the 30 becomes as expensive as the 125," he said. And by enhancing the 360, he feels he can equal the capabilities of the 125 at greatly reduced cost.

How the Accelerator Rates

IBM 360/30	IBM 360/40	CHCS Accelerator 30
1 byte	2 bytes	2 bytes
1.5 μsec	2.5 μsec	1:5 μsec

Chart compares the performances of the IBM Model 30 and Model 40 with the CHCS accelerator-equipped Model 30.

OP Code	Code	360/30	Accelerator 30
Load	58	24 μsec	16.5 μsec
Store	50	24 μsec	16.5 μsec
Load Multiple	98	206 μsec	105 μsec
Add	5A	29 μsec	22 μsec
Load Register	18	17 μsec	9 μsec

Some instructions execute almost twice as fast when run on a system using the accelerator feature. The chart compares the IBM 360/30 timings with similar instructions run with the accelerator.

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Accelerated 30 Should Handle Medium-Size Nets

By Alan Taylor
Of the CW Staff

NEWTOWN, Pa. – The accelerated Model 30 introduced by Computer Hardware Consultants & Services Inc. (CHCS) [CW, Jan. 10] should be able to handle the throughput of many Model 40 systems. It will be able to handle medium-size telecommunications networks efficiently and provide a surprisingly high price/performance ratio.

These conclusions are based on the preliminary results of the first tests of the accelerated system in operational environments. The tests are currently being conducted by Marc Reidstein of Trilog Associates Inc.

Particularly important in the Model 30 modifications being tested was their impact on Model 30-powered telecommunication networks. Until now the Model 30 has not been used in medium-load telecommunication systems being run on top of batch processing.

The software simulation microprogramming used in the standard Model 30 for handling such operations was designed for low loads, and so has a high interference rate. (It takes around 80 machine cycles on the standard system to handle each single byte being transmitted, so the increase in use of these systems can interfere seriously with the operations in a batch partition.)

The CHCS improvements have concentrated on reducing this interference, and so increasing the capacity of the accelerated system to handle network loadings without having to move to the considerably more expensive Model 40 or 125 systems.

The first tests were designed to make throughput comparisons of the accelerated Model 30 and unchanged Model 30 and 40 systems.

The tests were designed to get a handle on both full OS performance and DOS performance. In each case Reidstein elected to concentrate upon one processor-dominated program and one I/O concentrated program.

The I/O jobs selected were the disk sorts under both DOS and OS. These were checked on a 100,000-record file of variable length records averaging 20 bytes each.

The record ID and the record length were chosen as keys to provide for a randomized distribution of records. The DOS system with its lower overheads in the I/O area showed its strength by sorting the file in 12 minutes, while the OS system took 16 minutes to complete the job.

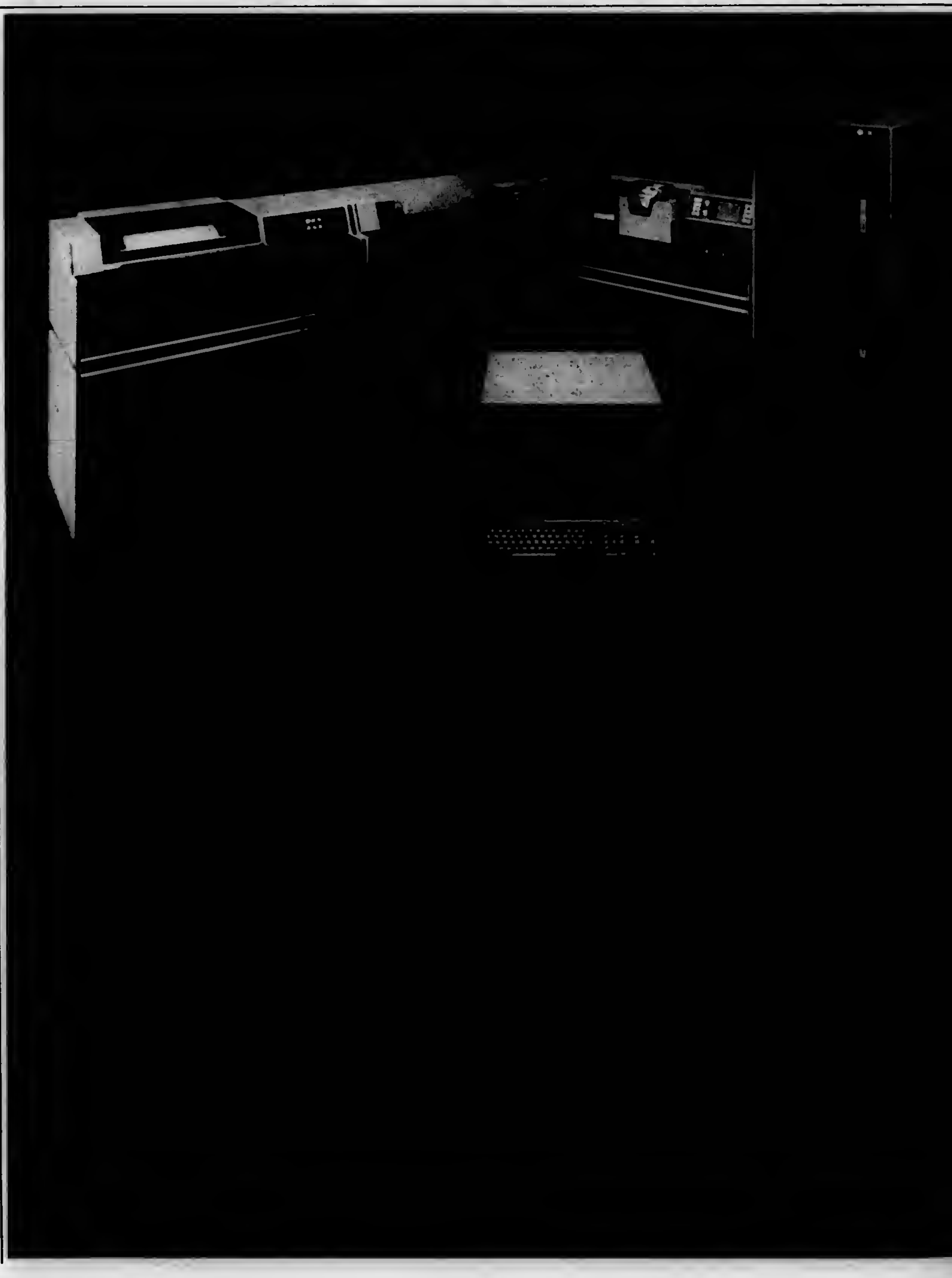
After watching the operation, Reidstein said he anticipated the accelerated system would show marked improvement over the standard Model 30, even though the I/O loads were predominant during most of the job.

"The first phase," he explained, "is concerned with an internal sort which really uses the processor. I was watching the wait light, and it hardly flickered at all until after the phase was completed, so the processor was flat out. This must have improved the performance by comparison with the standard model," he said.

It illustrated, he commented, that even programs such as sorts, which were often thought to be I/O bound, did in fact have processor involvement which could be improved without any I/O changes.

No tests were done on the use of remote networks. Reidstein believes, however, the improved performance of the accelerated Model 30 in the telecommunications area can be forecast with reasonable confidence, owing to the use of heavy I/O command structures in the sorting tests.

Changes to the Model 30 standard microprogramming card deck are entered with modified cards.



IBM Said to OK Off-Line Switch

Some of the independent suppliers have tried to ease the maintenance problem by providing special exclusion features that will "lock out" the independent memory. The effect of such switches is to make the "native or unaltered" portion look like an all-IBM system. And the theory is that IBM will maintain such CPUs where non-IBM parts have been switched out.

One of the more recent switch arrangements was announced by Computer Hardware Consultants & Services Inc. (CHCS) which the company says "permits IBM maintenance of highly upgraded" Model 30s under "standard agreements."

The "off-line switch" which CHCS says has been approved by IBM, "electronically negates alterations to Model 30 computer systems that expand core memory up to 256K. By throwing this switch the IBM Customer Engineer isolates the Model 30 from the CHCS add-on core . . . and this allows IBM to run standard diagnostic maintenance checks," according to CHCS.

After inspecting one of the CHCS Model 30 installations with the switch, IBM wrote the independent supplier that "it is practical for IBM Customer Engineers to maintain the unaltered portion of the IBM 2030 [CPU] under our standard maintenance agreement."

Similar installations would be eligible for IBM maintenance on their unaltered portions, the letter said.

Will Lightning Strike the 'Free Soul'?

Secret Fear Stalks Those Who Would 'Mix'

The enhancement of a user's 360 system is invariably based on a third party leasing arrangement and/or the use of independent peripherals.

While most users are very much aware of the significant savings that can be obtained with a shift from IBM to independent equipment, relatively few users have made such a shift.

The hesitancy on the part of users is to a large degree based on an unwritten fear that lightning will strike the mixed system site while virtue will prevail for the all-IBM user.

Industry experts estimate only 12% of U.S. users are innovative enough to take the plunge and use some sort of non-IBM equipment. And with few exceptions these users not only save 20% to 30% each month but they get maintenance and other support which is at least as good as that provided by IBM.

Users considering the installation of an independent disk or other peripheral system often hear "horror stories" about systems that crashed or files that were destroyed because the customer put his destiny in the hands of an independent supplier. Few of these stories are ever verified, probably because names are rarely used and sites never identified.

The users who seriously consider independent equipment insist on a list of names of others who have installed the same type of peripherals. Many independent suppliers readily provide this data to prospective customers.

Still the aura of IBM ownership pervades many DP installations.

"We thought about an independent disk system," one user said, "but the IBM CE just shrugged his shoulders." The user explained that this action on the part of the IBM representative had led to much soul searching with the subsequent decision not to contract for the independent equipment.

In most cases the IBM man doesn't say anything against the proposed independent equipment. Merely the shrug of a shoulder or a similar implication is enough to give the DP manager visions of an IBM maintenance man refusing to answer a repair call or some other horrible fate which never materializes.

"IBM is learning to accept independent competition." – a mixed-system user.

Satisfied independent equipment users look back on their all-IBM days and wonder why they didn't take the plunge earlier. And in most cases users find IBM's support changes very little when independent peripherals are introduced.

Especially in the area of 360 enhancements, the independents have provided users with features not available from IBM. The trend probably began with the add-on memory products that eventually allowed users to expand their mainframe systems beyond the rated memory capacity advertised by IBM.

Some maintenance problems did develop in this area but in each case where IBM threatened to withdraw maintenance, the independent supplier offered an alternative to the user. Eventually IBM conceded that independently enhanced mainframes could be supported.

Another innovative area pioneered by the independents involves the 3330-type disk system. Several vendors now allow the user to attach this faster disk to the Model 50 and 65.

Even the often expressed fear of "how long will the supplier be in business" has proven groundless. In the few instances where firms actually ceased to provide a certain type of equipment, alternative maintenance sources were provided.

For some users, again the innovative ones, the third party maintenance firms have provided high quality support at significant savings. True, IBM 360 maintenance is only about 3% of the total system cost but even a small savings is a dollar "earned" for most users.

Many installations get their first experience with third party maintenance when they acquire an independent terminal or mainframe peripheral. After they discover that the maintenance company understands the equipment and its representatives are qualified to keep the units in running order, they may expand their non-IBM maintenance until an entire site is being supported by independent sources.

"IBM is learning to accept independent competition. They are reacting in a competitive manner by trying harder to please the customer," one mixed system user said, "and that is an important development that will benefit all DP sites."

"... Be damned if I'll give up this 360 before I've squeezed the last bloomin' ounce out of her!"

MODEL 70

MODEL 74

MODEL 75

MODEL 78

MODEL 88

Independent Disk, Cache Memory Due for 65 Users

3330-, 2305-Type Devices Scheduled

Among the more significant 360 enhancements scheduled for this year by the independent suppliers is the addition of 3330- and 2305-type devices to the IBM 360 Model 65. The addition of a 3330-type disk to a 360 is limited to the Model 65 and is available only from independent suppliers.

Itel has already delivered several of its 7330 disks with its 7830 controller and Ampex said it is working to install a similar unit.

Attractive Options

The Itel system offers users some interesting options. Using an Itel controller to attach a 3330-type disk allows the user to also attach a faster 2305-type device with the same controller. On the other hand, IBM systems using these disks require a separate controller for each device.

The Model 65 can handle a transfer rate up to 1.3 Mbyte so "any fixed-head device that does not exceed this rate can be attached," an Itel spokesman said. The Itel 7305 has a transfer rate of .9 Mbyte and thus falls within the limits of the 65.

The IBM 2305 units, however, with transfer rates of 1.5 Mbyte and 3 Mbyte are beyond the capacity of the 65, the spokesman explained.

Another Trade-Off

The Itel 2305 equivalent will not be available until later this year, but in the meantime the company offered users another interesting trade-off to consider.

The 3330 and 2305 equivalents on the Model 65 can be attached in two ways. The independent units can attach directly to the CPU's 2860 selector channel or they can be attached using a special block multiplexer device.

While the selector channel approach is considered to be a plug-to-plug modification, some OS software changes are required on the 360/65, according to Itel. The basic software changes give the system Rotational Position Sensing (RPS) capabilities with both the 7305 and the 7330, the spokesman said.

For users who find the software changes distasteful, Itel's block multiplexer device will allow direct attachment of both 3330- and 2305-equivalent systems. The block multiplexer feature may include an "upgrade kit" for users who have a 2860 channel. This kit would allow these users to upgrade the block multiplexer to the capabilities of the 2880 channel, the Itel spokesman said.

While the selector versus block multiplexer trade-off is different from a configuration standpoint, the Model 65 will look the same to the user, Itel said. "From the standpoint of walking up and running a job on the CPU there would be no difference in job control or operational procedure," the spokesman said.

Ampex ECM Goes Beyond IBM 2361

Most independent memory add-on products for the 360 are basically a "one generation" enhancement. Although additional increments of memory can be added one on top of the other, they usually don't improve on the capabilities of the earlier memories.

In cases where independents have come out with faster semiconductor enhancements, the earlier core add-ons continue to operate at their slower speeds. The user would have to trade in the slower unit to enjoy the faster operation.

But one independent has found a way to speed up a previously-installed memory enhancement. The Mainframe-ECM memory is offered by Ampex for users of the Models 65, 67 and 75 who already have the company's Extended Core Memory (ECM).

The Mainframe-ECM is a semiconductor cache memory that operates at 250 nsec and is available in a 32K byte size for each Mbyte of ECM.

The ECM alone, although a replacement system for the IBM 2361, surpasses the capabilities of the IBM system. And when the cache feature is combined with the ECM, the effective speed of the 360 memory is increased to 750 nsec which matches the speed of IBM's 2365 memory, according to Ampex. This compares with a 1.8 sec speed on the ECM-only system, acccording to Tom Harleman, marketing manager at Ampex.

The cache, used in conjunction with the ECM, allows users to expand their 360s up to 8M bytes using the IBM 8080 adapter. This compares with the earlier limit of 2M bytes with the core-only ECM, Harleman said.

For less than a 20% increase in price, the 360 user will significantly increase the throughput of his system, he claimed. While users can decide how much additional memory they need, up to the 8M byte limit, Ampex said less than 1M byte expansions would probably not be worthwhile.

"We feel the user can easily go down to 256K of native memory on the 65," Harleman said, "and then add the cache and an ECM and get the equivalent of 1.25 million bytes." Or the user can add a 2M byte ECM and get the equivalent of 2.25 million bytes, he added.

The Ampex cache is very similar to the cache memory on the 370/155, according to Harleman. The high-speed cache together with the slower speed main memory serves to increase the overall throughput of the system.

The Ampex ECM-cache combination is scheduled to be available in "late spring," the company said. A 1M byte add-on lease will cost $8,000/mo on a two-year contract with maintenance and the same system will sell for $250,000.

Comparable mainframe memories from IBM and other suppliers lease for $12,000 to $36,000/mo and sell for $500,000 to $1.5 million, an Ampex spokesman said.

"A 12-unit 360 peripheral that occupies the same floor space as one unit!"

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Computer Sharing Cuts Costs for Model 30 Users

For users who cannot justify the financial cost of an in-house 360 installation, one supplier has a different solution.

"We call it computer sharing," said Ken Ball, director of marketing for Greyhound Computer Corp., "and we use the concept to marry together similar users."

The Greyhound approach allows a company to install a system such as a 360/30 and share the available resources with other users.

"Most systems are used less than 180 hr/mo, Ball said. So in any given month as many as 744 hours can be allocated to outside users, he estimated. "It would not be in IBM's interest to put several users on one system," Ball said, "but we feel there is only a limited amount of 360 processing power available and it should be used in the best way possible."

Costs Shared, Too

For the host user who agrees to have Greyhound find other users for his system, there can be financial benefits. "Suppose IBM supplies a Model 30 for $10,000/mo and we can supply the same machine for $6,000/mo," Ball said.

"If the host user needs 200 hr/mo and we contract to have an outside user utilize 50 hr/mo, the host user will pay only 75% of the monthly charge for the system."

As more outside time is allocated on the system, the cost to the host user drops proportionately, Ball said.

At present, about six users have taken advantage of the computer-sharing concept, he estimated. The principle can work for batch users who require physical access to a system or it could be applied to several users connected to a CPU through data lines, Ball said.

For variation, Ball believes more than two users could share a system as long as their processing requirements were met. In addition, the CPU need not be installed at the host user's site. "The Model 30 could reside at one of our data centers," Ball said. And such a move could help to expedite system maintenance by making the system more accessible, he added.

System Support

One of the user benefits of the Greyhound sharing scheme is that the company can provide the system support that often is very important to the smaller user, according to Paul LeClair, production manager of Greyhound's San Francisco data center.

"Actually the shared installation becomes an extension of our own data center," LeClair said. He cited one example where a shared CPU was located closer to a potential user than the data center. "He needed some time so we provided him with resources that the host user did not need," he said.

Obviously Greyhound will not find users to share the host machine without a charge. If the company agrees to contract for a block of hours on the host user's machine, the first hours pay Greyhound's costs and then the host user begins to get a direct reduction off his monthly rental.

In some ways the company may find itself competing with the host user for customers, but the relationship can also benefit both parties. LeClair cited one instance when the data center could not provide the time desired by a customer who needed time.

"We sent him over to a shared 30 system so we kept our customer happy and at the same time decreased the monthly cost for the host user," he said.

Life of 360 Set At 10 Years

While no one can predict exactly how long the 360s will continue to be an effective system for users, few appear ready to call the IBM family obsolete.

One independent supplier, DPF Inc., is planning a 10-year program to support 360 users with enhancements products for their systems. These enhancements will give the user greater productivity from his CPU, according to Michael Creedon, vice-president and national sales manager.

Included in the products DPF intends to offer are expected additions such as core, but some unusual ones are also planned.

"We're looking at attaching 3705-type devices to the 360," he said. The 3705 is a programmable front-end scheduled for first deliveries this year. The processor is an upgrade for IBM's 270X family of line controllers, and offers many of the characteristics pioneered by the independent front-end suppliers.

While primarily useful "for the higher end" 360s, Creedon said DPF will also offer the 3705-type unit down to the 360/40.

The independent supplier also expects to offer a non-IBM 3330-type disk system for the 360/50 and 65 and "to a certain degree on the Model 40."

And the firm expects to provide communications users with an independent equivalent of IBM's 270X line controllers, he added.

Eye on Software

In the software area, operating system enhancements will be available for 360 users, Creedon said. While the third party leasing companies have mostly concentrated on hardware, DPF will increasingly turn its attention to systems and software support using non-IBM programs, he said.

"As part of our 10-year plan, we realize the user will need support in non-hardware areas," he said. "We have to be able to assist the user in utilizing the equipment," he added.

"We're looking at the 360 now as an economic tool that can be used to achieve certain throughput," Creedon said.

Another independent that feels it can supply a special capability to 360 users is Fabri-Tek Inc. For users with Model 65s with 1M byte of storage, the company can add core memory "at the end of the feature wall," according to Ken Geason, director of end user marketing.

If the user has four IBM 2365-2 memory modules or independent equivalents, Fabri-Tek can expand the system to 4M bytes. Without the add-on capability the customer would have to eliminate some of his 2365-2s to "make a port available," Geason said.

While there are a "number of independents" who have expanded 65s beyond 1M byte, none have used the Fabri-Tek approach, Geason said. This capability is especially meaningful for the customer who has purchased his 360/65.

"This user would be really trapped unless he sold one or more of his 2365 memory modules, Geason added.

The Fabritek core costs about 25% to 30% of IBM's equivalent units, he said. This means a 70% savings in addition to the unusual expansion feature, he added.

The first 65 memory, called 65+, was installed last spring.

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Users Keep 360s

370 Performance Often Less Than Expected

The reasons for staying with a 360 are not always tied exclusively to cost. While most users feel the savings are important, many are also disappointed with the relatively small performance improvement they can get with a 370 upgrade. This increased operation, which often falls short of IBM's claims, has to be acquired at a high upgrade price, these users say.

"The reason for staying with 360s is that the 370s are so much more expensive than we feel is warranted. Our benchmarks have not satisfied us that the performance claimed for the 370s is worth the additional cost," according to Phil Wanglan, vice-president at Chicago's Central National Bank.

"We felt we could afford just so much on the bottom line on an increased basis to IBM every year and after that it becomes prohibitive," he said.

"We have had third-party leases for the past two years and some of the IBM peripherals are under full two-year leasing to hold those costs down. And we are not dissatisfied with OS performance on the 360/50s," Wanglan said.

"IBM was talking about a 1.9 to 2.2 increase in performance by going to the 145 from the 50. This was on a 256K Model 50 versus a 256K 145. But in order to come up with a 1.5 increase in performance we had to go to a 384K 145. And this 370 was dramatically higher in price," he said.

> *"The reason for staying with 360s is that the 370s are so much more expensive than we feel is warranted. Our benchmarks have not satisfied us that the performance claimed for the 370s is worth the additional cost." – a user*

"We didn't feel that the price gap which was in the six figures per year warranted getting only a 50% throughput or a 1.5 increase. This became more dramatic when we found we could lease Model 50s with 512K for about 48% of the list price," Wanglan said.

"There is very little 370 third-party equipment available at an attractive discount, within a reasonable time frame," he added.

For the 360s the bank could get a good discount and sign up for only 12 months, he said, and this still left room for upgrades within a short time.

Current third-party lease prices are about 55% of IBM list for 90-day cancellation privileges, and 48% of list for a 12-month commitment, he said. This includes the option of a no-penalty upgrade as long as the customer stays with the same lessor, he said.

But Wanglan thinks he will be forced into a 370 by 1974 because IBM will probably drop OS support for 360 users. By the end of 1973 users will have to pay for OS support, he predicted. "We know that all of the 360 peripherals are no longer in manufacture; they are rehabbed machines," he said.

"So into 1974 IBM will do a good job of constraining the desirability of staying with 360s much longer," he said.

While Wanglan said he has some 370 orders with IBM, he would not rule out other alternatives if they were financially attractive.

The bank now has dual 512K Model 50s but the second is required for backup. One 360/50, at 48% of IBM list, with 512K, cannot be duplicated with a similar 145, Wanglan said. "We would instead have to go to a 155 or a 158 and the cost spread would be phenomenal. You would be talking about a quarter of a million dollars per year," he said.

At Chrysler's Airtemp Division IBM had installed a 370/155 but the firm decided to look around for some way to cut costs. The best way seemed to be with a third-party lease," said Lynn McKinley, DP manager.

"We found that a 360/65 with independent 3330-equivalent disk drives was the best thing that we could get," he said. "We benchmarked 2314 disks on both the 65 and 155 and found the 65 outperformed the 370. We felt the 65 would be at least equivalent with the 3330-type drives," he said.

McKinley expected some degradation with the 3330-type units on the 768K 65 because the system "would lose the block-multiplexer function." But if the block-multiplexer feature is also added to the Model 65, as announced by some of the independents, it will be "an extremely fast machine," he said.

"We have been running for two weeks with the 65 and we haven't noticed any deterioration in throughput," McKinley said. Chrysler runs "every type of application" including inventory control, production control, finance, sales, personnel files and industrial engineering jobs, he said. "And there has not been a noticeable degradation anywhere," he said.

The company has Itel 7330 disks and IBM 3420 tape drives with the system on third-party lease. The IBM 155 was "the equivalent of what we have on the 65," McKinley said.

The savings enjoyed by switching to the 65 will be "between $270,000 and $300,000 per year," he said.

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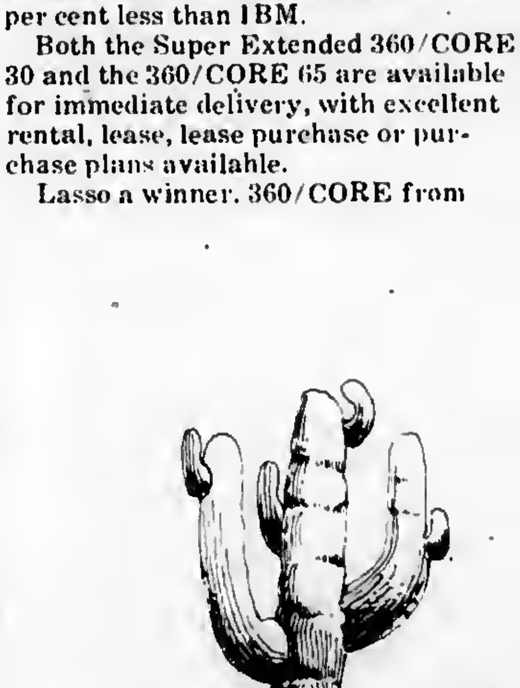

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Two Users Agree:

360/50 Better Price/Performer Than 145

By E. Drake Lundell Jr.
Of the CW Staff

If a 370/145 offers users a 50% throughput increase for just a 4% increase in price compared to a 360/50, why are several users finding the 360 unit a more effective price/performer?

The answer is simple: They are comparing leased 360/50s against 370s rented directly from IBM but the prices of the 50s offered by third-party leasing companies can change the equation completely.

Keydata Corp., Watertown, Mass., found the 145 was a better throughput performer than the 50 by about 50%. And in terms of IBM prices for the two systems, it was only 4% more expensive, obviously a better deal on a price/performance basis.

But Keydata looked around to see what type of deal they could get on a 360/50 from the third-party leasing companies and found that Itel was offering the system at between 50% and 65% of the original IBM rate.

If the 145 gives a 50% better performance for about the same price, the price/performance ratio is 3 to 2 in favor of the 145, according to John Hermistone, general manager for computer operations at Keydata.

But since the third-party lease rates have fallen to around 50% of the rental rates from IBM, it is now possible to get two 50s for the price of one 145.

This tips the price/performance ratio to 4 to 3 in favor of the 50s, Hermistone explained, and in addition gives the user some benefits not available with the one system shop.

The greatest additional benefit is backup, he noted. If one system is down the user can still operate on the second – operate at a reduced level, of course, but still remain on the air.

Another advantage is that there are no overtime charges when the systems are leased from third-party firms, he said. Keydata was paying approximately $3,000/mo in overtime charges to IBM with the 145.

In fact, a leasing company executive claims, "we have been able to prove in the majority of cases that a 50 leased from a third party is a 20% to 25% better price/performer than the 145," even before the overtime charges are figured into the equation.

At Keydata, which went from one 145 to one 50 with plans to upgrade to two 50s, the savings amounted to around $108,000/yr.

Another user who made the same evaluation is Golden 50 Pharmaceutical Co. in Chicago which replaced one 370/145 with two 360/50s for about the same price.

On a price/performance basis "we're ahead of the game," Joe Lavin, director of DP, said in discussing the move.

Before the switch, the firm was operating one leased 50 and a 145 rented directly from IBM.

The cost of the 262K 145 alone was averaging around $18,000/mo, Lavin said.

Golden 50 threw out the 145 and got another 50 and now the total cost for the two leased 50s is just under $20,000/mo – just over the cost for the 145 alone, he noted.

Lavin admitted the 370/145 was a better performer – "definitely faster" – than any single 50, but said on a price/performance basis the single 145 could not touch the performance of two 360/50s for approximately the same monthly rental.

Golden 50 is also saving in overtime charges, Lavin noted.

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University Discovers Third-Party Hardware Reduces Budget by 4%

By Michael Weinstein

Of the CW Staff

LAS CRUCES, N.M. – A saturated system and a school administration which would not allocate extra money for an upgrade led Mike Mann and the New Mexico State University computer center to investigate the "IBM-multivendor-third party world" with surprising and gratifying results.

From this search they were able to obtain a 300% increase in throughput while reducing the hardware budget by 4%.

The initial system was a 360/50 with 256K bytes of main memory and 1M byte of large core storage (LCS) operated under OS/MVT with HASP, Mann said.

In this particular environment, the operating system required over half of the high-speed core while one teleprocessing system (APL) took the rest.

Thus, at least while APL was running, all batch jobs were run in LCS – which led many to comment that New Mexico State had the largest, most expensive Model 50 in the West, Mann noted.

However, he said, the Model 50 proved to be a sound choice in many respects; it performed reliably and satisfied requirements very well – to a point. That point was saturation, which occurred for an extended period during the spring of 1971.

Studies and evaluations indicated an upgrade was essential. For all practical purposes, Mann noted, the massive problems presented by conversion to any other manufacturer dictated the upgrade be limited to IBM systems.

From this premise, three alternatives were considered: enhancement of the Model 50; move to a 360/65; or upgrade to a 370/155.

Mann decided to test the university administration's willingness to commit additional funds – $90,000 – to permit acquisition of the 360/65. However, subsequent discussion of belt-tightening and extending the life of the current machine resulted in no additional hardware funds for new systems.

During the summer of 1971, the five alternatives outlined were reconsidered, with the view toward purchase as a means of lowering cost, Mann said.

Preliminary discussions with third-party leasing and brokerage concerns were initiated. It was discovered that an IBM 360/65 system could be obtained from any of several third parties for about 50% to 60% of IBM's commercial price.

Discussions were also held with an outside vendor who could provide add-on memory, disk and tape units with considerable timing improvements over comparable IBM units. And all of these units would more than justify a resident customer engineer, Mann noted.

In 1971 the university put out a request for bids which was separated into two parts:

- A request for bids specifically for an IBM 360/65 CPU, 256K main memory, two (or more) selector channels, a multiplexer channel, and a console unit.
- A request for bids for auxiliary memory, disks and magnetic tape units satisfying certain minimum criteria and insisting that all items be supplied by the same vendor.

The low bidder on Part 1 offered an IBM 360/65 at 38% of IBM rental cost with all installation, shipping, cables and insurance included in the price.

The system also included three selector channels, two selector subchannels on the multiplexer channel and an 8080 adapter – for the independent's add-on memory.

The low bidder on Part 2 was Ampex, who presented figures offering 2M bytes of Extended Core Memory (ECM), two disk controllers and 12 spindles, and one tape controller and two disk drives at a price just over 50% of standard IBM one-year rental rates, Mann said.

When the two bids were combined, with the maintenance and tax figures included, it was discovered that the complete system could be obtained for some $18,000 less than the price tag of the current Model 50.

With 2M bytes of 1.8 msec core interleaved to give an effective cycle time of about 1.4 msec, Mann estimated that the proposed system would provide a throughput improvement of at least 300%.

The money saved provided for one further upgrade – the addition of a second line printer and card reader for student use.

At the same time the current card reader, printer, controller and two communications controllers were purchased from IBM, Mann stated.

A competitive summary of the old system and the new, along with the total annual cost of each is presented in table 2, also compiled by Cartlidge.

Old System	New System
IBM 360/50, 256K	IBM 360/65, 256K
1M bytes IBM LCS (8 µsec)	2M bytes Ampex ECM (1.4 µsec interleaved)
12 2314 disk spindles (60 µsec average access)	12 Ampex disk spindles (30 µsec average access)
2 IBM magnetic tape units (60K bytes)	2 Ampex tape drives (60K or 120K bytes)
2 selector channels	3 selector channels
1 multiplexer channel	1 multiplexer channel 2 selector subchannels
1 1403 printer	2 1430 printers
1 2540 card reader punch	1 2540 card reader punch 1 2502 card reader
1 2821 control unit	2 2821 control units
1 console unit	1 console unit
Total annual cost: $345,500	Total annual cost: $332,900

Table 1. Comparison of the Old System With the New Multivendor System

The financial advantages possible with a multivendor system are now obvious, Mann said. Many of the operational problems have been resolved and much valuable experience has been gained. The installation which considers moving to such a configuration should be informed and prepared to meet added stresses in exchange for an improved price/performance ratio, he concluded.

A full description of the New Mexico State experience will soon be available in printed form and can be obtained by writing to Bruce Ramsey, P.O. Box 732, Gaithersburg, Md.

Requests should be made for the paper "Financial and Operational Aspects of a Multivendor Installation in a Nonmetropolitan Area" Incorporated in the proceedings of the 3rd Annual Sigcosim Symposium.

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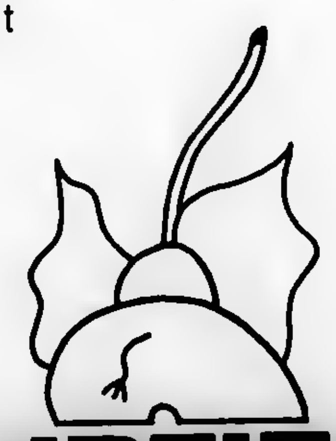

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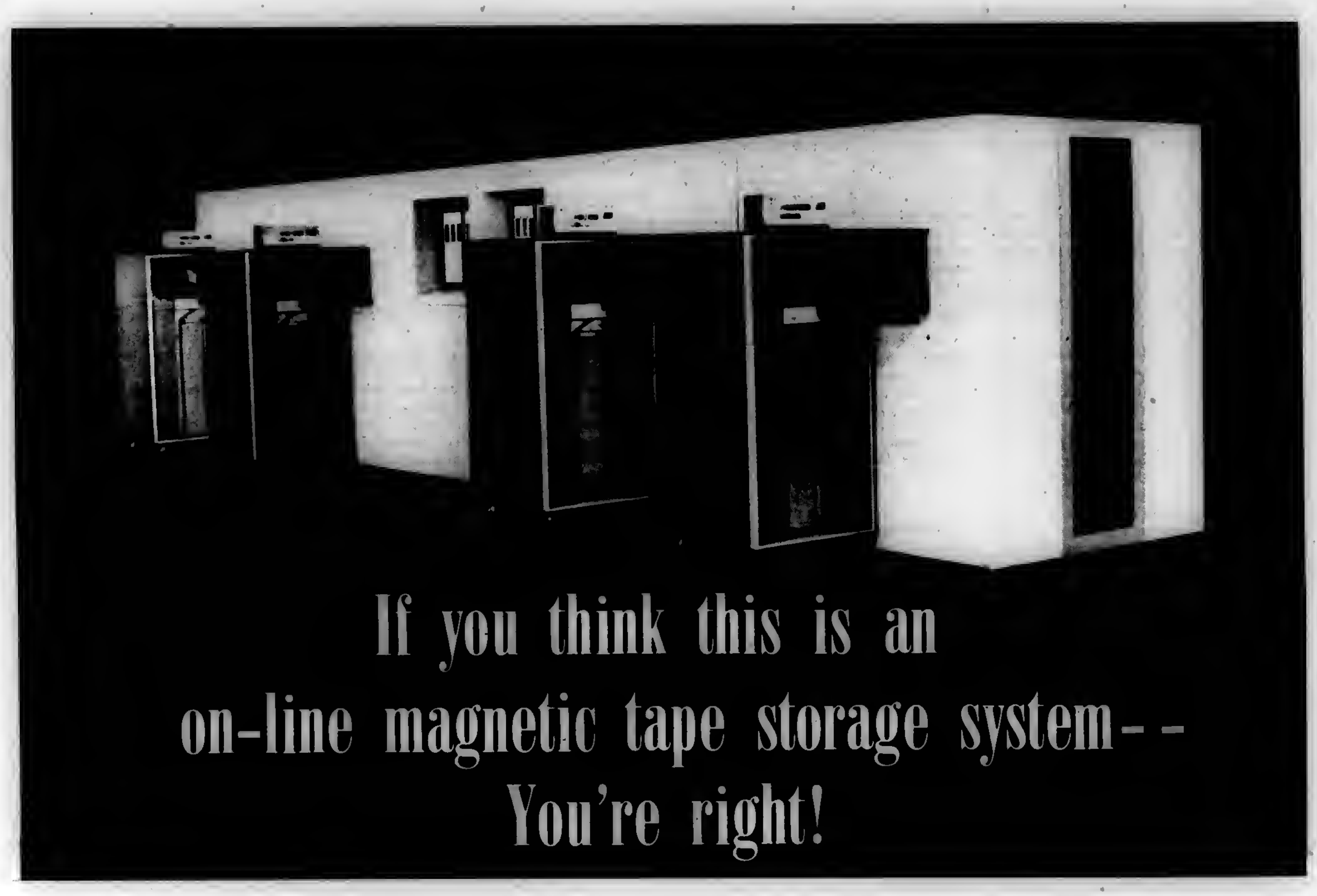

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Bits & Pieces

Input to Key-to-Tape Unit Done by Selectric

PLAINVIEW, N.Y. – A key-to-cassette system provides full teletypewriter signal capability and outputs keyboard data from an IBM Selectric directly onto a magnetic tape cassette, according to the developer, Varisystems Corp.

Designed as an alternative to punched paper tape, the "Reporter" eliminates the need for keypunching, tape tearing, chadding, spooling and other activities normally associated with paper tape, the firm's spokesman said.

The tape drive controls a 200-foot magnetic tape cassette which can store up to 645K bits of data each, in blocked format up to 256 characters. Tape speed averages 31 in./sec, the spokesman said.

Special command keys on the Selectric enable the operator to output codes used on- or off-line to drive peripherals, central processors or phototypesetting equipment, the spokesman added.

Cost of the system is $3,470 with delivery in 60 days from 207 Newtown Road, 11803.

Peripherals for PDP-8 Users

MAYNARD, Mass. – Digital Equipment Corp. is offering PDP-8 users a new logic module designed to interface equipment such as A/D converters, instruments, read-only memories and arithmetic/logic units to minicomputers equipped with the Omnibus bidirectional synchronous bus.

The M1709 Omnibus Interface Foundation Module provides all required Omnibus interface logic – device selectors, bus drivers/receivers and interrupt/skip circuitry, the firm's spokesman said. Price is $125 with delivery off-the-shelf.

HP Users Offered Add-On Core

SUNNYVALE, Calif. – Hewlett-Packard 2100 Series computers can now be expanded to 32K core with Daconics' 2970 core memory add-on subsystem, according to the developer.

The memory requires no hardware changes to the CPU and works with the existing installed core to offer a memory access time of 250 nsec, the firm's spokesman said.

A self-contained power supply conserves CPU power for peripheral I/O controllers and all existing software.

An 8K add-on costs $4,400, with the 16K add-on selling for $7,700 from 925 Thompson Pl., 94086.

Unit Rewinds Paper Tape

HIGHLAND PARK, Ill. – The TM/270 is a paper tape winder which collects tape that is being expelled from readers and punches at rates up to 115 char./sec or 11-1/2 in./sec, according to the developer, Data Specialists, Inc.

Price is $90 from 1548 Old Skokie Rd., 60035.

Minicomputer Allows PL/I Programming

NEW YORK – Q1 Corp. has a desk-top minicomputer costing around $20,000 which features a PL/I language capability.

The Q1/T is available in 4K-, 8K-, 12K- and 16K-byte configurations with the PL/I compiler requiring about 8K bytes – of which 5K are resident, a firm spokesman said.

The other language offered, a system assembler, can be linked to PL/I programs so assembler code can be used as subroutines, he asserted.

The present storage medium is special magnetic cards which are inserted into the side of the unit. Each of these cards can hold 64 tracks – 160 char./track – of data for a total of 10K byte/card which can be accessed by programs, the spokesman added.

A disk subsystem for larger storage, the spokesman said, will soon be released.

Output from the system is via a 30 char./sec printer that incorporates proportional spacing and offers users upper- and lower-case options with a 158-character total capability, the spokesman said.

Since the printer also has forward and reverse capabilities, it can be used as a plotting unit, he added.

Included in the keyboard entry console is an electronic display with 80 character display positions. This display is used to visually edit and correct programs or data, the spokesman stated.

In many cases the Q1/T provides faster response than larger, batch-oriented machines, such as the IBM 360/30 and System/3, since card punching and sequential tape storage are eliminated, the spokesman asserted.

The Q1/T is specifically aimed at commercial data processing and text-processing users with applications such as order, entry, inventory, receivables, payables and general ledger, the spokesman said.

In programming a typical business application – such as payroll – the use of PL/I permits a reduction of up to 90% in programming cost, compared to using machine language, the spokesman claimed.

Q1 Corp. will provide users with application and operating software as well as provide personnel training programs and operating aids, for the Q1/T, the spokesman stated.

Future enhancements include a mag tape system so that Q1/T output can be transferred and used by larger processors, and a 64K byte version of the system.

Future System Design Possible With Switch

By Michael Weinstein
Of the CW Staff

ZURICH, Switzerland – IBM scientists have unwrapped an experimental switching device that is reportedly much faster – by a factor of at least 20 – than experimental transistors and requires only about 1/10,000 of the power.

The importance of this development to the computer user, an IBM spokesman said, is that a technology now exists to allow central processors to operate much faster than previously defined limits.

The device can be switched in less than 10 trillionths of a second (picoseconds), the spokesman said.

Time's Winged Chariot

The speed of the new device can be envisioned, the spokesman continued, by noting there are about as many picoseconds in a second as there are seconds in 30,000 years.

The very low power required by the new switch means it generates little heat and thus the switches can be packed closely together to take full advantage of their speed, the spokesman asserted.

Since an electrical pulse travels about a millimeter in the time the IBM device switches, very dense packaging is essential to avoid excessive delays as signals travel from one circuit to the next, he said.

If this switching device were to be used in computers under its present design, it would be necessary to enclose the switches away from the CPU in a helium refrigeration unit, the spokesman noted.

While this presents some disadvantages, he felt the potentials of the new switches more than offset them.

Further, the spokesman stated, the technology to enclose the switches is presently available.

Looking Ahead

Small Calculators Add Memory For Preset Programming Tasks

Burroughs and Hewlett-Packard have each announced standard office calculators incorporating Read-Only-Memory (ROM) modules to provide users with a stored program capability.

Burroughs is offering two models, designated the C 6200 Series, which allow the user to access up to nine application programs in memory, activated by depressing program selection keys, a spokesman said.

General Business Applications

Programs are designed for general business applications; including calculation of selling price from cost and desired profit margin; automatic scheduling of compound calculations; preparation of depreciation schedules; automatic extensions with proof totals; proration of amounts; distribution of percentages; area volume calculations; job and/or processing costing; and determination of amount and percentage of interest or decrease for comparable periods, the spokesman said.

The C 6201 has seven application programs, said to be common to most businesses, while the C 6202 includes all seven of the C 6201's programs plus logarithm and standard deviation programs.

Both models have five storage memories used principally for storing of proof totals and/or accumulations, or both, resulting from executed programs, the spokesman stated.

To illustrate time savings using the new calculators, the spokesman said, "only two keyboard operations are required to calculate a selling price from a known cost and a desired gross profit margin. This calculation would require seven steps on a standard duplex calculator."

The C 6201, with seven application programs, costs $775 and a lease price of $24/mo. The C 6202, with nine programs, costs $875 and leases for $27/mo.

HP Upgrades HP-35

Hewlett-Packard's entry, the HP-80, is designed to solve equations such as log, sin, cos, tan and x^y, with a single keystroke, the firm's spokesman said.

In operation, data is entered, then a key is depressed for the unknown. The HP-80 executes the appropriate program, calling upon required functions, each of which is wired into the calculator as a subroutine, the spokesman stated.

Four temporary memory registers – X, Y, Z and T – form the operational stack storing intermediate results accessed by the calculator.

Numbers are entered into the stack from the bottom on a first in, last out basis. When a number is keyed in, it goes into the X register and is displayed – only the X register is displayed.

When "Save" is pressed, the number is repeated in the Y register. At the same time, any number in Y moves to Z, any number in Z moves to T and the old T value is lost.

Logic for the functional processing is in the form of seven ROMs, the spokesman said.

Like the previously released HP-35 calculator, the HP-80 uses reverse Polish (Lukaiewics) notation, the spokesman said.

Answers appear on a 15-character light-emitting diode (LED) display with one digit used for the decimal point.

Cost of the HP-80 is $395.

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'Hard Line' With Suppliers Paying Off As S&H Shapes Training to Staff Goals

By Don Leavitt

Of the CW Staff

NEW YORK – A DP training program can succeed if it shows a genuine interest in the programmers and analysts to be trained, a business-like concern for the managers involved and an overriding demand for value received from outside vendors.

That is the approach followed by Gail Buerger in her two years as DP training director for Sperry & Hutchinson, and it appears to be working well. Her first major project was to gain profile definitions for existing jobs, not just from formalized job descriptions, but from the people doing the work.

Training Time Precious

Once training is planned, it is tentatively but formally scheduled, even if it is a self-study program. The programming manager concerned is asked to approve the schedule for his subordinate, but if that is impractical, to assign a suhstitute so the training time will not be lost.

S&H utilizes a broad assortment of tools, techniques and courses, developed both in-house and outside the company, to cover desired subjects. But at least one outside vendor had his course canceled two days before it was to be given, because he had not completed the customization of a standard course that S&H had contracted for.

The initial profile definition project worked, Buerger explained recently, because she interviewed each programmer and analyst as well as having them complete a questionnaire. The interview brought out the workers' own goals, especially once they realized that anything they told Buerger was treated as privileged information.

Education

There is no point in putting people in courses they don't want, she said, recalling a "canned" systems and project control course brought in from the outside. That fell flat because the presenters could not relate the concepts to the S&H situation, she said.

The company has inadequate training facilities and if there are only a few students scheduled to take a course that is offered elsewhere by an outside vendor, S&H will send its workers out. They have, for example, attended classes at IBM, Advanced Management Research and Software Sciences, she said.

Courses that are essentially brush-up exercises are usually conducted in-house, but here again S&H may use instructors from outside or its own staff. A customized course on ANS Cobol optimization is given "about once a year" by Software Sciences.

Does It Herself

A session on RPG is given "when it seems worthwhile" by an IBM teacher, but the 10-week course for trainees is given by Buerger herself.

There are some 75 programmers and analysts, and 160 people overall in the S&H DP department. They have a 370/155 operating in OS/MFT, which is to be converted to MVT, though no timetable has been set for the changeover.

Deltak's multimedia course on OS for applications programming is heavily used at S&H, but not always as Deltak had intended. The readings are generally presented in lecture form, for example, and material on Hasp has been added.

College Consultants Sponsored by ACM

NEW YORK – Through its College Consultant Service, the Association for Computing Machinery (ACM) is prepared to underwrite the normal professional fees and $100 of travel expenses to subsidize visits of computer experts to interested colleges in support of undergraduate education.

The colleges need not have computer science courses or programs as such, but they must be accredited institutions offering at least a Bachelor's Degree, according to service director Prof. Gerald Engel of Penn State University.

As its commitment to the service, the host school would he expected to pay the consultant's room and board, and any travel expenses above $100. The service has an extensive list of potential consultants in all parts of the country, to keep the travel costs reasonable.

The service is currently accepting applications for the rest of the 1972-73 academic year, he said, and all visits for that period must be completed by July 31, 1973.

Further information about the service and applications for consultants should be addressed to Engel at the Computer Science Department, 316 McAllister Bldg., Pennsylvania State University, University Park, Pa., 16802.

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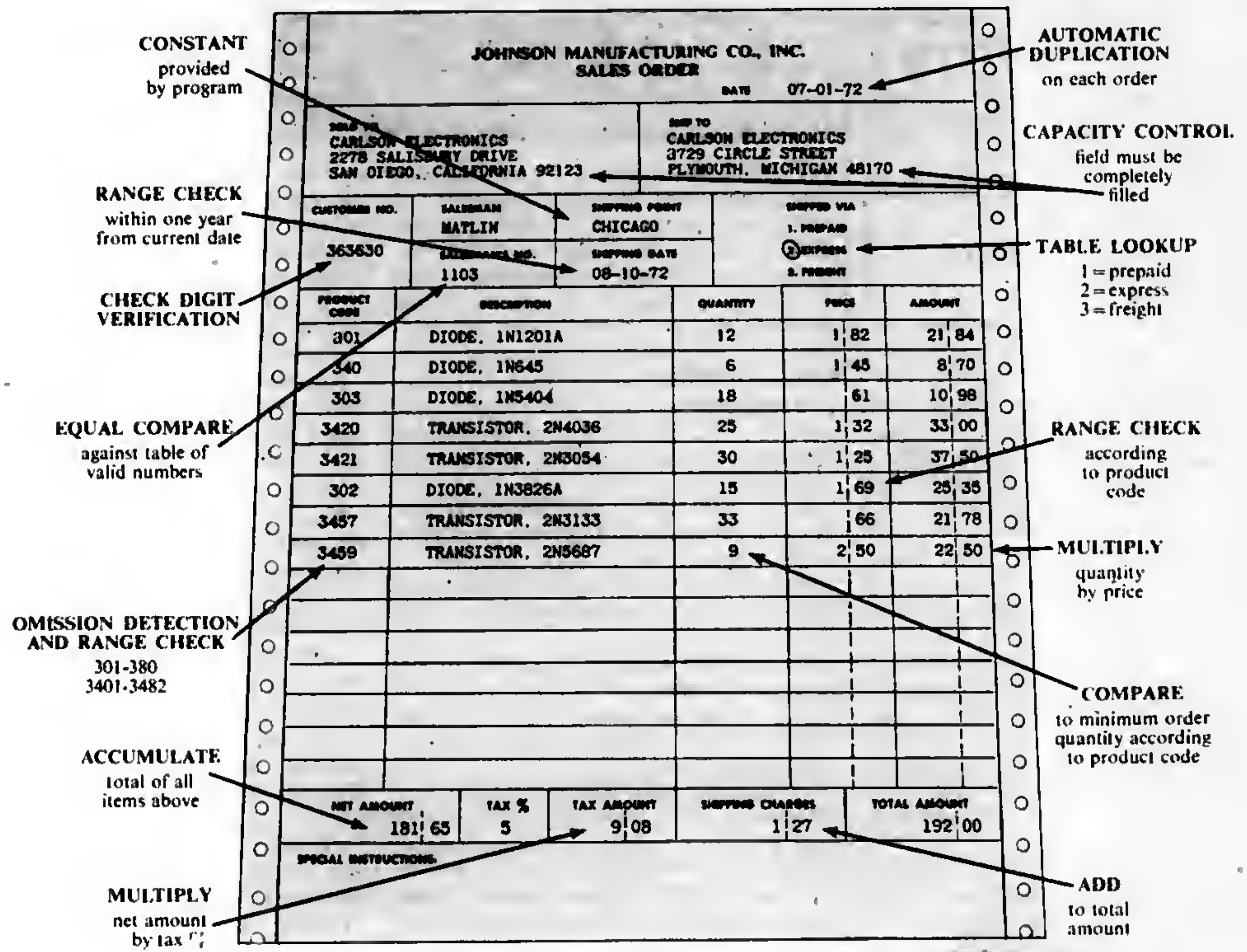
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CI Notes

Pact Upsets Some SBCers

NEW YORK – keports are circulating that employees of the Service Bureau Corp., which was sold by IBM to Control Data as part of their suit settlement, are unhappy with the move.

Several employees are bitter because they were not notified in advance of the planned changes and were not given the option to stay on at IBM in some other capacity.

All this has some other members of the services industry jumping with glee at the prospect of picking up some well-qualified people who now may want to leave SBC for greener pastures.

Iomec Plans Products

SANTA CLARA, Calif. – Iomec is planning to announce 13 new products this spring in order to broaden its line of peripherals for the minicomputer industry.

The firm is expected to unveil the products on the Computer Caravan's 10-week tour this spring.

Supershorts

Storage Technology Corp. has agreed in principle to acquire Promodata S.A., a French peripherals marketer whose line consists principally of STC equipment.

– – –

Control Data Corp. has extended its $1-million agreement with Fabri-Tek Inc. for extension memories for IBM 360s to $6 million over a two-year period.

– – –

Trendata Corp. has signed an equipment purchase/lease agreement with Phoenix Leasing Inc. that provides up to $24 million for the operating and full payout leasing of Trendata's terminals and automated typing products.

– – –

3M Co. has been named U.S. distributor of OCR equipment developed by OCR Systems, Inc.

– – –

Wangco Inc. has selected Marubeni Electronics Co., Ltd. as its Japanese distributor of tape and disk drives.

– – –

Data Dimensions, Inc. will market Datatype Corp.'s Optical Reading System in the New York and Philadelphia areas.

– – –

The IEEE Wincon show, slated for Feb. 13-15 in the International Hotel in Los Angeles, will be based on the theme, "Emerging Business Opportunities Through New Technologies," according to general chairman M.D. Margolis.

– – –

NCR, through its rental equipment service centers, has announced a new service under which NCR will rework printed circuit boards and MOS-LSI subassemblies for other companies.

Illegal Access Charged

IBM Sues Telex on Trade Secret Issue

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – IBM is seeking more than $25 million in damages from Telex charging that the firm uses industrial espionage and other alleged illegal tactics to gain access to IBM trade secrets.

The broad attack on Telex, and, by inference, on others in the peripherals industry came in a counterclaim filed last week in response to the Telex charges that IBM monopolized the computer market and attempted to stifle competition.

In the brief filed with the court here, IBM denied all the charges made by Telex claiming that such things as integrated peripherals controllers, extended- and fixed-term lease plans, etc. were moves made either to meet increased competition or because of advances in technology.

Power of Persuasion

In its countercharges against Telex, the firm said Telex makes peripherals "primarily by copying, directly or functionally, products designed, developed and manufactured by IBM and others and that to produce such copies Telex obtains IBM trade secrets and confidential information through various forms of industrial espionage, including hiring IBM employees and eliciting trade secrets from them, obtaining copies of IBM confidential documents from present and former IBM employees and obtaining other confidential information from various contacts within IBM."

The ability of Telex and "others" to cut prices below those of IBM, the complaint alleged, "has been and is primarily the result of the fact that Telex and others copy" the products offered by IBM.

"That practice gives to Telex and others a substantial competitive advantage which . . . is unfair and unlawful," the complaint charged.

In order to get such trade secret information, the complaint allegeu, "Telex and its officers have offered IBM employees cash bonuses based upon the completion of the copying of IBM products for Telex."

As an example of this type of action, IBM charged that Telex hired "an important IBM development engineer" who had worked on magnetic disk technology which had been code-named "Merlin."

IBM said it had invested over $30 million in the Merlin project.

'He Made Me an Offer'

The Telex agreement with the engineer provided for a bonus of $500,000 and stock options valued at $50,000 if he left IBM and developed a system employing the Merlin technology for Telex. In addition, the IBM engineer was authorized, IBM said, to offer other members of the development team bonuses of up to $100,000 if they would also leave IBM and join Telex on the project.

At the same time, the counterclaim said, the top 14 officers in Telex were only paid bonuses amounting to $129,000, "approximately one-fourth the bonus contract with this one individual employee hired from IBM to produce . . . copies of the Merlin technology."

In addition, IBM charged that top Telex officers "have gone so far in implementing their routine misappropriation of IBM trade secrets as to advance their own personal funds to induce IBM employees to leave their jobs" and make trade secrets available to Telex.

IBM also charged that Telex had violated the copyright laws by having "printed, published and/or distributed 13 different IBM technical manuals or publications, each of which infringes a valid IBM copyright."

For relief, IBM asked the court to award it "the damages it has in fact sustained, which may be measured by one of two alternative methods:

- "The net income of Telex Computer Products, Inc., for the years 1970, 1971, 1972 and to date, an amount not less than $25,827,000.
- "The difference between the amount IBM expended to design and develop the products which Telex has misappropriated and used trade secrets and other confidential information and the amount expended by Telex to develop the same products."

IBM also asked the court to enjoin Telex from further use of trade secrets or other proprietary information and from assigning any employee hired from IBM to projects relating to the same types of products he worked on while at IBM.

Telex said the charges were "without merit."

Industry Generally Welcomes IBM Key Entry Competition

By E. Drake Lundell Jr.
Of the CW Staff

Industry reaction to IBM's introduction of the 3740 key entry system in the U.S. was muted last week since most marketing men in the key entry business had expected the announcement ever since IBM brought out the unit in France [CW, Oct. 4].

Most observers agreed the move would be a boon to both the present data entry industry as well as to new competition.

"It's better to have them in the market than not," one observer said, since many users would not accept new techniques until those techniques received IBM's blessing in the form of a product.

IBM's acceptance of the concept of key entry equipment that falls somewhere between the keypunch and direct on-line data entry should also serve to educate users about this type of equipment, others said.

"After IBM does the education job and gets the user interested in the products, we should have an easier time selling to them," one marketing man said, "since we can offer products that are better on a price/performance basis.

"Of course," he admitted, "IBM is going to be a major factor in the market and is going to sell a lot of the units to its captive user base."

New Market Opportunities

However, he added, the move should open up new market opportunities for the independents among independent users who were just waiting for IBM to endorse the concept before deciding to change from a keypunch operation to a newer method for data entry.

Industry sources were not sure exactly how the 3740 would fit into the total data entry market. They noted the device was aimed at small installations, but said it might carry a price tag that is too steep for many smaller users.

They agreed the 3740 would not provide major competition for the large shared-processor or key-to-disk systems offered by such firms as General Computer Systems, Computer Machinery Corp., Inforex, Entrex and others, since it would not really be price/performance competitive in large shops.

At the same time, the possible effect of the new device on the keypunch market is unclear.

One industry observer dealing in the used equipment market does not feel the release of the 3740 will impact the keypunch market since the demand is so great for IBM 029s and 129s – users even have to wait for delivery.

He feels the impact will be gradual, from the top down, with the sophisticated users with many remote installations the first to employ the floppy disk approach to data entry.

By pushing the concept of communications with the new unit, IBM is also making it easy for users to upgrade from the 3740 to direct on-line data entry, one source noted, adding that IBM had been pushing the concept of direct data entry as the eventual replacement for the keypunch.

One note of worry in the industry reaction was for the possible effect of the IBM endorsement of the floppy disk as the storage medium for data entry systems.

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Finding a Computer's Residual Value Can Be Tricky, Government Discovers

By Gerald M. Galler

Special to Computerworld

Since 1961, agencies and departments of the Federal Government have been required to evaluate the economics of lease versus purchase in the acquisition of computer equipment.

Among the factors requiring consideration in such an analysis are cost of money (interest) and residual value of equipment.

But How . . . ?

Although these factors are required to be considered, very little guidance is provided regarding how they are used. Agencies are permitted complete flexibility in establishing useful equipment life, residual value and cost of money.

Agencies not wanting to purchase equipment can establish a low residual value and high cost of money to ensure that the lease versus purchase analysis will always favor leasing.

The establishment of the General Services Administration ADP Revolving Fund that purchases equipment for re-lease to government agencies is a further indication and reaffirmation of the government's intent to purchase equipment if at all economically feasible.

Furthermore, the success that GSA has experienced in placing equipment into agencies from the excess equipment pool as well as operating a "profitable" Revolving Fund substantiates the viability of purchasing new (and sometimes used) equipment and recirculating it.

The increasing emphasis on purchase and reutilization of computer equipment resulted in the emergence of what once was a relatively obscure sentence in the Office of Management and Budget Circular A-54 to one of the most controversial issues associated with determining the evaluated cost of DP equipment in a competitive procurement. The subject in question is residual value, its use and abuse.

There are at least seven basic methods of determining residual value:

- Straight-line depreciation.
- Second and tertiary users (useful life beyond initial installation period).
- Guaranteed buy-back.
- Scrap value at end of useful life.
- Fixed percentage of lowest purchase price among qualified bidders.
- Estimated used equipment value at end of government life cycle.
- A dollar value set by the agency or department prior to the procurement.

How Established?

The first questions which come to mind are, for example, who establishes the residual value of computer equipment to the government, and on what basis? Currently, each agency establishes the residual value to be whatever it wants it to be.

Let us examine the implications associated with the material worth given to residual value. It must either be zero or greater than zero. If it is zero, it will very likely make rental appear to be less costly than purchase since, among other things, maintenance and interest are added to the purchase price but not the rental price.

If residual value is greater than zero, then it must be either less than, equal to, or greater than the cost of money. If less than the cost of money, the evaluation cost for purchase will be increased by the difference and could be more costly than rental. If equal to the cost of money, the evaluation cost is the quoted purchase cost and a comparison is simply made of the quoted rental and purchase plus maintenance prices.

If it is greater than the cost of money, then purchase will generally appear to be less costly than rental. In any case, if the residual value is to be greater than zero, then by what means is that value to be determined?

GSA, for example, depreciates equipment on a straightline basis at the rate of 15% per year, but this doesn't always work.

For example, a component of the Department of Defense prepared a specification and submitted it to its central procurement office for computer equipment for approval and subsequent release for competitive bids. Instead It was advised that an IBM 360/50 was being released to the GSA excess equipment pool from the Department of Agriculture and would be available on a three-year lease at substantial savings over commercially available equipment of equivalent capacity and capability.

That 360/50 bears the serial number 1, manufactured in 1963. It is currently nine years old and will be 10 years old when the lease with GSA runs out. Chances are quite good that it will be retained beyond the initial lease period for at least several more years. The system is functioning quite well and is performing meaningful work.

There is no reason to believe that it will not have a 15-year life, almost twice the maximum life currently used for evaluation purposes.

Has the residual value of this 360/50 increased or was it really worth a substantial percentage of its original purchase price at the end of five years? According to GSA's calculations (15% per year) it would have had a value of zero at the end of seven years.

Until now, no mention has been made of hardware and software enhancements or new product line announcements which, when implemented over the course of a system's life, can significantly increase the residual value, particularly when considered in terms of useful years of operation beyond the first five.

The GE-225 was already several years old when a commercialized version of the Dartmouth time-sharing software was made available. The system emerged as a GE-265 and is still performing well today.

Breathing New Life

Consider the GE-600 Series, first announced in early 1964 and destined for a mediocre and limited existence. The emergence of Gecos III in 1968 immediately enhanced the Series 600 residual value.

The announcement of the H-6000 line of compatible systems, like IBM's 370 announcement, further extended the "desirable" life of the 600 product line. The life of the Series 600 was further extended by the recent award of the WWMCCS contract worth over $50 million for the Honeywell 6000 Series.

So here it is, eight years after the GE-600 was announced, and finding any for sale on the used computer market would be most improbable. The 600 system already in its last year of depreciated system life has at least three to five years of useful, revenue-producing life remaining. In 1967 GE could not give away a 600. If you order one now from Honeywell, you probably won't be able to get it this year. So what is its residual value today?

The government is aware of the problem. It simply chooses not to disclose it publicly until it has a solution. To this end, a special subcommittee was formed under the Ad Hoc ADP Committee of the Computer Performance Evaluation Users' Committee.

Gerald M. Galler is president of Federal Marketing Counsellors Inc.

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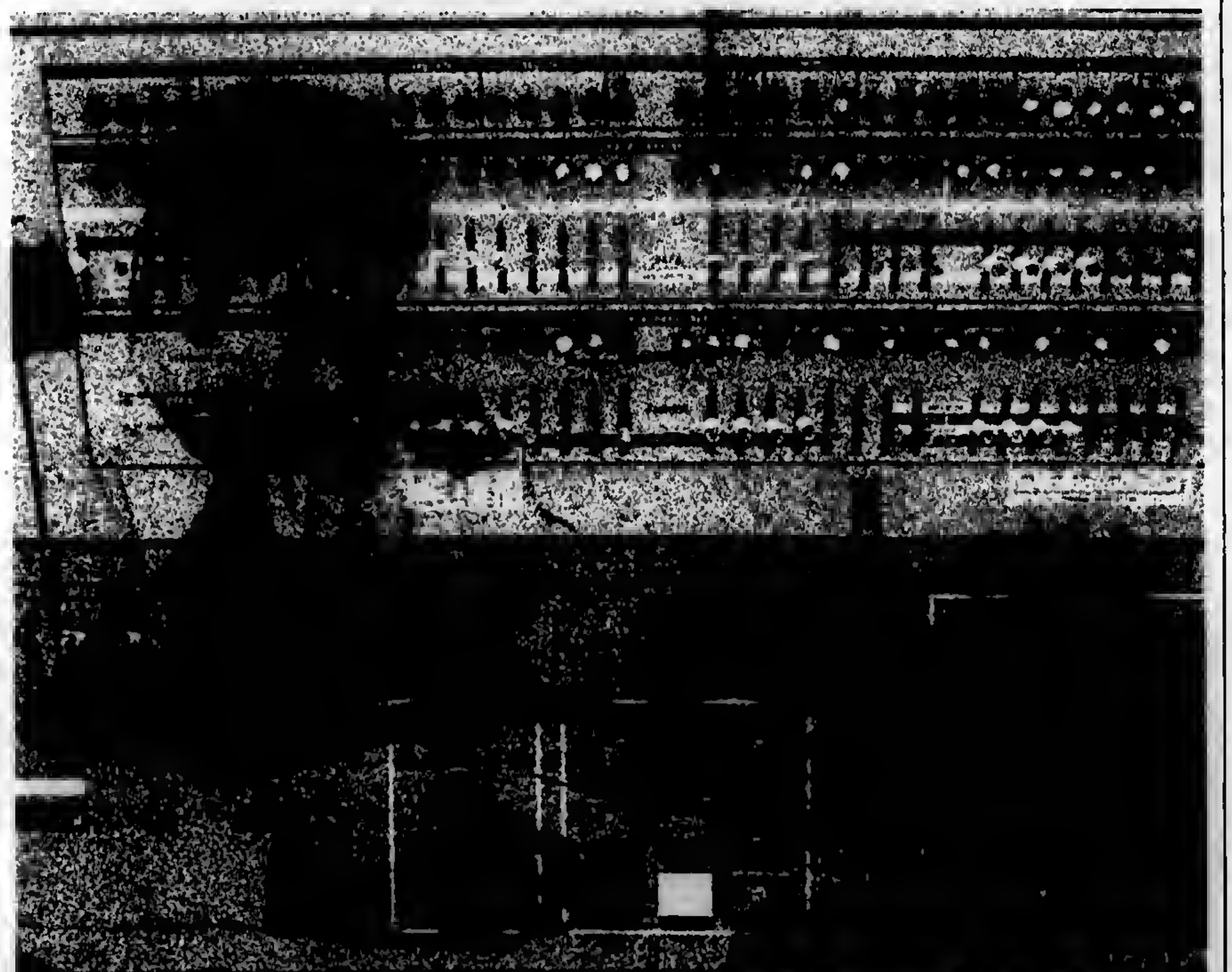

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Adapso Expands Role in Fight Against 'Incremental Marketing'

NEW YORK – The Association of Data Processing Service Organizations (Adapso) has expanded its fight against what it considers illegal marketing of computer services by organizations whose major business lies outside the data processing area.

For years, the organization has fought the "incremental marketing" of computer services by other firms. An example of this type of marketing practice would be where an auto maker found it had extra computer time and would offer it to its dealers on a service basis.

Since the firm is already underwriting the costs of its computer operation, Adapso apparently feels the firm can offer the service at unrealistic prices, therefore cutting into the market available to Adapso's members.

"All of the responses we have received from our members and others have indicated that this problem is one of the key economic issues in the computer services industry," according to Thomas O'Rourke, president of Adapso.

"Our membership welcomes and encourages fair competition. However, it will fight tooth and nail competition from organizations who use monopoly positions and power developed in other lines of commerce, to restrain free trade and competition in our industry."

O'Rourke stated the enlarged program would be several-pronged. "First," he said, "Adapso will act as a communications center or clearinghouse, accumulate evidence of unfair or illegal marketing problems, whether furnished us by our members or third parties.

"Second, Adapso will do whatever it lawfully can to assist members who are actively fighting this problem, whether before administrative agencies, in the Congress, in the courts or otherwise. This would include, under appropriate circumstances, participation hy Adapso as a plaintiff in litigation.

"Third," he concluded, "to the extent we are able to do so, we will also financially assist members who are under unlawful attack from incremental marketers."

Adapso said that incremental marketing exists whenever a seller marketing a product in a separate line of commerce also markets a not insubstantial volume of computer services, and where the following circumstances are present:

- The first product is patented or copyrighted, or otherwise a lawful monopoly of the seller.
- There exists some special relationship between the seller and the purchaser which is independent of the particular purchase-sale relationship giving rise to the questioned transaction, such as hy way of dealership, franchise or license.
- The seller offers its computer services only to those purchasing the major product and not generally.
- The major product is important to the business of the computer services organizations in the pertinent market.
- The seller is of large size, relative to the computer services organizations in the pertinent market.

Daconics to Supply Minis For Atmospheric Study

SUNNYVALE, Calif. – Daconics Corp. has received a contract, which could total $1.7 million, from the National Oceanic and Atmospheric Administration for three minicomputers to be used to study upper-air data.

The contract includes an option to purchase 95 additional minicomputers over a period of three years.

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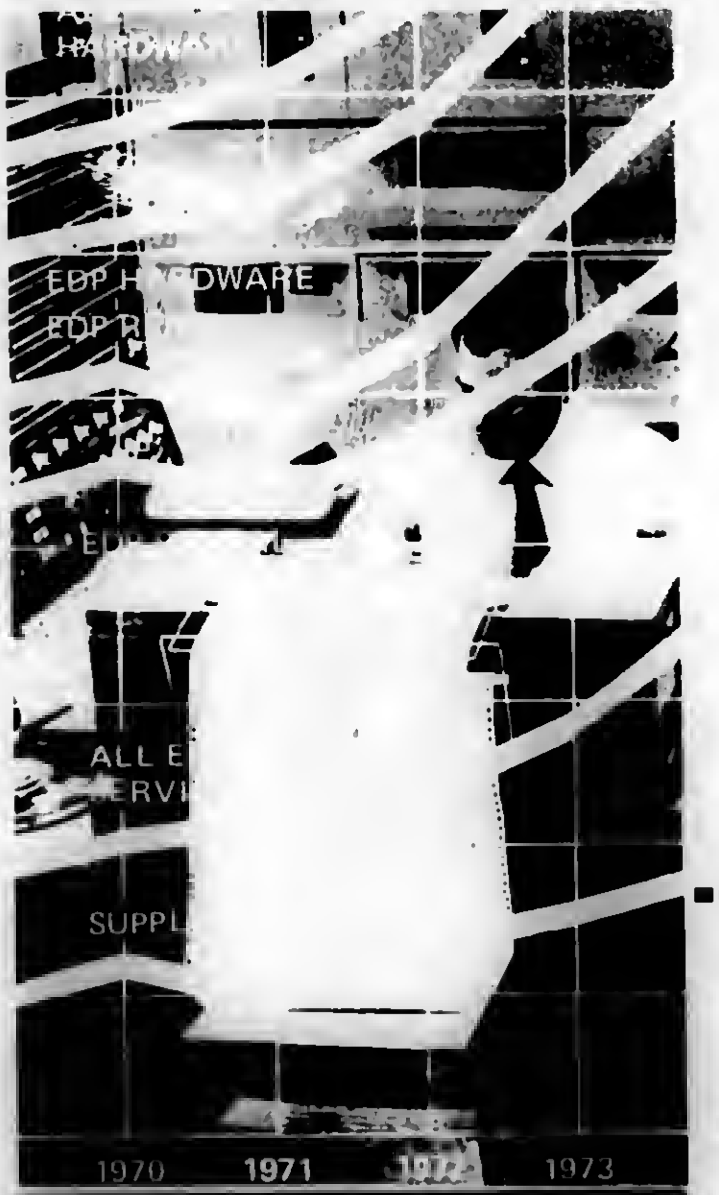

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Cyber 70 to Link Polish Universities

SWIERK, Poland – A Control Data Corp. Cyber 70 Model 72 will form the basis of a network system that will service several educational and scientific institutions in Poland.

The CDC Model 72 will be located at the Nuclear Research Institute here, with terminals at the Polish Academy of Sciences, the Warsaw University and the Technical University of Warsaw, as well as the Warsaw University of Planning and Statistics.

Foreign Orders & Installations

The system will include a full line of peripheral equipment.

The main applications will be a mixture of pure scientific work, with the nuclear sciences having the major share of time on the computer.

Other Orders, Installations

The Imperial Iranian Air Force has installed a Honeywell 6060, valued at $3.1 million, to control its spare-parts inventory for all military aircraft.

Ciber Clinica, Sao Paulo, Brazil, has purchased a computerized medical system from International Health Systems, Inc. to automate physical-exam procedures.

Shawinigan Engineering Co., a Montreal consulting firm, has ordered a Meta 4/1130 Emulator Computer System from Digital Scientific Corp.

Scientific Control Systems Ltd., a British computer service bureau, has ordered its third Univac 1108 system for use in real-time and batch applications.

Acquisitions

Neoterics, Inc., a Cleveland, Ohio-based computer service organization, has acquired RPA Computer Services, Inc. of Columbus, Ohio.

Granite Management Services, Inc. has acquired Capital Ventures Inc., the mortgage banking subsidiary of Empire National Bank of Newburgh, N.Y., for an unspecified amount of cash and notes.

Analog Devices has agreed to purchase certain assets of Megadyne Industries, Inc., manufacturer of precision thin-film resistor networks and thin-film substrates, for an undisclosed amount of cash.

Itel Corp. has agreed to acquire Pyramid Industries, a Los Angeles-based computer service company. Pyramid will be merged into the DP division of Itel under terms of the transaction.

Intranet Computing Corp., memory manufacturer, has acquired Bio-Optronics, Inc., a Los Angeles-based manufacturer of medical instruments.

Omron R & D, Inc., a U.S. subsidiary of Omron Tateisi Electronics Co., Japan, has acquired a majority of the common stock of Data Memory, Inc. Data Memory manufactures video-disk recorders for television and instrumentation industries.

Citizens Financial Corp. has agreed in principle to acquire Northeast Data Com, Inc., a subsidiary of The New Haven Savings Bank. Northeast Data Com will be combined with Citizens Financial's data service unit.

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THE AUTHORS

Roger MacGowan is professor of Computer Science with the Dept. of Defense Computer Institute in Washington, D.C. and is e frequent contributor to professional journals.

Reid Henderson is President of Compudemics, Inc., and is both a CPA and CDP. He also lectures at George Washington University and the Industrial College of the Armed Forces.

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Different Trends

Two Software Houses Show Losses

Although two software firms have shown losses for recent periods, the trends were different, with one improving its ledger, and the other going from profit to loss.

Applied Logic Corp. cut its losses for the year ended Sept. 30 to $271,061 or 15 cents a share from last year's $2.7 million loss. Cybermatics Inc., however, ran into problems on two large fixed price contracts, and showed losses in both the second quarter and six months.

At Applied Logic, fourth quarter earnings of $75,249 on revenues of $858,958 helped reduce losses for the year. The implementation of quasi-reorganization at the start of fiscal 1972, and continuing improvements in the cost to revenue ratio contributed to the decreased losses.

Cybermatics Stabla

Second quarter revenues were stable at Cybermatics, remaining around $1.8 million in both the 1971 and 1972 periods.

The loss for the quarter totaled $86,656 or 9 cents a share compared with earnings of $98,670 or 9 cents a share in the year-ago period.

In the six months, revenues totaled $3.7 million compared with $3.2 million in the year-ago period. The loss totaled $43,568 or 4 cents a share compared with earnings of $160,917 or 15 cents a share.

"The earnings decline reflected problems on two large fixed price contracts within the Software Division; each of the other divisions – Carci Computab Systems, Inc., Trademark Service Corp. and Automated Labels & Forms, Inc. – continued to show substantial revenues and contribute profits," explained President J. Roy Morris.

Losses Included

Losses, both incurred and projected, on these projects have been included in the second quarter, he added.

"We now expect to complete the second contract by the end of 1972 and at that point will be free of all unfavorable contracts. The division should be able to reestablish the pattern of growth it experienced in prior years," he said.

Trilog Explains Loss

PHILADELPHIA – Trilog Associates reported a first quarter loss of $8,661 on revenues of $437,293. In the comparable year-ago period, the firm earned $15,519 on $451,298.

New product development programs have been curtailed in the period, and amortization begun on several products in development last year, noted President Donald J. Devine. In the three months ended Oct. 28, software amortization exceeded capitalization by about $11,800.

Custom systems engineering project business continues to decline, and the firm is "directing its attention to the further development of custom facilities management services, package software and package processing services."

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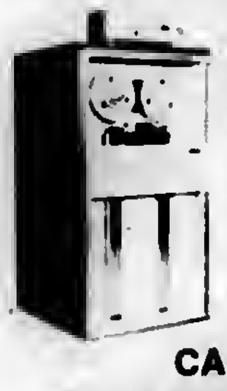

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On February 28th, Computerworld takes a hard look at Software

In our Februery 28th Software Supplement, *Computerworld* will be teking a hard look at e veriety of softwere sources currently available to EDP users. Payroll packages. Inventory. Accounts Receivable. And others.

Our Feb. 28th supplement will also examine some of tha companies that produce and sell software packages, custom programming services, programming aids end remote-computing application services.

If you ere selling in the Softwera market piece your ed should be there on Feb. 28th. Supplemant closing is February 9. Your *Computerworld* representative can give you all the details. Or cell Judy Milford at (617) 332-5606.

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IBM's board of directors has recommended a five-for-four stock split and boosted the quarterly dividend on presplit common stock by 5 cents to $1.40, payable March 10 to stockholders of record Feb. 14.

$$$

Computer leasing at two diversified firms, **DPA** and **Dearborn-Storm** "continues to provide substantial cash flow." DPA's leasing unit had record sales in the year ended Nov. 30, and helped repay debts of over $7 million. Although Dearborn-Storm's division had decreased earnings and revenues in the year ended Oct. 31, all mainframes continue under lease.

$$$

GRI Computer's sales for the six months ended Oct. 31 grew from $425,000 to $637,000, but at the same time losses increased from $71,000 to $367,000. Start-up and development costs for a microcircuits facility in Florida contributed $90,000 to the period's losses, and the GRI-909 series was phased out while the GRI-99 series began.

$$$

The "strong upswing" at **Electronic Associates** for 1972 stemmed from increased demand for the firm's computer products, especially the Pacer systems introduced last spring. EAI expects to report operational per-share net of about 34 cents for 1972, up 240% from 14 cents last year. The firm begins 1973 with a $16 million backlog, whereas last year the order load stood at $14 million.

$$$

Computer Control Systems has changed its name to **Teleswitcher.**

$$$

Several firms have begun the new year with increased lines of credit from their bankers. **Four-Phase Systems** has extended its line of credit to $10 million through the Bank of America. Available on a revolving credit basis through Sept. 30, 1973, the funds will be used to finance leasing and the accounts receivable.

$$$

Digitel Information Devices has increased its borrowing ceiling with the First National Bank of Boston from $600,000 to $1 million, and converted such borrowing from short-term to long-term debt payable Sept. 30, 1974.

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Lundy Electronics & Systems has secured a $5 million two-year agreement with the First National City Bank of New York and the Security Bank of Long Island.

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Sperry Rand Sets Records In Quarter, Nine Months

NEW YORK – Strong demand for computers, as well as other capital goods, has helped Sperry Rand boost third quarter earnings 43% on a 25% increase in revenues.

In the nine months ended Dec. 31, Sperry Rand scored about a 50% rise in earnings on a 25% jump in revenues.

Both periods set records for the firm and gains are expected to continue through the fiscal year, according to Chairman J. Paul Lyet. "Revenues, net income and bookings for Sperry Univac computers in the nine months were well ahead of the comparable period last year," observed Lyet.

In the third quarter, earnings totaled $23.4 million or 68 cents a share, compared with a restated $16.4 million or 48 cents a share in the year-ago period. Revenues climbed to $565.4 million from $453.9 million in the same quarter last year.

In the nine months, earnings jumped to $60.8 million or $1.77 a share on revenues of $1.6 billion. In the same period last year, earnings totaled $40.7 million or $1.19 a share on revenues of $1.3 billion.

The earnings per share for the nine months equaled that for the entire previous fiscal year ended March 31.

"We are benefitting directly from improved internal operations coupled with a stronger demand for capital goods as industry increases its investment in a new plant and equipment," Lyet noted.

Despite Revenue Rise

Xerox DP Still in Red

STAMFORD, Conn. – Although worldwide revenue from the computer segment of Xerox Corp. rose 19% to about $86 million, the unit continued to show a loss, while total Xerox earnings rose 17% for the year to $249.5 million.

Revenues in the computer unit are exclusive of results from Diablo Systems, Inc., acquired during the year.

Heavy investments in product development and expansion of marketing forces contributed to the unit's loss for the year, according to Chairman C. Peter McColough.

However, he explained, "we see significant progress coming in 1973, and we are very hopeful that within three years at the outside, we will get to break even in what you would consider our traditional computer business."

McColough expects computer operations in '73 to show a smaller operating loss and "significantly" lower inventory write-offs than in '72.

The computer segment showed about the same deficit and write-offs in 1972 as it did in 1971, he said, or about $24 million in pre-tax operating loss and $14 million in pre-tax writeoffs, for a $38 million deficit.

Xerox plans to introduce over a dozen new products during the year, which are expected to be in the computer, facsimile and copier-duplicator areas.

Data General Doubles First Quarter Net

SOUTHBORO, Mass. – Data General Corp. more than doubled its first quarter earnings in the period ended Dec. 23.

Earnings jumped to $1.3 million or 46 cents a share from a restated $595,000 or 22 cents a share in the year-ago period.

Revenues rose to $9.8 million from $5.3 million in the first quarter last year.

The results for the previous year's quarter were restated to reflect a pooling of interests.

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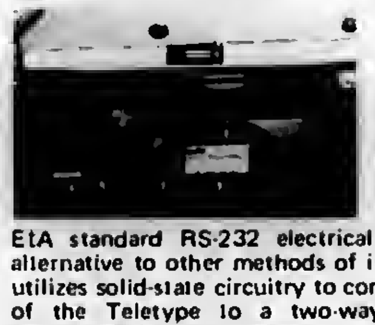

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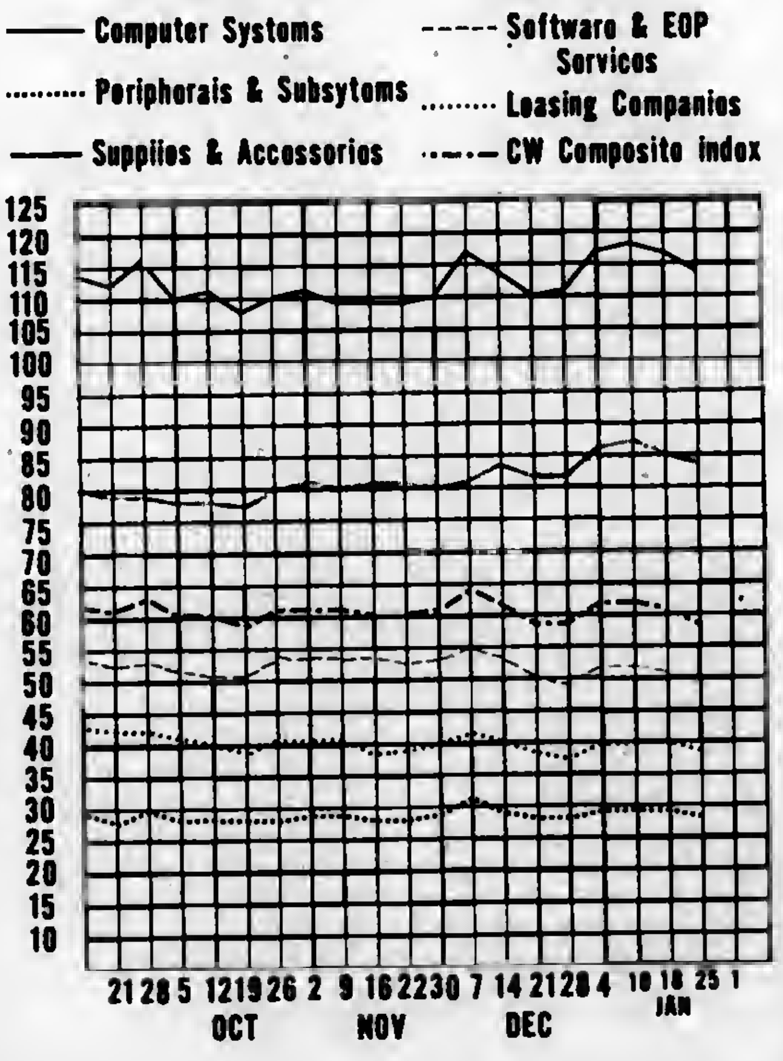
EXCH		PRICE			
		1972 RANGE (1)	CLOSE JAN 25 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EOP SERVICES				
O	AOVANCEO COMP TECH	1- 3	2	0	0.0
A	APPLIEO DATA RES.	3- 7	3 1/4	- 3/8	-10.3
O	APPLIEO LOGIC	1- 4	2 3/4	0	0.0
N	AUTOMATIC OATA PROC	72- 99	86 7/8	-5 1/8	-5.5
O	BRANOON APPLIEO SYST	1- 2	3/4	0	0.0
O	COMPUTER OIMENSIONS	4- 14	3 1/2	- 1/2	-12.5
O	COMPUTER OYNAMICS	1- 4	1	0	0.0
O	COMPUTER NETWORK	3- 7	3 1/4	0	0.0
N	COMPUTER SCIENCES	4- 10	4 5/8	- 1/2	-9.7
O	COMPUTER TASK GROUP	1- 2	1 3/8	+ 1/8	+10.0
O	COMPUTER TECHNOLOGY	3- 8	2 3/4	+ 1/4	+10.0
O	COMPUTER USAGE	7- 14	8 1/8	- 3/8	-4.4
N	COMPUTING & SOFTWARE	11- 28	10 3/4	-2 1/4	-17.3
O	COMRESS	1- 3	1	0	0.0
O	COMSHARE	5- 10	9	+ 5/8	+7.4
O	OATATAB	4- 9	4	+ 1/8	+3.2
O	EDP RESOURCES	2- 8	2 3/4	+ 1/4	+10.0
A	ELECT COMP PROG	1- S	1 5/8	0	0.0
N	ELECTRONIC OATA SYS.	43- 65	52 3/4	- 3/8	-0.7
O	INFORMATICS	5- 11	4 3/4	- 5/8	-11.6
O	I.O.A. OATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYOATA CORP	7- 13	10 3/4	-1	-R.S
O	LOGICON	4- 9	3 3/4	- 3/8	-9.0
A	MANAGEMENT OATA	4- 10	3 7/8	- 1/2	-11.4
O	NATIONAL CSS INC	8- 36	33 5/8	-2 1/R	-5.9
O	NATIONAL INFO SRVCS	1- S	2 1/4	+ 1/R	+S.8
P	ON LINE SYSTEMS INC	R- 2R	24 1/2	-1 1/2	-S.7
N	PLANNING RESEARCH	5- 17	4 7/8	- 1/4	-4.8
O	PROGRAMMING METHOOS	20- 25	23 3/4	- 1/4	-1.0
O	PROGRAMMING & SYS	1- 2	3/4	- 1/4	-25.0
O	RAPIOATA INC	5- 27	23 1/4	- 3/4	-3.1
O	SCIENTIFIC COMPUTERS	2- 4	1 1/2	0	0.0
O	SIMPLICITY COMPUTER	1- S	3 1/2	+ 3/R	+12.0
O	TBS COMPUTER CENTERS	3- 6	3 3/4	- 1/8	-3.2
O	TCC INC	1- 3	1/2	- 1/R	-20.0
O	TYMSHARE INC	7- 12	10 7/8	+ 1/4	+2.3
O	UNITEO DATA CENTER	5- 8	6	0	0.0
N	UNIVERSITY COMPUTING	8- 26	8 1/2	- 1/4	-2.R
A	URS SYSTEMS	6- 10	5 3/4	-1 1/4	-17.R
	PERIPHERALS & SUBSYSTEMS				
N	AOORESSOGRAPH-MULT	27- 49	27	-3 3/R	-11.1
O	AOVANCEO MEMORY SYS	12- 23	21 1/4	-1 3/8	-6.0
N	AMPEX CORP	5- 15	5 3/4	- 1/4	-4.1
O	ANOERSON JACOBSON	4- 8	4 3/4	- 1/8	-2.5
O	BEEHIVE MEDICAL ELEC	1- 8	6 7/8	- 3/8	-5.1
A	BOLT,BERANEK & NEW	5- 21	10 5/R	- 1/4	-2.2
N	BUNKER-RAMO	9- 14	9 1/R	- 1/4	-2.6
A	CALCOMP	9- 25	10 3/4	- 1/2	-4.4
O	CAMBRIOGE MEMORIES	9- 15	12 3/4	- 1/4	-1.9
O	CENTRONICS OATA COMP	6- 28	23 1/4	+ 1/4	+1.0
O	COOEX CORP	6- 25	17 1/4	- 1/2	-2.R
O	COGNITRONICS	2- 5	2 1/4	0	0.0
O	COMPUTER COMMUN.	1- 7	3 3/8	+ 1/R	+3.8
A	COMPUTER EOUIPMENT	2- 4	2 1/2	- 1/R	-4.7
O	COMPUTER MACHINERY	7- 13	10 5/8	-1 5/R	-13.2
O	COMPUTER TRANSCEIVER	2- 9	4 1/2	- 3/8	-7.6
A	COMPUTEST	3- 9	3 3/4	- 1/4	-6.2
N	CONRAC CORP	24- 39	27 1/2	- 7/R	-3.0
A	OATA PROOUCTS CORP	3- 7	4	0	0.0
O	OATA RECOGNITION	1- 5	2 1/2	+1 1/4	+100.0
O	OATA TECHNOLOGY	2- 5	3 7/R	+ 1/4	+6.R
O	OI/AN CONTROLS	0- 8	3 7/8	- 1/8	-3.1
N	ELECTRONIC M & M	3- R	4 5/8	- 1/R	-2.6
O	FABRI-TEK	2- 5	4 1/4	- 1/2	-10.5
O	GENERAL COMPUTER SYS	6- 16	7 3/4	+ 3/4	+10.7
N	GENERAL ELECTRIC	59- 74	68 1/2	-3 3/8	-4.6
N	HAZELTINE CORP	7- 13	8 1/8	+ 1/2	+6.5
O	INFOREX INC	18- 36	17 3/4	-1 7/R	-9.5
O	INFORMATION DISPLAYS	1- 5	1	- 1/R	-11.1
O	INFORMATION INTL INC	8- 25	12 1/2	-1	-7.4
A	LUNOY ELECTRONICS	8- 14	8 3/4	+ 1/4	+2.9
O	MANAGEMENT ASSIST	1- 1	1/4	- 1/8	-33.3
A	MILGO ELECTRONICS	15- 44	21	-1 1/2	-6.6
N	MOHAWK OATA SCI	9- 27	9 7/8	- 3/4	-7.0
O	OOEC COMPUTER SYST.	6- 12	4 3/4	0	0.0
O	OPTICAL SCANNING	5- 16	5 1/4	0	0.0
O	PERTEC CORP	7- 17	7	- 1/4	-3.4
O	PHOTON	4- 15	4	-1 5/8	-2R.R
A	POTTER INSTRUMENT	7- 21	7 5/8	0	0.0
O	PRECISION INST.	3- 13	3	- 1/4	-7.6
O	RECOGNITION EOUIP	5- 15	6 1/4	-1	-13.7
N	SANOERS ASSOCIATES	13- 21	14 1/2	- 7/8	-5.6
O	SCAN OATA	4- 13	3 5/8	- 3/8	-9.3
O	STORAGE TECHNOLOGY	17- 39	28	-1 1/4	-4.2
O	SYCOR INC	7- 11	10 1/4	- 1/2	-4.6
O	TALLY CORP.	8- 15	13 1/4	+ 1/2	+3.9
N	TEKTRONIX INC	34- 64	51 5/8	+ 5/8	+1.2
N	TELEX	5-.15	5 3/8	- 1/2	-8.5
O	WILTEK INC	10- 26	14	-1 1/2	-9.6
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	8	+ 1/2	+6.6
A	BARRY WRIGHT	9- 14	10 1/8	-1 3/8	-11.9
A	OATA DOCUMENTS	17- 26	21 3/8	+ 3/8	+1.7
O	OUPLEX PROOUCTS INC	8- 16	9 1/4	- 1/4	-2.6
N	ENNIS BUS. FORMS	6- 10	7 7/8	0	0.0
O	GRAHAM MAGNETICS	15- 27	17 3/4	-1 1/4	-6.5
O	GRAPHIC CONTROLS	11- 15	11 1/4	- 1/4	-2.1
N	3M COMPANY	76- 88	86 3/4	+ 1/8	+0.1
O	MOORE CORP LTO	42- 57	56	-1	-1.7
N	NASHUA CORP	48- 62	55 3/4	+ 5/8	+1.1
O	REYNOLOS & REYNOLO	37- 77	47 5/8	+ 1/8	+0.2
O	STANOARO REGISTER	14- 20	18 3/4	- 1/4	-1.3
O	TAB PROOUCTS CO	14- 23	21	- 3/4	-3.4
N	UARCO	21- 28	20 1/2	-1	-4.6
A	WABASH MAGNETICS	6- 11	6 7/8	+ 1/8	+1.R
N	WALLACE BUS FORMS	21- 26	25	- 1/2	-1.9
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-230	220 5/8	-7 3/8	-3.2
N	COLLINS RAOIO	14- 27	21 3/4	- 1/4	-1.1
N	CONTROL OATA CORP	43- 78	55 1/4	-1 1/8	-1.9
O	OATA GENERAL CORP	56-130	121	-6 1/2	-5.0
O	OIGITAL COMP CONTROL	S- 25	5 1/4	- 1/4	-4.5
N	OIGITAL EOUIPMENT	72-101	96 1/2	-1 7/8	-1.9
N	ELECTRONIC ASSOC.	6- 13	8 1/8	- 7/8	-9.7
A	ELECTRONIC ENGINEER.	6- 14	8 1/2	- 1/8	-1.4
N	FOXBORO	23- 41	30 1/8	- 1/8	-0.4
O	GENERAL AUTOMATION	13- 49	46 3/4	+ 1/4	+0.5
O	GRI COMPUTER CORP	2- 5	2 1/2	+ 1/8	+5.2
N	HEWLETT-PACKARO CO	46- 94	90 3/8	+ 3/8	+0.4
N	HONEYWELL INC	118-170	128 3/4	-4 3/4	-3.5
N	IBM	333-444	436	+7 1/8	+1.6
O	INTERDATA INC	8- 16	11 5/8	+ 1/4	+2.1
N	MEMOREX	15- 3R	16 3/4	- 5/8	-3.5
O	MICROOATA CORP	S- 10	9 3/8	- 1/2	-5.0
N	NCR	29- 38	29 1/2	-1 7/8	-5.9
N	RAYTHEON CO	27- 47	30 1/4	-1 3/4	-S.4
N	SPERRY RANO	30- 50	47 3/4	- 1/2	-1.0
A	SYSTEMS ENG. LARS	7- 16	7 1/4	- 3/8	-4.9
N	VARIAN ASSOCIATES	14- 22	17 3/8	- 7/8	-4.7
N	WANG LABS.	23- 61	29 1/2	- 1/4	-0.R
N	XEROX CORP	121-172	152 1/2	+ 7/8	+0.5
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3	0	0.0
O	BRESNAHAN COMP.	1- 3	1 3/8	- 1/8	-R.3
O	COMOISCO INC	3- 18	15 5/8	-1	-6.0
O	COMMERCE GROUP CORP	5- 11	S 3/R	- 1/R	-2.2
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	6- 14	6 3/8	- 7/8	-12.0
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	OPF INC	S- 13	7 1/2	- 5/8	-7.6
M	OATRONIC RENTAL	2- 4	2 1/4	- 1/8	-5.2
A	OCL INC	2- 10	2 5/8	0	0.0
A	DEARBORN-STORM	16- 26	22 1/2	- 3/4	-3.2
A	OPA, INC.	5- 8	6 7/8	- 3/8	-5.1
A	GRANITE MGT	S- 11	S 5/8	- 1/8	-2.1
A	GREYHOUNO COMPUTER	6- 11	5 5/8	- 1/4	-4.2
A	ITEL	7- 12	11 1/8	0	0.0
N	LEASCO CORP	15- 24	14 3/4	- 5/R	-4.0
O	LEASPAC CORP	6- 15	6 3/4	- 1/2	-6.8
O	LECTRO MGT INC	1- 4	1 7/8	- 1/8	-6.2
A	ROCKWOOO COMPUTER	2- 7	2 3/8	- 1/8	-5.0
O	SYSTEMS CAPITAL	3- 20	11 1/8	-1	-8.2
N	U.S. LEASING	19- 35	32 1/2	-1 5/8	-4.7

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BIO PRICES AS OF 3 P.M. OR LAST BIO
(1) TO NEAREST OOLLAR

Computer Stocks Trading Index



Earnings Reports

APPLIED MAGNETICS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.26	$.33
Revenue	31,764,695	24,030,566
aSpec Chg	425,000	92,691
Earnings	1,090,811	1,351,191

a-In 1972, provision for potential loss on disposition of food processing plant; in 1971 from sale of subsidiary.

SEISMIC COMPUTING
Year Ended Sept. 30

	1972	1971
Shr Ernd	$1.13	$.75
Revenue	25,784,000	22,059,000
a Spec Cred	378,000	38,000
Earnings	1,411,000	893,000

a-In 1972, from sale of stock and purchase of subordinated debentures; in 1971, from purchase of subordinated debentures.

DATA DESIGN LABORATORIES
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.10	$.10
Revenue	2,235,509	1,840,178
Tax Cred	10,350	16,750
Earnings	112,527	114,047

a-Restated.

ELECTRONIC COMPUTER PROGRAMMING INSTITUTE
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.01	$.02
Revenue	1,047,964	765,128
Spec Cred	.....	a3,400
Earnings	3,568	15,789
9 Mo Shr	.01	.....
Revenue	3,093,131	2,191,773
Spec Chg	.....	b18,506
Earnings	4,129	(11,402)

a-An adjustment from the six-month figures. b-Loss from sale of 19%-owned subsidiary.

COMPUTER COMMUNICATIONS
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.06	.....
Revenue	1,600,511	$748,188
Disc Op	.....	(121,513)
Tax Cred	50,000	.....
Earnings	100,821	(627,589)

a-Restated.

INFORMATION INTERNATIONAL
Six Months Ended Oct. 31

	1972	1971
Shr Ernd	$.15	.....
Revenue	3,491,189	$1,297,928
Tax Cred	176,000	.....
Earnings	380,488	(195,171)

AMPEX
Three Months Ended Oct. 28

	1972	a1971
Shr Ernd	$.02	.....
Revenue	78,040,000	.....
Earnings	271,000	.....
6 Mo Rev	146,849,000	.....
Loss	2,894,000	.....

a-Comparative figures not available.

BOOTHE COMPUTER
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	.....	a$.32
Revenue	$12,718,000	14,998,000
Disc Op	.....	(193,000)
Earnings	(13,572,000)	680,000
9 Mo Shr	.....	a1.17
Revenue	40,714,000	45,576,000
Disc Op	.....	(431,000)
Spec Cred	b1,148,000	.....
Earnings	(12,334,000)	2,475,000

a-Adjusted for a 10% stock dividend in June 1972. b-From sale of stock of subsidiaries.

CALIFORNIA COMPUTER PRODUCTS
Three Months Ended Oct. 1

	1972	a1971
Revenue	$12,992,000	$13,483,000
Spec Chg	.....	b4,725,000
Loss	2,283,000	4,953,000

a-Restated to conform with current accounting policies. b-Cumulative effect on prior years of changing to a different method of accounting for engineering and development costs and lease acquisition and installation costs.

INFORMATION DISPLAY
Nine Months Ended Sept. 30

	1972	1971
Revenue	$1,377,651	$1,129,799
Loss	208,182	160,624

COMPUTER TAPE RECERTIFICATION
ISC/PRYOR COMPUTER

Extend your 360 or 370
WITH
EDOS, The Extended DOS
AND
EDOS Extended Spooling

EDOS is . . .

- **Improved Throughput of 50%**

With Basic EDOS, users throughout the world have been experiencing overall 25% improvement in systems throughput. The Extended Spooling Facility has more than doubled this remarkable performance improvement, with users reporting improvements of as much as 75% in systems throughput. In addition, the Six Partition Support feature doubles partition availability.

- **Compatible with DOS**

EDOS is 100% compatible with DOS. All IBM distributed programs and all user written programs operate without modification.

- **Continuing Support**

On March 31, 1973, IBM will no longer provide free DOS/360 maintenance. EDOS users will continue to receive without charge complete maintenance. Continuing support not only in terms of maintenance, but a continuous development plan of powerful extensions.

EDOS is . . .

- **Integrated Features**

Automatic Volume Sensing—tape and disk assignments by device type at execute time.

Relocation—catalogue any program once and execute in any partition.

Procedure Library—an 'intelligent' procedure library, permitting selective retrieval of catalogued job control.

Job Accounting—a complete data collection, summarization and reporting system.

Text Editor—for documentation of your programs.

Extended Source Library—extends the source library support to all languages down to the statement level.

Resident Translants—saves up to 50% of program execution time and is especially useful with ISAM processing.

Load Balancing—automatic optimization of C.P.U. utilization.

Fast Dump/Restore—dump a 2314 volume to tape in five minutes and restore in four minutes.

Fast Linkage Editor—twice as fast as the standard linkage editor.

Blocked Fetch—a transparent feature providing improved C.P.U. performance.

Modified Storage Dump—saves 40% of storage dump time.

THESE TWELVE FEATURES CONSISTENTLY PROVIDE OVERALL THROUGHPUT IMPROVEMENTS OF 25%.

- **Six Partition Support**

Twice the partition availability—it's like having another C.P.U. Run whatever you want in any partition.

- **Extended Spooling**

A new and unique high performance spooling system integrated into EDOS.

Performance—up to 50% improved throughput performance over any other spooling system available.

Dynamic Core Allocation—The only resident core that is required is 2K in the EDOS Supervisor.

All additional modules (approximately 2K per device) are resident only during the time of actual use.

Compare this with other spooling systems that require resident core for all real and pseudo devices at all times.

Minimum Disk Requirements—requires one half of the disk space required by other spooling systems.

Operator Ease/Flexibility—The Computer Company did more than just incorporate all of the features found in other spooling systems. We implemented a complete operator oriented system designed primarily for ease of use with maximum flexibility.

EDOS is . . .

- **Unquestionably the best software value on the market today!**

EDOS was developed by The Computer Company to improve the performance and operational characteristics of the IBM Disk Operating System (DOS) on your System/360 or System/370. EDOS is the new support for the DOS user. EDOS is a continuing series of system releases offering coordinated enhancements to DOS. The performance and features of EDOS make it a logical alternative to OS without conversion.

EDOS is inexpensive. With all of the features and performance that EDOS provides, its compatibility and ease of installation, you will want to evaluate it in your own installation. We frankly believe you will agree that EDOS is the most exciting systems software available. A 60 day free evaluation period is provided.

The Basic System Release 5 of EDOS (all features except Six Partition Support and Extended Spooling) has a lease price of $225.00 per month. Six Partition Support has a monthly lease price of $75.00; Extended Spooling has a monthly lease price of $200.00.

MARKETING AGENTS FOR EDOS

CIG COMPUTER PRODUCTS, INC.

a subsidiary of COMPUTER INVESTORS GROUP, INC.

COMPUTER PRODUCTS, INC.
1351 WASHINGTON BOULEVARD
STAMFORD, CONNECTICUT 06902

Please send me additional information about EDOS.

NAME________________________

TITLE________________________

COMPANY________________________

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Systems Software Specialists

THE COMPUTER COMPANY

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

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NEWSPAPER

NEWS IN BRIEF

Framingham Computer Budget Cut by 40%

FRAMINGHAM, Mass. – The proposed budget for the Regional Vocational Technical School (Voke) computer for training data processing students [CW, Jan. 17] has been cut by 40%, according to Voke Superintendent Daniel Donoghue.

At a recent meeting of the town's finance committee he said the cut will reduce the cost per student from $20,000/yr to around $12,000.

The financial cut of 40% was not documented with specific figures but Donoghue said it was common experience that when the costs of major items were reduced, such as the computer, equivalent reductions could be made in the teaching area. He said the finance committee could expect a 40% reduction not only in the hardware costs, but also in instructional costs.

Donoghue explained that for the past two-and-a-half years the school had been planning for a computer system which would be big enough to handle all the data processing needs of the towns in the area including school scheduling, assessing and police work.

But the four towns involved – Framingham, Holliston, Hopkinton and Ashland – have not been "beating the regional school's door down" to obtain computer services.

370/115 Configurations Reported Quoted in Spain

MADRID, Spain – Representatives of IBM World Trade have reportedly quoted two 370/115 configurations to potential users in Spain.

The first system included a 32K CPU with a 300 line/min. printer, 250 card/min card unit and 30M bytes of on-line disk storage for $5,000/mo.

The second system included a 64K CPU with 500 line/min printer, 200 card/min reader and 60M bytes of on-line disk storage for $6,800/mo.

The prices were converted based on current U.S.-Spanish exchange rates. IBM World Trade would not comment on the report.

On the Inside This Week

Value-Added Networks Geared to Data Users *–Page 13*

Study Checks SMF Accounting Systems *–Page 11*

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Systems/Peripherals 13

VS Users Get Multi-370s, OS Upgrade

By Ronald A. Frank
and Don Leavitt
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has added a multiprocessing capability to the upper end of its 370 series to allow the integration of non-virtual 155s and 165s with new 158MP and 168MP mainframes.

IBM has a broad-based array of new software support for the 370 virtual storage users. Despite the new features, however, the keynote throughout the announcements is compatibility with the users' existing applications programs.

A multiprocessing configuration can be based on 155, 165, 158MP (for multiprocessing), 168MP and the larger models of the 145. Memory capacity on the 145 was doubled to 1M byte.

OS/VS2 Release 2 was enhanced to control the multiprocessor versions of the 370, through a variation of the Attached Support Processor (ASP), originally announced for System 360.

Updated IMS/VS

Data base/data communications operations under VS are expected to be made easier by the introduction of updated versions of Information Management System (IMS/VS) and Customer Information Control System (CICS/VS).

OS/VS2 is the original VS operating system for OS/MVT users. OS/VS2 Release 2 includes a component called Job Entry Subsystem (JES3), based on ver-

(Continued on Page 4)

(Photo by Dave Chare)
Robert Sennet, representing the Society of Professional Data Processors, has the attention of the Computer Foundation meeting. Sennet sought the necessary time for proper organization.

Societies Rally to Support Computer Foundation Plan

By Alan Taylor
Special to Computerworld

CHICAGO – Many data processing societies have promised to support the Computer Foundation proposal of the Data Processing Management Association and the Association for Computing Machinery put forward at an open meeting here recently. The foundation plan is to take over the operation of the Certificate in Data Processing (CDP) and Registered Business Programmer (RBP) examinations from the DPMA this summer, and to operate them and other forms of practitioner certification and research.

Support promised by the societies was toward the cost of developing a final incorporation charter in time for the proposed transfer of the programs to the foundation, on July 1 this year. It amounted to $1,000 per society.

During the meeting, hosted by DPMA, it was explained that an estimated $11,000 would be needed for organizational expenses prior to the incorporation. This included the costs of providing separate office facilities outside those available from either the DPMA or ACM.

Fred Harris, ACM cochairman, explained this had been done to avoid any possible suspicion that either ACM or DPMA was in control of the foundation or had decided in advance on the details

(Continued on Page 2)

(Photo by J. Mourreau)
Computerworld Publisher Patrick McGovern leads the Computer Caravan to Boston.

Caravan to Begin in Boston

By a CW Staff Writer

BOSTON – With an expanded user program and 50% more exhibiting companies than last year, *Computerworld* officials are making last-minute preparations for the Computer Caravan, which begins its 10-city tour here next week.

More than 50 companies will be exhibiting the latest in hardware, software and services, covering virtually every aspect of computer usage, according to Neal Wilder, national sales manager for the caravan.

Additionally, five panel discussions, 11 workshops and a tutorial on data communications planning will be conducted in each city.

Local computer users will be featured in all panels and workshops, and consultant Gilbert Hoxie of Booz, Allen & Hamilton, Inc. will travel with the caravan and

(Continued on Page 3)

IBM/CDC Deal– It's 'Curiouser'

By E. Drake Lundell Jr.
Of the CW Staff

"Curiouser and Curiouser" –
Alice of *Alice in Wonderland*

MINNEAPOLIS – Court actions here and in New York over the past two weeks have left many observers feeling like Alice as the argument over the deal between IBM and Control Data to destroy an important computer-based index has reached new heights.

Not only did the Justice Department join Telex in opposing the index destruction, part of the IBM/CDC suit settlement, but also Judge Philip Neville here ordered IBM and Control Data to refrain from destroying any further documents while he considered the Telex motion to have Control Data reconstruct the index.

In his order to the two parties, Neville said: "This is clear. Control Data is under injunction from this court as of now; IBM is under injunction from this court as of now not to destroy another document, not to move, transfer, give back or otherwise deal with any documents until we resolve this issue that's now pending before the court.

"I don't want to make a hollow proceeding of this and discover if I make an

(Continued on Page 6)

CW Photo by Leslie Flanagan

Where Will He Be in '73?

Some teams during last week's college football draft had a little extra going for them. Herman Ball, director of player personnel for the Philadelphia Eagles, and Jack Butler (foreground), director of Blesto-VIII, the combined scouting organization of the Bears, Lions, Eagles, Steelers, Vikings, Colts, Dolphins and Bills, use printouts of vital statistics of the players to help with the choices. The 1030 Teleterm printer from Computer Devices, Burlington, Mass., was located at the Eagles' stadium and accessed the University of Alabama's Univac time-sharing system which contained the vital information on the players.

Many DP-Related Problems Rank High on Congress Agenda

By E. Drake Lundell Jr.

Of the CW Staff

Washington Wrapup

WASHINGTON, D.C. – Computers and computer-related problems will be a major topic of discussion in Congress this year as that body takes up a wide range of DP issues centering on the protection of individual privacy in data-bank systems.

Congress is also planning investigations into the monopoly questions with heavy emphasis on the computer industry and will try to find ways and programs to apply computer technology to social problems.

Among the glut of bills introduced in the first weeks of the new Congress, more than a score deal with the issue of computerized data banks and individual privacy.

And on the CBS program "Face the Nation" Senate Majority Leader Mike Mansfield (D-Mont.) promised a "very, very thorough" investigation of the data-bank activities of the FBI, Army and other government agencies, especially as they relate to political figures. Sen. Sam Ervin (D-N.C.) will head the investigation of these activities.

Guard Dissemination

The first bill introduced on the subject was placed in the hopper by Rep. Don Edwards (D-Calif.) as H.R. 188 to "provide for the dissemination and use of criminal-arrest records in a manner that insures their security and privacy."

Basically, the measure would prohibit the distribution of arrest-record information on persons not convicted of crimes. At present the FBI's Computerized Criminal History system allows the distribution of records on anyone arrested for a crime, whether convicted or not.

Rep. Edward Koch (D-N.Y.) also introduced two privacy-oriented measures.

The first, HR 665, would "protect the constitutional rights of citizens of the U.S. and prevent unwarranted invasions of privacy by prescribing procedures and standards governing the disclosure of information to government agencies."

The second measure, which would "provide that persons be apprised of records concerning them which are maintained by government agencies," was introduced last year by Koch.

On the Senate side of the Congress it is expected that the issue of computerized data banks will be discussed by the Office of Technology Assessment as well as the Ervin committee.

This new body, headed by Sen. Edward Kennedy (D-Mass.), was established last year to provide the Congress with assessments of the impact of technology on society at large.

In addition, the Department of Health, Education and Welfare committee studying the issue of a Universal Identifier (UID) will report on its recommendations sometime this year – and this report could prompt more congressional action or else call for the issuance of administrative guidelines for such a UID by the President or the department.

Hearings are slated this spring by Sen. Philip Hart (D-Mich.) on new proposals in the antitrust and monopoly field. One of the major industries to be investigated will be the computer field with all segments of the business invited to give testimony.

With the present settlement of the Control Data suit against IBM and the Justice Department activity against the industry giant, these hearings are expected to take on the importance that was lacking during the last session last year.

There will also be a spate of activities to try to reorient computer systems to what congressmen see as important social problems instead of the heavy emphasis on military systems. But even with this action, the military will still be the largest buyer of computer systems in the government.

Examples of this type of activity abound. Already introduced are proposals to establish a national computerized Fire Data System, a computerized Environmental Data System, a computerized National Research Data System and several proposals to have the National Science Foundation support computer projects aimed at civilian needs.

The most ambitious of these is the National Science Policy and Priorities Act of 1973, sponsored by Senator Kennedy. It would give the National Science Foundation $110 million over the next three years for computer-related projects to improve public services in areas such as health care, housing, transportation, pollution control and education.

Societies Rally to Support Computer Foundation

(Continued from Page 1)

of organization.

This is for the computer community, DPMA cochairman John K. Swearingen pointed out in his opening remarks. "It is now up to the profession to decide how it should be run, and this is what we have invited everyone to hear about."

DPMA Council Continues

The organization suggested in the papers distributed at the meeting would continue the operation of the DPMA Certification Council, which currently runs the CDP and RBP examination. The preservation of the council's autonomy was said to be one of the functions of the proposed organization, and the council structure was to be used as a model for the other activities which the foundation is expected to develop.

The size of the foundation's resources was indicated in a series of graphs showing the growth in income from the CDP and RBP examinations over the past five years. The 1969 revenue was $86,300, and this had risen until the 1973 forecast revenue was $127,500. Direct costs during the period had risen from $70,000 in 1969 to $80,000 in 1971, but had then fallen to $74,000 in the 1973 forecast.

Indirect costs during the period had fluctuated from $58,100 in 1970 to $37,000 in 1972, and had made the program a money loser for DPMA every year except 1971, when a profit of $4,700 was posted.

Forecasts for 1973 and 1974 show estimated profits of $12,500 and $13,879 respectively. If the full $11,000 support from the societies is not raised, this could be reduced to $9,000 to repay loans from ACM and DPMA.

(Photo by Dave Chare)

John K. Swearingen, DPMA, and Fred Harris, ACM, cochairmen of the Computer Foundation Organizing Committee, preside over the public meeting.

The foundation is expected to widen its certification activities beyond those operated by DPMA. One list of needs required by a selected Certification and Testing Advisory Committee was that data processing management, operations research, business systems, business programming, scientific programming and computer systems should all have programs with one common objective – to recognize the individual as an accomplished, competent practitioner.

The certification programs should look, according to the ACM/DPMA organizing committee, for a body of knowledge, high intellectual content, pride of contribution to society, association of practitioners, service to mankind and ethics.

The committee also recommended the organization be equally controlled by the participating computer and information management societies. It emphasized, however, that the establishment of the recommended foundation is not intended to interfere or compete with these societies or other organizations, but it should permit them to pursue their individual objectives while the recommended organization develops and administers – for the industry as a whole – those programs which can be treated best through unified efforts.

Committee History

The organizing committee was set up after meetings in 1971 between ACM President Dr. Walter H. Carlson and DPMA President Edward O. Linebach.

The committee chairman was former DPMA President James D. Parker Jr., CDP, and the four members were Fred H. Harris (representing ACM), John K. Swearingen (representing DPMA), Commander Grace Hopper and William J. Horne, CDP. In addition, W.J.S. Ellis sat as an observer representing the Association for Systems Management

Membership on the committee was by invitation only. DPMA said careful consideration was given to the members' selection to insure representation from the various segments of the industry and from related associations, as well as individuals having a broad knowledge and holding highly respected positions.

The committee met in January and April 1972, before recommending that more certification programs for practitioners were needed and an independent organization should be created to administer them.

The concept was passed by DPMA's Board of Directors in June 1972 and by the ACM Council in August 1972. It had also been approved and supported by DPMA's Certification Council in April.

Moo . . . 6785 . . .

BOZEMAN, Mont. – Two Montana State University scientists may have solved the rising problem of cattle rustling out West.

Dr. John Hanton, associate professor of electrical engineering, and Harley Leach, a research engineer, have produced a transistorized capsule which is ingested by a calf exactly three hours after birth.

The capsule, which is heavy enough to remain in the cow's second stomach, emits an electronically receivable coded signal. The signal includes a registration number which can be entered into a computer to identify the animal's owner.

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Caravan Begins Its Trek

(Continued from Page 1)

deliver the communications tutorial, reported Edward J. Bride, forum manager.

After Boston, the caravan visits the following cities, in order: Washington, D.C., New York, Atlanta, Houston, Anaheim, San Francisco, Kansas City (Mo.), Chicago and Cleveland.

During 1972, its first year, the caravan was attended by more than 18,000 users, plus representatives of various exhibiting companies during a nine-city tour.

For 1973, caravan officials have predicted an attendance of upwards of 30,000.

Planning Ahead

As of last week, registrations were being received, for the first four cities on the tour, and caravan officials advised advanced registration would avoid lines and reduce the possibility of missing sessions. Officials said about half the forum sessions would probably be sold out, meaning about 400 users per day for these sessions.

Forum panelists will represent nearly every facet of the computer community, including business, education and government, Bride reported.

The only segment of the community not on the user panels is the computer industry itself; some exhibiting companies will be presenting special seminars oriented toward their particular product or service, but this is separate from the forum program, Bride explained.

In each city, the opening day is devoted to data entry, with four workshops on keypunch replacement, OCR, intelligent terminals and direct (on-line) data entry. Hoxie's tutorial is given during the afternoon, in an open, general session.

On the middle day, data communications is the panel theme with workshops on data transmission and equipment selection.

On the afternoon of the middle day, a panel on software evaluation will be held.

Installation management is the theme on the third day, with workshops on personnel selection and training, programming management and independent peripherals. In most cities, two users will share the independent-peripherals workshop, one to discuss core and the second to discuss other peripherals.

On the afternoon of the third day, the open session will feature a panel on the use of small computers in a business environment.

It's the Concepts That Count Here

LAFAYETTE, Ind. – A Purdue University engineering professor has developed an examination format which he hopes will help upgrade the quality of math and engineering courses and so improve students' ability in those areas.

The test, designed by Prof. Thomas Boyle, is graded by a CDC 6500 which provides the student and his instructor with an analysis of the student's strong and weak areas.

The computer can do this because each test is divided into subtests, each of which tests a very specific area of knowledge. For example, a very elementary math test might be divided into four subtests – addition, subtraction, multiplication and division. The computer's analysis may show the student is good at addition and subtraction but weak in multiplication and division. He can then study the weak areas and repeat the test.

The test differs from ordinary programmed instruction and traditional tests in that the student is not told which specific questions he answered wrong. Doing this would not allow the student to repeat the test since he could memorize the answers without really learning the underlying concepts. With Boyle's method the tests can be repeated until all the material is learned.

Boyle hopes to put the tests on-line using remote terminals. Under this system the student would receive his analysis immediately after completing the tests.

The test has been used successfully in freshman math and engineering courses at Purdue, Boyle said. It is administered at the beginning of each course to let the student know what areas of competence are expected of him. It is then given throughout the course to monitor the student's progress.

Purdue's Measurement and Research Center plans to market the test to high school math teachers nationwide.

Colby College to Develop Resource Allocation System

WATERVILLE, Me. – Colby College has been awarded a $56,500 grant by the Research Allocation Management Program (Ramp) of the Esso Education Foundation, New York, to develop a basic computer-assisted system for the planning of resource allocation.

Colby President Robert E.L. Strider said the contract for implementing the project has been awarded to Systems Research Group, Inc., a Toronto firm which has been working on a comprehensive information system master plan for Massachusetts State College's 11 campuses.

Development of a plan for resource allocation is aimed at providing transactional and statistical data including projections of trends, consequences of alternate choices, and analyses of costs, physical plant use and personnel requirements.

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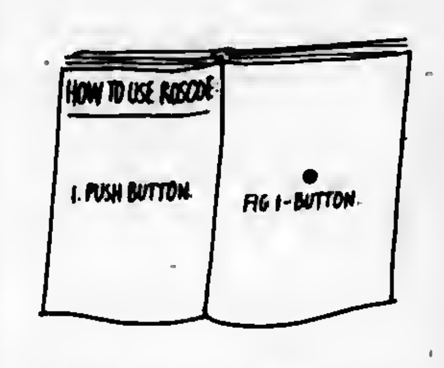
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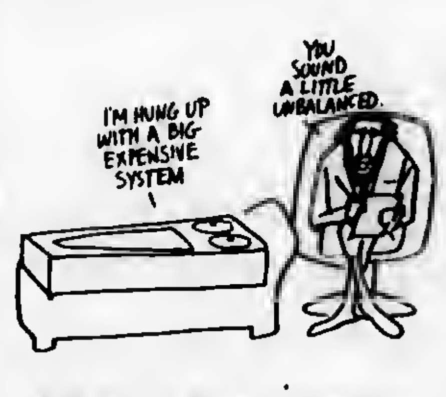
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VS Users Get Multiprocessor 370s and OS Upgrade

(Continued from Page 1)

sion 3 ASP, which permits peripheral devices to be pooled by all systems in a multiprocessor complex, IBM explained.

Under JES3, tapes and direct access units can be shared by as many as eight separate computers. Card I/O devices and printers in a multiprocessing complex are typically assigned to the controlling CPU, the company added.

OS/VS2 Release 2 also provides multiple address spaces which, IBM said, may result in the number of concurrent on-line applications, because in a terminal network each user can access 16M bytes of virtual storage.

Vtam provides dynamic linkage between an application program and a terminal, at the request of either, and until either relinquishes control.

Vtam will become a part of each of the VS operating systems, at no cost to the users, and this should ease conversion of application programs from a DOS to an OS environment, IBM said.

The VS versions of IMS and CICS appear to answer some of the problems the early users of OS/VS1 had trying to trade off low activity rates with high real-core requirements. Unless the control programs were maintained in real core, these users found response times degraded badly due to paging overhead.

With IMS/VS and CICS/VS, "less real core may be required" to support these applications in a virtual system, according to an IBM spokesman.

OS/VS2 Release 2 is scheduled for March 1974 at no charge. NCP/VS is likewise a free item, expected to be available in November of this year. At the same time Vtam, another "freebie," will be ready for DOS/VS users. It will be available to OS/VS1 installations in February 1974, and to OS/VS2 Release 2 users in June of next year.

CICS/VS is scheduled for delivery in January 1974, under a license agreement at monthly charges of $750 for OS/VS users and $350 for DOS/VS users.

IMS/VS, which is compatible with IMS Version 2, will be ready for OS/VS users next February under a license agreement at monthly charges of $700 for the data base system, and $850 for the data communications system.

The multiprocessor configurations provide some new options for 155 and 165 users who have non-virtual systems. Both of these mainframes can operate in a multiprocessor system although they cannot be used as a control computer.

A control CPU interfaces the multiprocessor configuration to "the outside world," and handles the job scheduling for up to four CPUs that can be included in an MP system.

Two types of multiprocessor systems, loosely coupled and tightly coupled, can be configured. A tightly coupled system includes two 158MPs or two 168MPs connected with either a 3058 or a 3068 multisystem unit. These multisystem units include a control panel and act as a processing switch between the two CPUs.

The loosely coupled systems can include a mixture of 155s, 165s, 158s, 168s and the largest 145s. Only a virtual machine can act as the control CPU in this type of configuration.

Uniprocessors

Any installed 158 or 168 systems, now called "uniprocessors," can be field-upgraded to MP versions "in a matter of days," IBM said.

In a tightly coupled system, both CPUs, each with its own main storage and I/O equipment, can run concurrent while processing different applications or the same job. The MP CPUs contain "architectural extensions" for the MP mode including time-of-day synchronization, IBM said.

Monthly rental for the 158MP ranges from $108,000 with 1M characters of storage to about $200,000 for 8M characters. The 168MP costs $260,000/mo with 4M characters and $370,000/mo with 16M characters.

Purchase prices on the 158MP range from $5 million to $9 million and on the 168MP range from $11.4 million to $16.2 million. First deliveries will be in March 1974.

3704 Uses Vtam, NCP/VS for TP

IBM also introduced the 3704 communications controller which is a scaled-down version of the earlier 3705. The 3704 can handle up to 32 low-speed lines compared to a maximum of 352 on the 3705.

A 370 virtual systems teleprocessing capability, called Virtual Telecommunications Access Method (Vtam), will allow users to share communications lines among terminals and applications programs eliminating the need to dedicate each line to a specific teleprocessing application and terminal.

Communications users will also be able to operate concurrently in both emulation (270X) mode and network control mode with the Network Control Program/VS available at no charge on virtual 370 systems.

Both the 3704 and 3705 will now be able to operate as remote network concentrators collecting data from low-speed terminals and sending it over higher speed to the main CPU.

Two features enable either the 3704 or 3705 to operate as remote processors. A duplex or half-duplex communications interface is required. The duplex version handles a two-way link between local and remote 3704s and 3705s at speeds up to 7,200 bit/sec. The duplex interface costs $124/mo per line on the 3704 and $106/mo on the 3705.

The second feature is a remote program loader that enables a mainframe to load the Network Control Program into a 3704 or 3705 over a communications line. It costs $176/mo on the 3704 and $235/mo on the 3705.

The 3704 can operate with most 360s and 370s and can support IBM terminals including the 1050, 2740 series, 2780 and 2790, 3270, 3735, 3780 and the 3741 diskette system on virtual CPUs only.

The 3704 is available under the extended-term plan two-year contract at monthly rental prices ranging from $740 to $1,630. Under the standard rental agreement the 3704 costs from $870 to $1,900/mo and purchase prices range from $35,000 to $90,000. First deliveries of the 3704 with the emulator capability are scheduled for May 1973.

The IBM 3704 communications controller can accommodate a maximum of 32 communications lines.

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Judge Acts to Save Documents

(Continued from Page 1)

order 10 days from now that then [a Control Data lawyer] gets up and says 'we didn't know, we sent back all the documents;' and I'm not going to let you do that, and you're under injunction not to do that, and IBM is under injunction not to destroy any documents it has."

Telex argued that the destruction of the index violated a pretrial order by Neville that CDC "will make available to counsel for Telex all IBM documents in its possession and its so-called data base or index."

"Our objective is not really to thwart the settlement; our objective is not to cause this settlement to be blocked and the case reinstated," the lawyers admitted.

Rather, they said, they had filed the motion in order to get IBM and CDC to live up to the court ruling that required that Telex have access to the index of the documents in the case.

In addition, the Telex lawyers said Telex "would be greatly handicapped in a trial of this case if deprived of the data base or index which this order provided for . . . It is our position that we will suffer substantial detriment, substantial prejudice.

"In short," the Telex lawyers said, "these parties in the settlement of this suit have taken it upon themselves, for reasons perhaps best known to them, to insure the prompt destruction of this index and data base. It was provided for in the terms of the settlement itself; it was done promptly, precipitously . . .

"This information, we are told, is no longer available to us unless your honor direct that Control Data reconstruct this data base and make it available to Telex," they concluded.

In reply, IBM and CDC argued the destruction of the data base or index did not violate the order and the index would not be useful to Telex anyway.

IBM and CDC also argued that the order did not give Telex rights to the index forever and that Telex had suffered no material injuries by the file destruction.

There were differences, however, in the court over whether the destruction of the index was part of a "secret deal" between IBM and CDC, as charged by many observers of the case.

Telex attorneys charged that a lawyer for CDC, Michael Berens, had told them the "terms of the settlement . . . required this data base or index be destroyed," and asserted that the "index was one of the most important negotiating leverages that CDC had in negotiating the settlement that was made."

However, the CDC lawyers said the destruction "was not a condition, it was an understanding of the settlement," and the IBM lawyers agreed the index destruction was not part of an agreement but was understood between the parties.

The CDC lawyers also indicated the settlement would allow Justice to bring its case to trial earlier, since there would not be any conflict with the trial in the CDC case.

However, Neville noted pointedly that "your destruction didn't help them any."

When an IBM attorney was questioned on why IBM wanted to destroy the index, he replied that "we wish there be peace between CDC and IBM, and it would be inconsistent with such a peace to have the person who had been your enemy continue to supply an arsenal against you."

Another IBM attorney, however, indicated that one of the first things discussed in the initial meeting on a settlement was the index and files of documents compiled by CDC.

Will Justice Renew Attack...With Vigor?

The angry filing by the Justice Department last week over the destruction of the index to documents in the IBM/CDC case may be a manifestation of a new hard-line attitude by the government.

Reliable sources reported last week that the Nixon Administration has finally given the go-ahead to press the case with all possible speed and resources.

This move, it was said, helped back the Justice Department contention that the case should go to trial and not be settled by a consent decree.

It also helps to dispel rumors that the administration was leaning in favor of IBM because of heavy political contributions by members of the Watson family and the top management of IBM to the Nixon reelection campaign.

However, the sources noted, IBM had not really begun to lobby hard for a settlement, even though IBM lawyer Nicholas Katzenbach reportedly has been lobbying against planned Senate hearings on the computer industry.

Brief Asks IBM To Reconstruct Index

NEW YORK – In its filing with the court here, the Justice Department's extensive brief on the destruction of the index to the documents in the IBM/Control Data case contains some of the sharpest language yet from government attorneys.

It asked that the court compel IBM to either reconstruct the data base or index; pay the Justice Department to do the same thing; or give the Justice Department access to the IBM data base of the documents in the case.

It is estimated that it would cost the department $4 million to reconstruct the destroyed index – all of which would have to be paid by IBM if the government motion is successful.

The Justice Department contends that the destruction of the index violated pretrial order number one, issued by Judge David Edelstein, which requires that both the Justice Department and IBM "secure from destruction all records of any kind which relate in any way to electronic data processing."

Justice's motion, in addition to requesting that IBM pay for reconstruction of the index, asked the court to order IBM to produce all records relating to the CDC settlement and to allow Justice to subpoena all representatives of IBM and CDC who took part in the negotiations.

In a new twist, Justice also asked the court to issue an order prohibiting the defendant "IBM" from disposing of any of its assets, wherever they may be located other than in the transaction of normal business, until the case is settled.

This is seen as a move to prevent IBM from trying to dispose of some of its assets while the case is under consideration, legal forces said.

The government motion noted the government had been making use of the data base and it had often told the court and IBM it would be using the file in preparing for its case. The destruction, Justice said, would handicap the government's case and delay the trial in the case.

It charged that IBM exercised control over the documents because of its payment of $15 million to CDC for legal work in the case and because IBM lawyers were present when the data base was destroyed.

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Editorial

Apologies Are Not Enough

The explanation by IBM that the political pressuring of a State of Delaware official was just a misunderstanding is inadequate. As evidenced by letters from readers, many people believe that such action is quite usual across the country. Tha IBM apologies under this circumstance, far from ending the mattar, indicata the corporation is aware that selling tactics reportedly being used are in fact blameworthy.

Tha matter is made more serious because it is so easy for computer salesmen to attack the competence of DP managers. All new computars hava soma sort of a selling gimmick – such as virtual storage. As part of the selling process the company produces "virtual storage experts," who at the drop of a hat can lecture on the unprecedented values of the gimmick, tha amount of research needed to bring it to the market, etc.

From tha experts' testimony it is easy for a marketing man to say to the DP manager's boss, "You will have to get a competent virtual storage man – you need one with your new computer."

Effectively, what has been said is that "your current DP manager is incompetant" and unable to keep up with the pace of development. The point, onca introduced, can be reiterated whenever the DP manager fails to respond to the salesman's suggestions with appropriate enthusiasm.

If IBM marketing is to obtain the laadership and trust that IBM equipment has won in the past, the same positive actions to prevent any suspicions of pressure tactics being used will be necessary.

To start with, the IBM salesmen could make it a rule not to pay calls on the company president, or other officials without having the DP manager present. That could be instituted as corporation policy, as branch policy, or simply by the individual salesman.

It would mean a great deal more to the DP manager trying to serve his amployer's interest honestly than any apologies could ever mean.

RPG 11-- Wave of Future

By N.M. Demos

Special to Computerworld

Viewpoint

For the average commercial data processing installation, Cobol is, or should be, obsolete. The wave of the future, fast becoming a reality, is a language with an internal logic structure. The best example of this type of language in wide use today is RPG II.

RPG II is a true fourth-generation language. First we had machine code, then one-for-one assemblers, then machine-independent (theoretically), user-oriented languages, now the time for a more powerful tool has arrived. Note the following:

- The internal logic flow of RPG II relieves the programmer of much coding and debugging.
- RPG II is terse, easy to code.
- RPG II compiles very quickly and efficiently.
- RPG II, with its internal logic flow, makes program standardization partially automatic.
- RPG II, with a minimum of coding coventions, provides excellent documentation.
- RPG II source code can be automatically converted into quasi-English statements if desired.

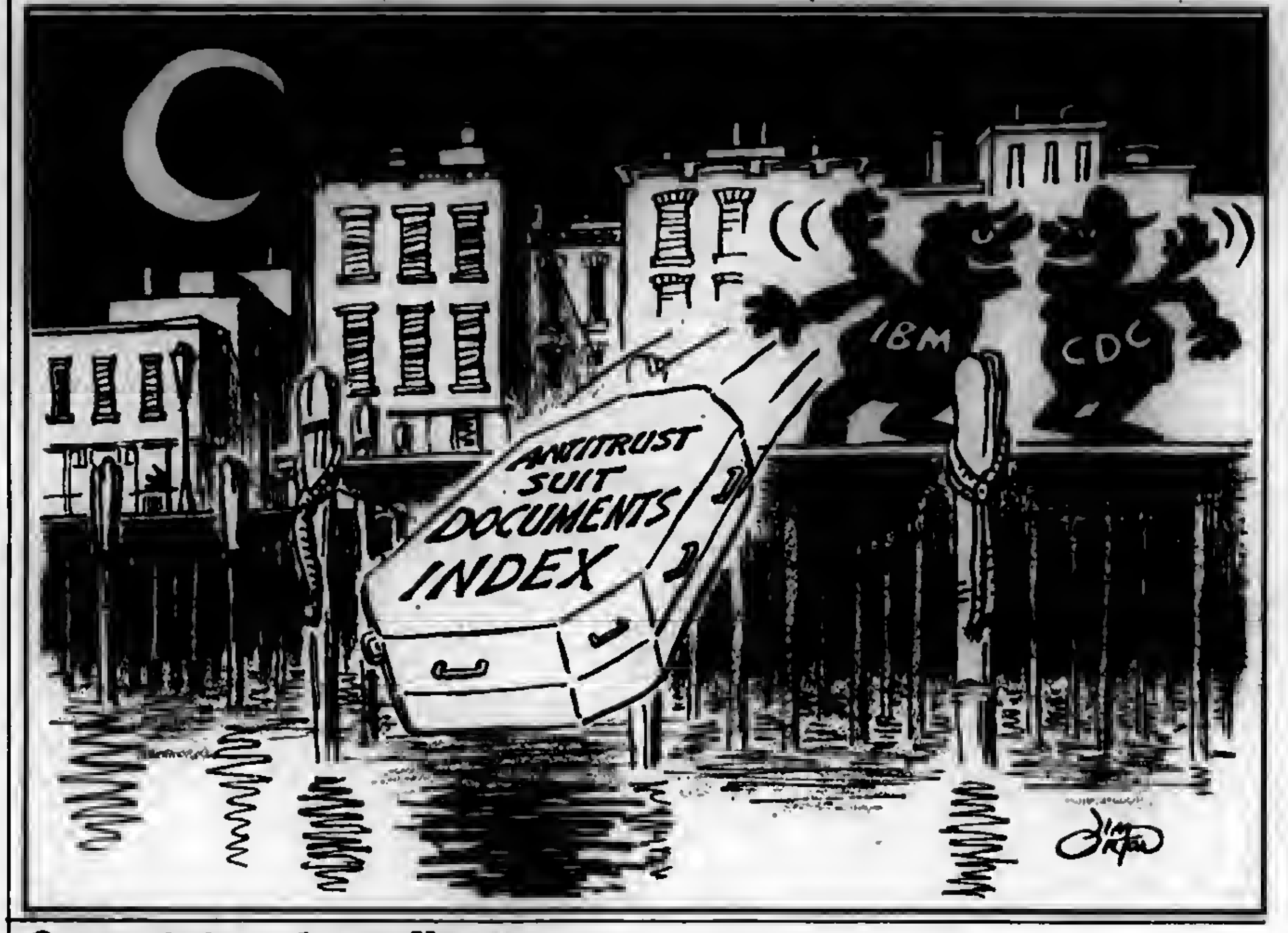
Several enhancements of RPG II are needed to make it a true all-purpose application language. Some that come to mind are:

- Work file capability; this could be implemented by a "CLOSE" verb.
- To save core, a method of processing (without look-ahead) directly from the record input area.
- A method of converting switch settings to array values. This could be done by a compiler-defined array, each element of which would be a switch setting.
- Compiler logic so that if there were more than one input file, without matching records, the input areas and routines would be overlayed by the next input file.
- A user-controllable overlay structure.
- The capability to code subroutines as separately compilable modules.

A thorough understanding of RPG II logic flow is a prerequisite to effective use of the language and is the major reason for its lack of wide acceptance on IBM 360s and 370s.

RPG II is not the low-level report generator of its predecessors. RPG II or a language of its type represents a breakthrough into a better cost/performance ratio for a programming staff.

'A Mutual Understanding'



Organizing Installations

10 Commandments for Teamwork

God gave Moses 10 commandments for guiding our lives, so 10 should do for organizing our installations.

The American Management Association suggests the following 10 (from Dale's *Planning and Developing the Company Organization Structure*):

- Each employee should be assigned definite and clearcut responsibilities – Everybody's business is usually nobody's business, so you may want to ask certain operators to be responsible for specific systems. You may also want to apply this in your systems and programming areas, so each person maintains particular systems in addition to developing new ones.

Management

By Frank Greenwood, PhD

- Responsibility should always be coupled with a corresponding authority – Allow someone to grab your authority and you will pay for it, since you remain responsible. Aggressive users will sometimes try to impose processing priorities, and programmers are often tempted to test and debug via batch processing at their convenience.

These actions could upset the overall production schedule. If you allow others to preempt your authority, you remain responsible for the results. This "responsibility equals authority" equation is reversible, so that authority is accompanied by equal responsibility. Accordingly, input offices are responsible for when you get the input documents and for their accuracy.

- No change in the scope or responsibilities of a position should be made without a definite understanding of all persons concerned – When a person is promoted he often has trouble letting go of his old job and may interfere with the new incumbent. An operations manager who has been moved up, for example, will probably have to be told to stay out of day-to-day operating matters (several times).
- No supervisor or employee, occupying a single position in the organization, should be subject to orders from more than one source.
- Orders should never be given to a subordinate over the head of his supervisor. If the supervisor is ineffective, replace him, don't bypass him – Ignore this and you dilute the authority of a supervisor, thereby weakening the organization your living depends on. For most routine matters, however, anyone having legitimate business with another should contact that person directly (i.e., without going through the chain of command).
- Whenever possible, praise your subordinates for a task well done. However, if you must criticize your subordinates, do it privately. Never criticize in the presence of associates of equal or lower rank.
- No dispute or difference between supervisors or employees as to their authority or responsibility should be considered too trivial for a prompt and careful adjudication – When someone comes to you grouching about his boss, tell him to go back and settle it with his superior. Add that if he cannot settle it equitably, he is entitled to come to you, but that his boss must also be present. Then, if you three cannot solve the problem, all three will go to your boss.
- Approval for promotions, wage changes and disciplinary action should always be obtained from the supervisor immediately above the one responsible for the action – This policy tends to ensure that decisions are not made on an emotional, subjective basis, thus avoiding situations such as when the night shift supervisor "ran off" the operator and hired his neighbor, thereby getting free transportation.
- No employee should ever be required to be, at the same time, an assistant to and critic of another – A programmer cannot remain loyal to the lead programmer and at the same time criticize him before the manager of computer services. Again, this weakens the organization upon which your living depends. But, a programmer may evaluate a set of facts and arrive at a judgment that differs from that of the lead programmer.

Up to the time the lead programmer takes an official position, the programmer should usually be free to disagree and to push his own views in a sensible fashion.

After the lead programmer takes an official position, however, the programmer should normally fall into line and implement the decision as if it were his own.

- Every employee should be provided with an evaluation of his performance on a regular basis, both to enable him to maintain a high standard of performance, and, where necessary, to provide guidance in ways of improving his performance – Probably toughest of the 10, this requires that you involve individuals in defining their own jobs and expected results and that employees participate in the installation's decision-making. It also requires that people have considerable freedom about how to achieve their objectives.

When you are doing these things, you and your subordinates are in a position to mutually agree on how performance has compared to expected results.

The above guidelines should help achieve the voluntary cooperation of the people you supervise. Creating and developing voluntary cooperation is critical to you because no matter how powerful a combination of money, machines and materials you control, it is dead without a team of willing, thinking and articulate people to make it work.

Frank Greenwood is computer center director at the University of Montana.

Baby of 360s Comes of Age

On Its 8th Birthday Model 30 Achieves Independence

The IBM 360/30 has always been an unusual machine, sometimes seeming to have quasi-human characteristics. For instance, it was in January 1965, just nine months after it was announced by its proud parent, that the system was delivered and its real power unveiled.

The Taylor Report

By

Alan Taylor, CDP

To many of us January appears to be a sort of birthday in the life of the machine. The first showing of the vital "1401 compatibility" feature could be compared to a gathering of guests for a child's christening, with prognostications of the fortune of the new infant, worries about the health of its relations, and talk of how the family fortune might now be carved up between the newcomer and its yet-to-be seen brothers.

The chief topic of conversation was whether the hardware compatibility feature would really work and be as successful as IBM claimed.

When the news of the feature had first been announced there was no doubt that IBM would succeed, but during the three months prior to the showing industry observers developed a greater understanding of the problems involved as a result of experience with another hardware/software compatibility case.

The doubters were out in full force, and were well-armed with facts, while the defenders could only respond with press release-backed assurances.

Fuel For The Fire

The facts which fueled the doubtful speculation came from the discovery that many IBM 1401 systems were quite different from each other. During the previous two months, hardly a week passed by without revealing some new and different 1401.

Often the news came from IBM contacts who passed on the information that ABC Corp. was trying to use the Honeywell Bridge or Liberator concepts to put their 1401 programs onto a Honeywell 200, but they were not working.

Tales of Honeywell experts flying around the country trying to put out the fires were widespread, and the fact that the 1401 manuals left out many important details on the operation of the system was becoming apparent for the first time.

It was the existence of different versions of the 1401 – which was revealed by the problems of the Honeywell Liberator program – that provided the facts for the doubting Thomases at the showing of the Model 30.

Baby Shows Its Stuff

But the Model 30 was well vindicated. The power of its punched card microprogram to be easily changed to suit the particular 1401 system was demonstrated time and time again. The system showed its power but like any baby at a christening, the potential of that power was a mystery for the future.

Now, eight years later, we are beginning to see just how powerful the Model 30 is. Only a year ago, on another January day, a Model 30 champion [Advanced Memory Systems] took IBM to court to force the firm to provide proper maintenance for its threatened offspring.

During the past year, the partial independence of the 30 has been demonstrated in many places where additional core has allowed users to run programs that did not previously fit into the system, to use partitions which were not available before, etc.

Eight Years Strong

This January the Model 30 celebrated its eighth birthday with still stronger signs of life. Computer Hardware and Consultant Services Inc. (CHCS) introduced its accelerated Model 30, which has much of the power of a Model 40 and can use four times more core than the standard Model 30.

(Photo by Don Tice)

Frank Pawelski of CHCS shows Alan Taylor the empty spaces on the second logic gate of the Model 30. CHCS reinstalled second gates, which were removed from the IBM design during the changeover from Version A to Version B of the Model 30, and is using the gates to hold the additional logic of its accelerated system.

To do this, CHCS had to put back a feature IBM had eliminated in the early stages of the 30. As originally designed, the Model 30 was a two-gate system, with logic capabilities on both gates.

Most of the logic was on the A gate, which is in front of the B gate. The B gate contained some small amounts of logic such as the storage protect feature, but was mainly present for later enhancements that would increase the power of the system during its marketing life.

One of the planned enhancements was a high-speed multiplexer channel, and quite a few wires could be seen leading to its apparent predesignated position.

However, the channel was never released. Instead, the Model 30 was redesigned and the second gate was dropped, a move which greatly limited the available room for expansion.

Perhaps someone at IBM realized just how powerful a competitor for its next series of computers the Models 30 would be, or perhaps a value analysis simply showed there was no need for a gate to be installed. I don't know what happened, but the gate vanished.

Now, however, the gate is back – together with its implied promise of facilities to expand the usefulness of the system. (A conservative estimate of the life of the Model 30 is at least 15 years, so there is plenty of engineering capability left in it.) CHCS has installed the second gate for its new arithmetic unit and other equipment.

So now, at the eight-year mark, the Model 30 is showing a surprising resilience. Although it has been under death sentence from the marketing area for years, its achievements are increasing almost monthly.

Bon Voyage

What the power of the system will be next year at this time I cannot guess, for the Model 30, supported by a host of champions, has set out on an independent voyage. Boosted by additional core, guaranteed maintenance and improved timings, the Model 30 can give its users the best performance its engineers can maintain, without being held back by the pressures of marketing philosphies or the financial interests of its manufacturer.

Come what may – wreck and the destruction of the high hopes many of us now have, or fortune and the achievement of new peaks in price/performance – it will be an interesting voyage.

To the liberated Model 30 and its champions go my best wishes for fair weather, fine sailing and a happy return. I ask you to look after the eight-year old now in your care, for the computer community can be greatly served by its powers in the future.

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DPers Must Answer Charges

The Readers Respond

In the Jan. 17 Taylor Report readers were invited to give their opinions on the question of whether the DP profession is entitled to refuse to consider allegations of public abuse (such as providing inaccurate information) when ignoring the allegations allows DP users to make more money, or DP practitioners to get more jobs.

The readers were also invited to suggest under what other circumstances such a refusal would be proper.

Of the responses received, over 90% said the profession was not entitled to refuse consideration in either of the two specific cases (making money or obtaining jobs), and over 80% could not think of any reason why the profession should ever refuse to give serious consideration to any allegations of abuse.

Some of the reasons suggested (lack of evidence, obviously unfounded allegations, etc.) implied that the writers might have voted with the majority, if the phrase "give serious consideration" had been further explained. An allegation which has no supporting evidence, or which is in fact unfounded can be given serious consideration, found wanting and dismissed.

Some of the comments received were:

"Under no circumstances. Why should this profession *only* be exempt from criticism?" – Sidney Golder, Framingham, Mass.

"The DP profession is not entitled to refuse to give serious consideration to any charge of abuse." – R.T. Hauguel, South Bend, Ind.

"When it is obvious that the allegations are excuses rather than fact!" – D. L. Steen, Findlay, Ohio.

"When allegations are not backed up with evidence, facts, etc." – Richard Bator, Nabnasset, Mass.

"Only if the complaint or alleged abuse is an isolated case, or is just plain unreasonable." – Leo Murlowski, Minneapolis, Minn.

"When the allegation cannot be substantiated." – William Forsythe, Cleveland, Ohio.

Letters to the Editor

IBM Forces Customers To Buy Systems Blind

IBM, preceding the announcement of its 370 line, kept telling its customers that the machines of the future would be "virtual-memory machines."

Its salesmen and technicians announced that equipment of the future would have paging, spooling, cascading and such systems would have the necessary index registers necessary to perform virtual-memory tasks. IBM's initial announcement and deliveries of its 370/155s and 165s did not include any software associated with this new generation of computers.

The promise of the IBM 370 was implied, but not spoken, in the press. Few companies the size of IBM, with its power, political influence, market control, leadership and logistic knowledge offered less to the user than would a charlatan with "caveat emptor" furnish these users who are unwary and have been cultivated to the point of being able to be duped.

Upon delivery of the IBM 370/165s and 155s, IBM sold a greater percentage of its rental base than ever before. It even had the gall to raise prices on such computer systems prior to initial deliveries and force them to be taken by purchasers.

Then came the true story of virtual memory.

IBM taught its major purchase customers that they should no longer purchase IBM computer systems. The IBM 370/155 and 165 are not virtual-memory machines!

Today, IBM is not saying that virtual memory will perform at this performance level on your virtual-memory application and throughput.

The customer may be allowed to "benchmark and make his own decision." Few have the availability, staff and time to benchmark their requirements.

Again, like the image of justice, the IBM customer is forced to buy computer systems blind.

The superbrains within IBM are again attempting to say that the knowledgeable customer has sufficient facts to make his rent or buy decision.

IBM's logistics, as proven under the Control Data suit, will never reach the court of public opinion. Another deal will be made with the U.S. Justice Department alleviating IBM of all responsibility for creating a proliferation of oversold and overutilized computer systems.

The IBM "370 non-generation computer system" is an end to settlement of the IBM consent decree of 1974 and total control of the computer marketplace.

Thomas E. Doyle

Summit, N.J.

Is Your Rear End Dragging?

Computerworld carries numerous articles relative to front-end support. But what I'm interested in is rear-end support – mine always seems to be dragging.

Do you expect to publish anything on this in the future?

Will Perry
CDP

Dallas, Texas

Computerworld has scheduled an Output Supplement for the issue of October 31. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. _Computerworld_ reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

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Dangerous World of Computer Buying: Is It Love of Technology or Company?

By Michael Weinstein
Of the CW Staff

Viewpoint

A company in Philadelphia recently was persuaded to upgrade to a large computer with "virtual memory" capabilities – but their programs were written for an IBM 1401. The net effect of this "upgrade" was a multimillion dollar machine that was simulating the operation of the old 1401!

During the past year the company reported a loss of revenue that would have been turned into a substantial profit without the large upgrade.

While an extreme case, it does point up two areas where general computer operations fail. First, all too often computer people are more loyal to the technology with which they work than the company they work for and never do salesmen or company experts come forth to argue against large upgrades which are unnecessary.

These problems continue because nowhere is the separation of the company from the individual department more evident than in the computer room.

The DP manager all too often sees himself as the technological leader of society and becomes more enamored with the technology of his machines than with the fact that he works for a company with a set profit-making goal.

He tends to forget that most computer applications could be performed by "x" number of accountants or typists. The value of the computer is that it gets the job done quicker and more accurately.

It is the job of the DP manager to optimize this speed and efficiency – not to trailblaze into new technology.

This separation of computer department from company also allows the computer vendor's salesman to play one side against the other and eventually gain a commission on a new and larger system.

Sometimes studies appear when a user contemplates changing vendors. These surreptitious and supposedly well-meaning studies offer to help the company solve difficult problems before facing the added difficulty of choosing new equipment.

What should make this tactic suspect in every user's eyes is that a company has yet to recommend that a user buy another vendor's equipment. By definition these studies must be biased.

Large vendors are the main employment agencies of the industry. If a DP manager is "good" and follows the advice of his salesman, he has every right to expect that when he wishes to change jobs, help and recommendations will follow. But if he is classified as "unfriendly," no computer company will recommend a man for a job when his first task may be the replacement of that vendor's computers.

The other factor contributing to the problem is that corporate managers still look at computers as a mystical mathematical rite. They do not take the time to learn the basics of DP operation.

If management continues to be unwilling to learn, it will be left to the mercy of whomever it wishes to believe. Managers must learn their interests lie in the computer room and they should temper advice from a vendor with the realization that the saleman's main interest is to make a sale.

Ombudsman Offers Potential to Usee

By Shulom Kurtz
Special to Computerworld

Viewpoint

For several years I've been a silent reader, but at this point I find I must raise a challenge to Alan Taylor with whom I generally agree.

Of particular concern is the matter of professionalism in the attitude of the practitioners of computer applications, a concept espoused by Taylor in a variety of ways. It was, therefore, surprising to read his apparently quite cynical view of the ACM ombudsman program [CW, Dec. 27/Jan. 3].

Although ACM undertook the operative side of the program under Walter Carlson's presidency, the original proposal came about as a joint action of DPMA, IEEE Computer Group (now the Computer Society) and the ACM, with endorsement by all three organizations.

The purpose of the program was never to undertake an active role as prosecutor. Rather, in an era when the layman's attempt to deal with a high technology is frustrated by a communications chasm, the ombudsman should serve as the translator between the two – an objective fact-finder with no axe to grind, whose purpose would be to assist in finding the problem source to allow appropriate corrective measures to be taken.

As originally conceived, the ombudsman was not to establish a new level of activity, but rather to work within the framework of existing organizations for consumer protection.

In practice it begins to appear that these organizations may not receive many complaints because people give up before being sufficiently aroused to proceed through formal channels.

This conclusion is borne out by Taylor's own columns discussing such items as the arbitrary system, the need for professionalism, etc. Taylor is sufficiently knowledgable to carry his own case to the computer user, but unfortunately John Q. Public often finds himself the "usee."

It is in this area where the ombudsman program offers great potential.

There is no doubt the most fundamental sources of these problems are in the realms of academia and computer vendors, as Taylor suggests. Data processing management must share the liability when it assigns unqualified personnel to systems design and programming and fails to exercise adequate supervision to assure that work is done to good standards.

The man whose credit rating is adversely affected now by a poorly implemented system is not concerned with anything but his immediate problem. It is at this level where the ombudsman functions. All three of the parent organizations – DPMA, ACM and the IEEE Computer Society – must address the basic problems.

The ombudsman program warrants the support of the entire data processing community.

Shulom Kurtz is ombudsman for the Rocky Mountain Chapter, ACM, Denver, Colo.

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Random Notes

Manufacturers Get NCR Help Handling Inventory Control

DAYTON, Ohio – The Inventory Material Control (IMC) package just released by NCR for Century users with a minimum 32K storage, is flexible enough for job-shops, mass or batch-production operations, an NCR spokesman said.

Within IMC are subsystems for implementation and file maintenance, item analysis and cost control formulation, and allocation and stockkeeping control. Distributed without cost to Century users, the package can be used by itself or as the second part of an integrated system for manufacturers, which already includes a bill of materials processor.

Sanders Adds 'Span' Software To 804 Terminals, 810 Clusters

NASHUA, N.H. – Users currently operating with IBM 2260/2265 CRT terminals can gain advanced editing and faster printing capabilities without breaking 2260 line disciplines, by shifting to Sanders 804 Stand-Alone or 810 Cluster terminals equipped with new software just announced by the company.

The "Span" software is bundled into the price of the hardware. The 804 stand-alone terminal is $6,980 with lease prices from $202- to $245/mo. An 810 Cluster of eight terminals is priced at $3,387/terminal, with leases ranging from $94-$115/mo per terminal.

T/S Banking Programs Listed

PHILADELPHIA – A full range of banking and financial management programs are available through time-sharing networks and the capabilities of many of these programs are reported in detail in the latest of Time-Sharing Information Services' applications directories.

The *Banking and Finance* handbook sells for $28, from 3401 Science Center, 19104.

Fixed Asset Accounting Updated

SAN DIEGO, Calif. – Both 360/370 and Burroughs users can Implement version II of the Fixed Assets Accounting System (FAAS) now available from Infonational Inc., 620 C St., 92101.

The enhanced FAAS supports six methods of depreciation and flexible depreciation proration upon both acquisition and disposition of items controlled by the system. Calculation of investment tax credit is also part of the $10,000 package, the company said.

Correction

The correct address for M. Bryce & Associates, Inc., developers of the Pride package for system planning and development [CW, Jan. 17], is P.O. Box 15459, Cincinnati, Ohio 45215.

Differences Detailed

Study Checks SMF Accounting Systems

By Don Leavitt
Of the CW Staff

PALO ALTO, Calif. – The System Management Facility (SMF) option for OS/360 can be an effective base for job accounting, resource utilization reporting and billing, but both SMF and SMF-driven accounting systems have weaknesses, according to Compata Inc., a DP research firm.

A study recently completed by Compata showed that a half-dozen accounting systems from different vendors all follow the same basic steps in moving data from the SMF gathering routines to the users' final reports. But they differ sharply within the basic steps, and these differences determine their effectiveness.

In its study, Compata reviews Applied Data Research's Abacus, Boole & Babbage's CAS and CIMS/II from Boothe Computer Corp. It also analyzes Comput-a-charge, marketed jointly by Value Computing and Capex; Paces, from Pace Applied Technology and IBM's own SMF Selectable Analyzer.

Working with both narrative descriptions and simple, two-dimensional charts, the study defines five separate "areas of interest" common to all these systems, and shows – in detail – how the systems address themselves to these areas.

Exit Points

The first area covers the user exit points built into SMF. Compata shows what can be done at each of the points to enhance the data being gathered by SMF, and then pinpoints what each system does.

The next area Compata focuses on is system user data which summarizes job characteristics (and sometimes, user charges), written to the user's system output file (Sysout) at job run time. Accounting systems differ significantly in the algorithms used to charge the users for computer time.

Again, the systems differ widely in the editing routines they use to check SMF records for credibility, to remove duplicate records, resolve duplicate fields or to check groups of records for consistency.

SMF provides an abundance of data which, when properly analyzed, can provide guidelines for increasing system effectiveness, but, the report noted, no particular set of reports is right for all installations.

Billing Phases

Systems that do not provide user charges at job run time have separate billing phases, and these, once again, vary sharply from system to system, Compata found. A minimum system shows resource usage and charges by job and job step. Others allow user insertion of credits and debits, and generate resource usage analyses, cost vs. budget reports and other extensions of basic SMF data.

After detailing how current accounting systems use SMF data, the report concludes with an evaluation of how both SMF and the accounting systems can or should be changed to cope with virtual storage, to provide better accounting functions or to improve the operating system itself.

The complete report is available for $95, from 460 California Ave., 94306.

Load-Go 'Quikjob' Costs $30/Mo But Outperforms Other 'Writers'

DAYTON, Ohio – System Support Software Inc. charges only $30/mo for Quikjob, even though the new package appears to have processing capabilities and output options beyond those of many "report writer" systems that lease for a great deal more.

Described as a limited programming language, Quikjob creates load-and-go programs from imperative statements written in "English" similar to Cobol procedure division coding.

Card, tape or disk files in fixed or variable record format can serve as input. User-controlled logic permits multiple record types in the same file, but the current implementation of Quikjob is limited to a single input file for each run.

No Limit to Output

Output from this package has no such limitation. Users can create a printed report (formatted as he wishes), a punched card file and any combination of up to three tape or disk files that need have no relation to the other files.

The file organization and record formats of the output are under user control, therefore they could match the characteristics of an input file. The processing statements available, coupled with the ability to output as well as input the same file structure, mean that Quikjob has reasonable file maintenance capabilities, a company spokesman noted.

Users can define those fields on which they want to base control level breaks, but logic linked to the control field change may be separated from the point in the program at which the change is sensed.

Quikjob adds, subtracts and multiplies on Ebcdic, packed decimal or binary data, with rounding, truncating and decimal alignment handled automatically by the Multiply logic.

The operators available to a Quikjob user include logic comparisons, moves, IF statements and a variety of I/O commands.

The system is designed for 360s and 370s. DOS requires a 24K partition and OS will use about 45K bytes, depending on the options selected. In addition to the $30/mo lease plan, Quikjob is available for purchase at $2,950.

System Support Software Inc. is at 1132 Donson Drive, 45429.

'Alphacomm' Seeks Name Match

NEW YORK – Users with 360-based teleprocessing networks handling customer inquiries can search their files for specific records or for records that are phonetically similar to given alphabetic keys, with the Alphacomm cross-referencing system now available from GTE Information Systems Inc. (GTEIS).

The search and retrieval logic of Alphacomm normally functions as an application under several teleprocessing monitors, and is particularly adaptable to CRT terminal operations, the company said. It could be used in a batch environment.

The system creates, maintains and reorganizes as required its own Isam file, including for each record user-supplied data and an Alphacomm-generated phonetic key based on the major field.

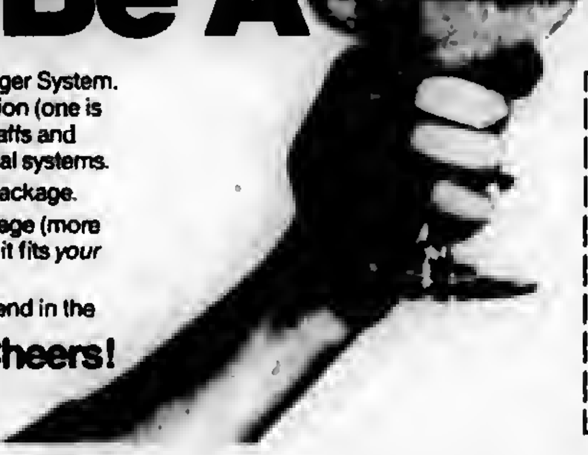
The user tailors the search logic as each inquiry is initiated. He may, for example, request exact matches to the input key, or he may ask for all possible names within a specified degree of likeness.

Minimum data needed for a search is the prime alpha "argument," such as an individual's last name. Beyond that, however, Alphacomm will accept additional search parameters – type of account, department, zip code or state – in order to select the most appropriate records in case of duplicate "hits."

Alphacomm handles CRT paging in addition to file maintenance. Response time to any inquiry is said to be about one second, with the initial CRT page displayed even before subsequent ones are fully formatted.

As a teleprocessing application, Alphacomm uses a minimum of 16K bytes beyond the controlling monitor system. It is currently operational with Intercomm, a monitor also available from GTEIS, and is being adapted to interface with IBM's Customer Information Control System (CICS) and other monitors.

Alphacomm is priced from $12,500 to $15,000, depending on the amount of teleprocessing monitor interfacing required. Programming Methods Division of GTEIS is at 1301 Avenue of the Americas, 10019.



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Since January, 7 companies ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the $800 million class). They all have the programming staffs and resources necessary to develop their own corporate financial systems.

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Their reasoning is simple: it costs less to use a *proven* package (more than 50 users have installed it in the past three years). Also, it fits *your* needs rather than the other way around.

For these happy users, 1973 will be a vintage year. Call or send in the coupon today. Then get ready to join the celebration.

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03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
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____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
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4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

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FORUM TOPICS

Day 1 – Data Entry
Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 – Communications
Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management
Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

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Forum Attendance Is limited
In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

Data Briefs

Compcon Meeting to Discuss Status of 'Computing Nets'

SAN FRANCISCO – "Computing Networks from Minis through Maxis – Are They for Real?" is one of the questions to be discussed at Compcon '73, the Seventh Annual IEEE Computer Society International Conference.

The three day meeting Feb. 27-March 1 at the Jack Tar Hotel is dedicated entirely to examining networks and will cover such topics as distributed networks, network architecture, network security, research networks, examples in the business community and performance in computer communications systems.

Registration chairman is Ben E. Britt, IBM General Products Division, Dept. H75/Bldg. 141, Monterey & Cottle Roads, San Jose, Calif. 95114.

Teleprinter Uses Impact Printhead

BOSTON – Di-An Controls, Inc. has introduced the Series 9030 Teleprinter which uses a matrix impact printhead with operator-selectable speeds of 10-, 15- and 30 char./sec.

The teleprinter offers 132-column print capacity; full Ascii upper- and lower-case codes; adjustable form-feed tractors; half- and full-duplex or local operation; odd, even, or no parity error detection and an RS-232-C interface.

The terminal includes an integral power supply, electronics, keyboard and printer.

The unit costs $1,955. Di-An is at 944 Dorchester Ave., 02125.

Terminal Has OCR Font Option

SKOKIE, Ill. – Teletype Corp. is offering an OCR font option to its Model 37 receive-only terminals.

The terminals are designed to be fully compatible with AP and UPI wire services. Speeds of 100 word/min and 150 word/min, eight-level Ascii and an EIA interface are available.

The price of the Model 37 with OCR is approximately $3,000. No modification packages will be available for existing model 37s, the company said. Teletype is at 5555 Touhy Ave., 60076.

Test Set Analyzes Data Systems

PROVIDENCE, R.I. – The Model 1310 TDM-Modem Test Set from International Data Sciences, Inc. is designed to test and analyze digital data communications systems which include low-speed asynchronous or high-speed synchronous modems.

The Model 1310 generates and analyzes pseudo-random data sequences in the form of start-stop asynchronous characters. Asynchronous bit rates of 75 to 9,600 bit/sec may be selected, or synchronous rates up to 3 mbit/sec.

The Model 1310 costs $2,150. International Data Sciences, Inc. is at 100 Nashua St., 02904.

Analysis - Part I

Value-Added Nets Geared to Data

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – Another era in data communications services may have begun when Packet Communications Inc. (PCI) filed its application for a "value-added" network with the Federal Communications Commission [CW, Jan. 31].

The services that PCI proposes to bring to computer/communications users are not new. They were pioneered by the Advanced Research Projects Agency (Arpa) network. But the Arpa net has some obvious differences from the commercial operation proposed by PCI.

The Arpa net provides computer resource-sharing services to primarily scientific and research-oriented academic institutions. It is operated by the Department of Defense which reportedly gets wideband facilities from AT&T at a considerable discount over normal private line users.

Important Precedents

But the precedents set by Arpa are nonetheless very important. The resource-sharing concept is based on the premise that shared communications facilities operated under computer control mean considerable economies for the subscriber.

These economies come about through more efficient channeling of data over the communications facilities. The data is assembled into "packets" of information, and these packets are switched under CPU control throughout an Arpa, or valued-added network.

The user of a commercial packet-switched net will probably enjoy some significant advantages not available to today's private line user. An Arpa or value-added network subscriber does not have to worry about multiplexers, front-end concentrators, modems, data speeds and all the rest of the complicated engineering involved with the operation of a private line system configured with AT&T lines.

Value-added data networks may drastically change the communications services options presently available to teleprocessing users. An FCC application for the first such network has been filed by Packet Communications Inc. This series of articles examines the expected effect of the proposed systems on the user.

The operator of a commercial Arpa-type network will come right into the user's installation to supply him with the necessary hardware and software interfacing. The user will retain control over his CPU and data but the value-added carrier will "move" the data on a turnkey basis.

While PCI envisions early FCC approval for its application, others are not so optimistic. At least two other potential value-added network carriers are known to be planning to enter the FCC arena.

Telecommunications Networks Inc. said it plans to file its application "soon," and Telenet Communications Inc. is also studying the prospects of applying for network approval. Telenet is a subsidiary of Bolt Beranek and Newman, which has done most of the Arpa network systems work for the government.

If the other two contenders apply to the FCC within the next few months, it is possible the commission would consider all three applications in one proceeding. This would probably take at least a year to complete. Another important question is the status of these new carriers with regard to regulation.

The PCI application acknowledges that the company "is offering a unique type of service which does not easily fit within traditional [FCC] classifications." But PCI said it is willing to be classified as a common carrier and its application proposes a tariff complete with rates and types of services.

From the user's standpoint, the major difference under existing AT&T tariffs would be the profit that PCI could make from its services. A common carrier is allowed a specified rate of return approved by the commission, but if PCI were simply classified as a special customer of AT&T, under the sharing provisions of its Tariff 260, then PCI would not be allowed to make a profit from the resale or sharing of its lines to the customer.

Some industry experts believe AT&T has given "informal notice" to the value-added companies and the FCC that it intends to amend its Tariff 260 to cover the new applicants. But no one is sure how the commission will interpret the role of the value-added networks.

Managers Reported Gaining in Stature

NEW YORK – Users continue to separate communications management from DP and other services with the communications manager having the same status and salary as managers in other departments.

These findings are included in an analysis of the need for teleprocessing and related professionals by Communications Personnel Inc.

The single most important job requirement during 1972 was for "corporate administrators expert in the data communications field." The optimum background for such administrators was "an advanced degree in computer sciences coupled with hands-on experience in low- and medium-speed networks," the report said.

A copy of the report is available from Suite 802, 441 Lexington Ave., 10017.

Western Union Would Liberalize Telex, TWX With Rate Increases

NEW YORK – Western Union Telegraph Co. has applied to the FCC for permission to offer a liberalized interconnection service for TWX and Telex users.

A basic change in the proposed services would separate the line, or "access charge," from the terminal cost, thereby making it easier for users to connect independent terminals.

Separate Installation Cost

While WU is simplifying the use of customer-provided equipment, it is also proposing to set a separate installation charge for both the line and the terminal. This means that the subscriber will pay $100 for a new installation compared with the present $50 charge. If a user switched from a WU terminal to independent device, he would have to pay $50 for a "new installation," according to a WU spokesman.

The access charge for a TWX line would be $11.50/mo while the access charge for a Telex line would be $24/mo. If WU provides the terminal, the charge would be $49.50/mo for a Model 32 ASR on the Telex service and $62/mo for a Model 33 ASR on the TWX net.

An increase in the cost of computer interfaces for both services is also proposed. A data set arrangement on TWX would be increased from $30/mo to $40/mo. The increase would be $8.50/mo for the first line connected to a CPU and $10.25/mo for each additional line, a spokesman said. On Telex the cost would increase $8.50/mo for the first line connected to a CPU with no increase for additional lines.

The proposed rates will take effect Feb. 28 unless suspended by the commission.

Data 100 Terminal Dressed Up

MINNEAPOLIS – Data 100 Corp. has announced two enhancements to its Model 70 Remote Batch Terminal – designed as an IBM 2780 replacement unit.

New features include a line printer, rated at 1,250 line/min, and a higher communications speed of 19,200 bit/sec, the firm's spokesman said.

The firm is at 7725 Washington Ave., 55345.

Now...get both in one...
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No longer is it necessary for the batch terminal user who has a need to access a local time sharing system to maintain a simple, low-speed terminal just for this purpose in the same office. Sycor now has eliminated this expense by adding low speed (100-300 baud) asynchronous communications capability to its Model 340.

A Sycor 340 user can access any major time sharing system, input the problem, receive the solution, and continue with the data entry operation. Captured data then can be batched to the central computer facility at 1200-4800 baud speeds using IBM-compatible BSC procedures.

In addition to this unique dual communications capability, Sycor provides users with T.A.L., a programming language developed specially for data entry applications. A wide choice of peripherals also is available – printers ranging in speed from 30 cps to 200 lpm, 7 or 9 track magnetic tape drives, and a 250 cpm card reader.

To get started getting both in one, call or write today for our colorful, informative brochure on the versatile Model 340.

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CDC Cyber 1000 Switches Nets

MINNEAPOLIS – Control Data Corp. has upgraded its M1000 data communications system to the expanded Cyber 1000 system. The new system includes faster memory speeds, higher transmission rates and increased disk capacity.

Designed for large users such as multiplant manufacturing firms, the Cyber 1000 operates as a store-and-forward message-switching center or as a data preprocessor to handle communications control.

Interfaces Most CPUs

The Cyber 1000 system can be interfaced with 360/370 mainframes in the Model 40 and Model 135 and larger categories. In addition to IBM systems, the CDC system can be interfaced with most major mainframes, a spokesman said.

The Cyber 1000 has a 900-nsec memory compared with the 2.4 sec on the M1000 system. Communications speeds up to 9,600 bit/sec can be supported with 50 kbit/sec capability available if required by the user.

For existing M1000 users the new system is completely "software-compatible" and the processor or line controller can be replaced without changing the peripheral equipment, the spokesman said.

Each Cyber 1000 processor can support up to 128 lines using teletypewriters, CDC 711 and 713 CRTs and IBM terminals including the 2740, 1050, 2780 and virtually all binary synchronous terminals, CDC said.

Disk System Upgraded

The disk storage system has been upgraded to 24M "bits of fixed-head storage" compared to the maximum 12M bits available with the M1000. An IBM 3330 disk system could also be interfaced to the Cyber 1000, the company said.

A single-processor Cyber 1000 system with disk and tape system controlling about 20 lines would cost about $250,000. Monthly rentals range from $100 to $170 per communications line depending on configuration. Deliveries range from six to 18 months and include full systems support, CDC said.

Up to eight disk and tape systems can be attached to a Cyber 1000 processor, in addition to card punch and reading units. The system can also support multiple hosts which are not compatible with each other but can be interfaced through the Cyber system. Dual Cyber processors can be configured to provide redundancy.

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Dennis G. Sisco—Marketing Manager

CMC Adds Telebatch To Key Entry Units

SANTA MONICA, Calif. – Computer Machinery Corp. has added a communications capability to its Keyprocessing key-to-disk system.

The Telebatch feature allows CMC systems to transmit data at speeds from 1,800 bit/sec to 19,200 bit/sec between data entry units and 360/370 or "similar" CPUs. Telebatch adds the capabilities of IBM 2780 terminals to CMC systems including batch data entry, job entry, output printing and media conversion, the company said.

Using binary synchronous communications protocol, the Telebatch feature operates with the user's modem and handles Ebcdic code transmission. The Telebatch capability can be added to 5, 7, 9 and 18-station CMC systems and can operate with IBM 2780 or equivalent terminals.

The Telebatch controller and operating system cost $3,300 or $95/mo with maintenance. Enhancements such as remote job entry cost $1,200 or $30/mo. First deliveries are scheduled for the third quarter of 1973. CMC is at 100 Wilshire Blvd., 90401.

NCR Banking Terminal Uses Dual Memories Off-Line

DAYTON, Ohio – NCR has introduced an electronic teller terminal for commercial banks.

The 275-100 programmable terminal can handle bank transactions not requiring a passbook. The terminal includes two internal memories – one a 2K core memory for "application program loading" and the other a 4K MOS/LSI memory to control the terminal.

A program is loaded into the 275-100 through punched paper tape or a mag tape cassette. The basic program allows the terminal to operate off-line, but the unit can be converted to operate on-line to a CPU, the company said.

Each terminal can be shared by two tellers. Entries are made through a 10-key keyboard and editing is done with an 8-digit display. All transactions are recorded on a "fully protected lock-in journal tape."

A separate printer is used for validation and receipt printing with a second printer handling customer receipts or other listings. The terminals cost $4,495 or $145/mo with first deliveries late in 1973.

Bits & Pieces

Magnetic Tape System Offered to Mini Users

PALO ALTO, Calif. – Precision Instrument Co. (PI) has come up with an 800/1,600 bit/in. mag tape system for minicomputer users.

The system includes a PI-1400 digital magnetic tape recorder, computer interface, formatting electronics and a complete software package, according to a firm spokesman.

Dual-density 800/1,600 bit/in. read/write electronics are standard. The 7-channel recorder has 200, 556 or 800 char./in. (choice of two). The 9-channel recorder interfaces in either 800 char./in. NRZI or 1,600 char./in., phase-encoded mode, the spokesman said. Standard tape speeds are 12.5, 25, 37.5 and 45 in./sec., he added.

System price is under $8,000 from 3170 Porter Drive, 94304.

PDP-11 Users Get Cassette OS

SAN JOSE, Calif. – Dicom Industries has a cassette operating system with a complete hardware/software/interface package for Digital Equipment Corp. PDP-11 series computers.

Complete as a unit or an integrated additional I/O device within the user's own system, the software of the CMTOS-PDP-11 Model 344 includes a system loader, command processor, driver, modified IOX, debugger, editor and assembler.

Cost, according to a spokesman, is $3,450 for the unit, $850 for the interface and $895 for the software.

The firm is at 715 N. Pastoria Ave., 94086.

Positioner for Electronic Control

OCEANSIDE, Calif. – A new 2-axis positioning system, the NPT-2000, designed to bring electronic control to a wide range of industrial applications, is available from Hughes Aircraft Co.'s industrial products division.

Two system versions are offered, priced at $14,500 and $15,750 from 2020 Oceanside Blvd.

DC Power Sources Available

IRVINE, Calif. – Users with high-speed automatic testing, process control or similar applications requiring an accurate and stable DC power source can use two computer-controlled DC power sources from Moxon Inc.

Models 3536 and 3537 are designed for direct interface and operation with computers, data generators, TTL binary inputs, automatic controllers or similar sources.

The price is $1,495 from 2222 Michelson Drive, 92664.

Can Replace Sigma 3

Xerox Has Foreground/Background Mini

By Michael Weinstein
Of the CW Staff

EL SEGUNDO, Calif. – Xerox Corp. has unveiled a minicomputer system with foreground/background capabilities which could compete with the PDP-11/40 in many applications.

The 530 will be offered as a replacement for the Sigma 3 – in some configurations, at about half the cost – and to users with applications such as process control, monitoring, testing and checkout and communications message-switching, a spokesman for the firm said.

Using the example of communications control, the spokesman explained, the real-time task of message-switching would be handled in the foreground with the user able to perform standard batch operations in the background on an interrupt basis.

The 530 is a 16-bit computer equipped with an 8K-word memory that is field expandable to 65K words in 8K increments, the spokesman said.

Multiple Buses

It employs a multi-bused architecture with three access paths to memory for connecting various processors and system devices. Conflicts that might arise from simultaneous requests are resolved by a hardwired priority scheme, the spokesman added.

Memory cycle time for a 16-bit word is 800 nsec with memory access time at 480 nsec.

Either one or two I/O processors can be used with the 530 with the channels operating asynchronously – with each other and the processor – to provide data transfer/communications between peripherals and memory.

Xerox 530 technology includes LSI and MSI components.

I/O processor #1 – standard – can handle 16 channels with I/O processor #2 capable of handling an additional 12 channels, the spokesman said.

Compatible Peripherals

Various standard and special-purpose peripherals for the 530 are available allowing the user to specify system configuration from his application needs, the spokesman asserted.

A cartridge disk storage subsystem available with the 530 has capacities from 2.3M to 18.4M byte/controller and a transfer rate of 312 kbyte/sec – average access time is 50.5 µsec.

The disk storage subsystem has capacities from 24.5M to 196M bytes, a transfer rate of 312 kbyte/sec and an average access time of 87.5 µsec.

Fixed-head rapid-access data files have a capacity of 3M bytes per unit; transfer rates are 188 kbyte/sec and access time is 17 µsec.

Both 7- and 9-track mag tape drives are available – either 37.5 or 75 in./sec – with transfer rates of 20.8- and 60 kbyte/sec, respectively.

Purchase price for this configuration is $62,900.

Deliveries of the 530 are expected for the third quarter of 1973 with a dual-processor capability and optional bipolar memory to be offered at a later date.

Card equipment offers reading speeds of 200 and 400 card/min with the ability to read intermixed binary or Ebcdic codes.

Line printers with speeds from 350 to 1,100 line/min have 132 print positions and up to 64 characters.

Software includes a choice of two operating systems, both of which allow multiple real-time jobs to be run in the foreground while general-purpose batch programs are concurrently run in the background, the spokesman said.

Languages include three Fortran compilers – including ANS Fortran IV – and a report program generator (RPG) for implementing business applications, he added.

A typical configuration with a 16K-word processor, 2.3M-byte cartridge disk storage subsystem, buffered 350 line/min impact printer, 200 card/min reader and 10 char./sec keyboard console leases for about $1,700/mo.

MDS Adds Multi-Job Processor

UTICA, N.Y. – Mohawk Data Sciences (MDS) has upgraded its key-to-disk system with an increase in disk storage capacity and a communications capability for the system's shared processor to allow users to operate in a multi-job environment, according to a spokesman for the firm.

The 2409-I data entry system allows users to access 350K bytes of usable disk storage area – more than double that for the previously offered 2404.

Also available to the 2409-I is an optional concurrent communications/keying capability which enables the user to input key-to-disk information at the same time the system is communicating to or from a larger processor or terminal, the spokesman said.

Used in this multi-job manner – key entry operations concurrent with communications operations – the system is capable of functional emulation of RJE communications terminals such as the IBM 2780 and 2968, and the 360/20 Hasp work station, at speeds ranging from 1,200- through 9,600 bit/sec.

Concurrent tape-to-printer/keying capability is also an option on a choice of three printers – at speeds to 760 line/min, the spokesman asserted.

In addition, users have a choice of nine magnetic tape drives with densities ranging from 200 through 1,600 bit/in.; both 7- and 9-track units are offered, he added.

The basic system consists of eight keyboards, a 32K-byte shared processor and a tape drive which can be expanded to 24 keystations, or a 64K-byte shared processor and two tape drives, the spokesman said.

Rental for the shared processor and disk subsystem is $840/mo. Mag tape drives range from $200 to $275/mo. Cost per keyboard is $175 for eight stations and around $100 for a maximum of 24.

First deliveries will begin in June from Box 362, 13505.

Switch Moves Add-Ons Off-Line to Meet IBM Requirements

NEWTOWN, Pa. – A new switch arrangement from Computer Hardware Consultants and Services, Inc., for its Model 3768 core memory, permits IBM maintenance of upgraded IBM 360/30 systems under standard agreements. The off-line switch, approved by IBM, electronically negates alterations of Model 30s that expand core memory beyond IBM limits and up to 256K.

The IBM customer engineer then can run standard diagnostic maintenance checks on the 360/30. The switch costs $155/mo and can be delivered in three weeks from the firm at 8 Pheasant Run, 18940.

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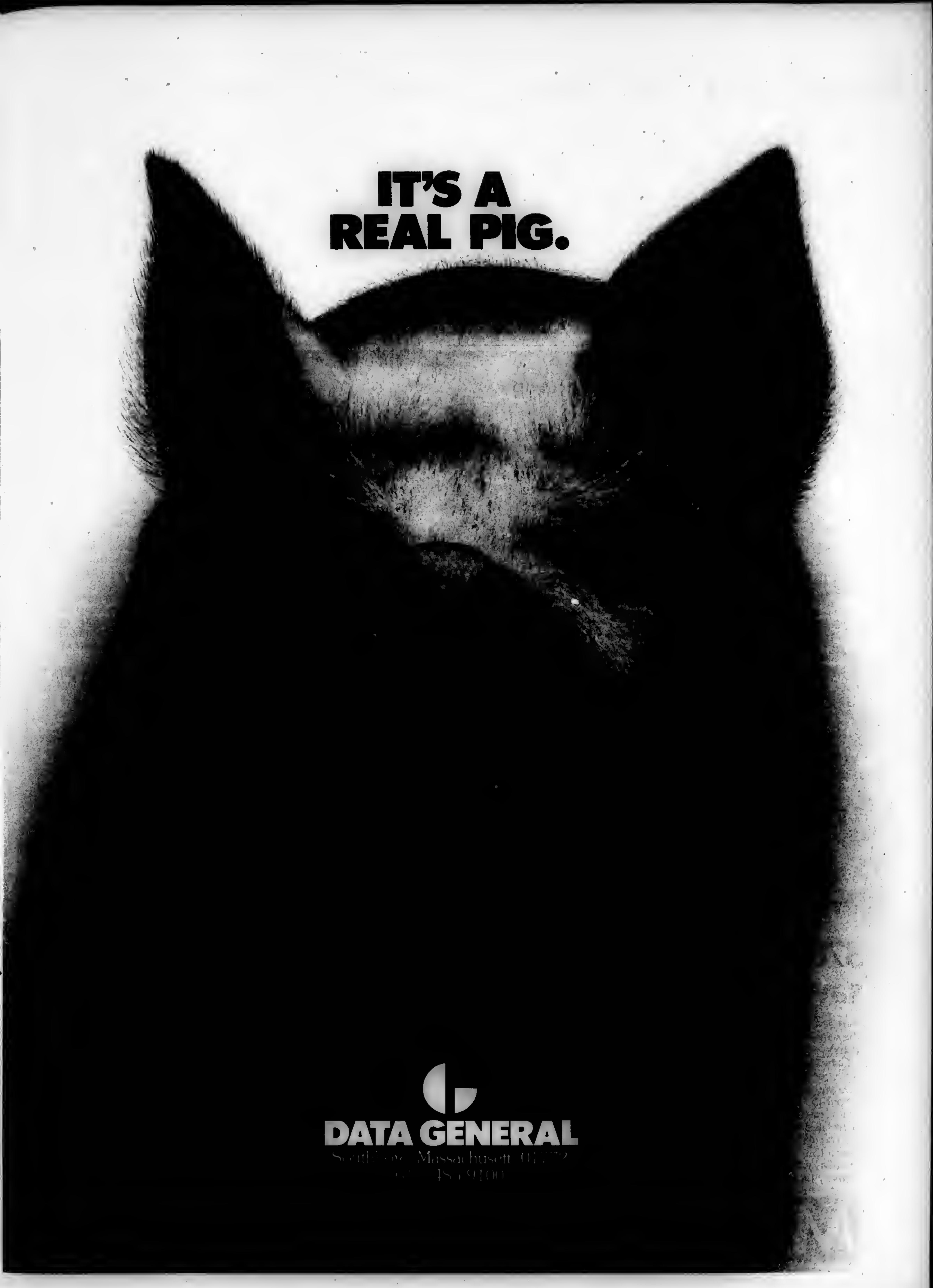
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Diverse Data Run Through Satellite Processors

By Michael Weinstein
Of the CW Staff

EAST HARTFORD, Conn. – A large user is networking an IBM 360/65 to 11 Singer System Tens connected to over 600 remote programmable terminals to perform data entry operations off-line.

The use of satellite processors allows Pratt & Whitney Aircraft to enter large, diverse amounts of data into the network in a real-time environment without degrading the system performance of the larger IBM system with large I/O-bound applications.

Types of data entered from terminals and stored on the Singer Tens' disk subsystems are: completion of production tasks; location of parts; checks of machine usage; and employee attendance.

Workers Involved

In the case of employee attendance, as each employee enters or leaves the plant he depresses a specified key on one of the terminals.

Hitting the key invokes the employee attendance program and the employee is directed by a display to enter his badge into a reading device.

When the employee enters his badge, time and location information is added by the "intelligent" terminal and the entire field is transmitted to a Singer Ten processor.

As more employees enter the plant a disk file is formed of employee time of arrival. This disk file – and other identical files created at other Singer Tens in other plant locations – is polled by the 360/65 to create a composite file of employee attendance.

At night this information is processed in a batch environment to produce reports available to company officials at 7 a.m. the next morning.

Since each satellite processor is a complete system in itself, more complex operations are possible. For example, using the employee attendance application, if a badge is stolen, programs can be written for the Singer Tens to scan all badges as they are entered to find the invalid number.

If this number is encountered, a bell will alert local security guards and a message will be displayed at the operator's console.

Each 100K-byte Singer processor is segmented into 20 partitions and a common area for program and operating system utilization.

The first 5K-byte partition is dedicated to the programmer-operator. This area would perform the scanning operation to search for the invalid badge.

The other 19 segments are divided into 3K bytes each to accept information transmitted from the terminals.

Each of these partitions operates on a "slice-of-time" operation – i.e., the computer polls each in turn to see whether a terminal wishes to transmit data.

If a terminal is in a send mode, the data is transmitted into that partition for formatting and storage on the satellite's disk subsystem.

The common area accesses about 38K bytes to handle the formatting and operating system for the satellite processor.

Also resident in the common portion of core are the application programs for the remote terminals.

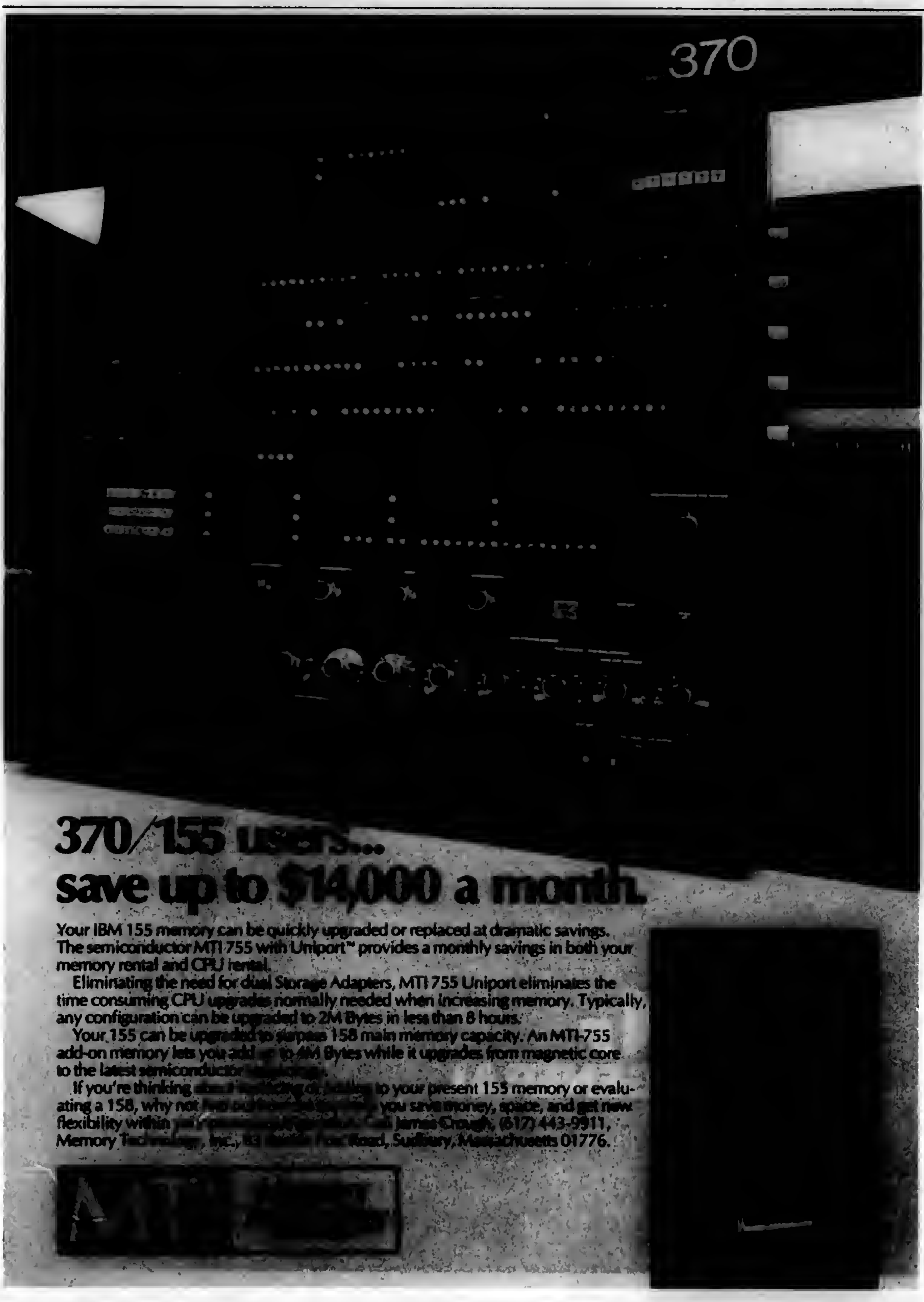
Two Terminal Types

Terminals fall into two types: an attendance station and a job information station. The difference is that attendance stations are simpler and are used only for employee attendance reporting and the job information terminals can be used for multiple applications.

Within the job information terminals, up to 10 applications can be stored internally with the ability to call for additional programs from the Singer Ten's disk subsystem.

Also included is logic to add information as to time and location of all data entries.

Job information terminals accept messages entered by badge, punched card and through the unit's keyboard.



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Police Center Run on $25,000 Budget

HARTFORD, Conn. – On a $25,000/yr budget the police department of this city has set up a computer system to help manage a variety of police activities.

The goals of the disk-oriented NCR 50 system are to develop a management information system (MIS) and a criminal identification system (CIS) to be tied into the state and national networks.

In the MIS application over 121,000 calls for assistance are presently stored on disk. These calls can involve anything from dog bites to car accidents to homicides, Robert Dunphy, DP manager, said.

Also included in this file are the location of the incident, the car and officers who attended, time taken to handle the situation and resultant action.

Spotlighting Crime

From this data base, reports are prepared showing when and where certain types of calls occur. The police department can then determine high crime areas and provide more patrols in these areas, Dunphy stated.

The system also performs time accounting functions such as computing sick leave, vacation time, compensatory duty, etc., he added.

In the future, the department plans to use the system to prepare FBI Uniform Crime Reports and survey requests from special interest groups.

For example, Dunphy noted, data about sites of accidents can be correlated with present traffic enforcement practices to improve traffic safety.

Criminal Activites

The criminal identification system will store information on previously arrested criminals including physical characteristics, past history, method of operation and identification numbers such as Social Security, armed forces serial numbers, etc.

This information will be used to assist investigators in searching for suspects for particular types of crimes, Dunphy noted.

The NCR 50 is equipped with 4M-byte removable disks. Dunphy plans to keep information on-line seasonally and store past information in a tape library.

The department also has a remote-access terminal linked to the state's DP center to get motor vehicle information, Dunphy said. Similar terminals linking local police to the regional networks and the National Crime Information Center in Washington, D.C. are planned.

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Fastrack 3 Series Fixed-Head Disks Replace IBM 2305s

SAN DIEGO – The Fastrack 3 fixed-head disk memories from Pacific Micronetics are intended as direct replacements for IBM 2305 fixed-head disks. They are designed for applications requiring fast access time and short swap time, such as virtual memory, real time, time critical or time sharing applications, the company said.

The memories are available in two series. The old series consists of two models – 3,600 and 6,000 rpm – both with 128 tracks capable of storing 120K bit/track.

The 010 units have a total capacity of 1.8M bytes, a spokesman stated.

The 100 series is available in six models, all with 120 Kbit/track, 3,600 or 6,000 rpm, with capacities of 2.8M, 5.7M and 11M bytes on 192, 384 and 768 heads respectively, the spokesman said.

Data transfer rates are 7.2 MHz for the 3,600 rpm models and 12.0 MHz for the 6,000 rpm units, he added.

Head loading is provided by a pneumatic diaphram in the 010 series and a low-duty cycle compressor in the 100 series.

Heads are held in a retracted position, the spokesman said, until predetermined speed is reached, then loaded under an rpm-dependent loading program.

Fail-safe head retraction is provided in case of abnormal rpm, pressure or power conditions, he asserted.

Prices range from $8,600 to $10,800 for the 010 series and $19,300 to $59,940 for the 100 series. Itel will market the devices to end users.

Disk System for PDP-11 Expandable to 10M Words

SCOTTSDALE, Ariz. – The Data Miser Model 110, from International Memory Systems, provides PDP-11 users with a plug-compatible moving-head disk memory system with 1.25M words of storage.

The system can be field-expanded with up to seven additional disks for maximum storage capacity of 10M words.

Included in the $4,950 unit are software, controller, disk, power supplies and cabling needed to tie the system into the PDP-11 Unibus, the firm's spokesman said.

Each additional 1.25M-word disk drive costs $1,950.

The system is DEC DOS-compatible or an IBM DOS monitor recorded on disk is available, he added.

Transfer rate is 10 μsec/word with an average random access time of 75 μsec.

Delivery is 60 days from 14609 N. Scottsdale Road, 85254.

Computers and the DP Employee--Part III

Disillusioned UK Managers Shun Ambitious Plans

By Joseph Hanlon

Special to Computerworld

(end of series)

LONDON – Disillusionment resulting from unfilled computer promises is causing managers to shun ambitious projects. Interest is decreasing in management information systems and other ambitious projects, as well as in software packages.

The culprit is "heavy software costs" and "overoptimism in the ability of analysts and programmers to translate human activities into computer programs," according to the report on "Computers in Offices" issued by the UK Department of Employment (DE).

As a result, there has been a "reduction in the plans of potential computer users," the report declared. Some of the cutbacks are temporary, due to the recession or to "disillusionment following the early overoptimism, which caused potential users to overreact." Nevertheless, the report concluded, "the long-term trend in the growth of computers is likely to drop."

The work to which computers have been applied is still mainly of a repetitive nature. Some of the more ambitious systems for improving decision-making by management, involving the coordination of data from all aspects of business (integrated data bases), have not yet generally made the progress once expected."

Bright Spots

Two changes are occurring, however, which are not reflected merely by counting machines: computers are being used more intensively, and there is some tendency to upgrade to a bigger machine rather than buy an additional computer.

Both of these changes reflect the one bright spot for computer users in the report: computers are doing increasing amounts of the traditional routine clerical jobs, and the efforts of the past few years are just now beginning to pay off. Indeed, as was noted in the first part of this series, computers are taking away clerical jobs at an ever increasing rate.

In particular, computers are doing a broader range of tasks. The DE lists seven types of work: stock control, invoicing and billing, financial accounting, general statistics, management information, payroll and production control. In the 1964 survey, the average installation was doing work in only 2.8 of these categories; by 1969 it was working in 4.6 categories.

On the basis of computer time spent, invoicing and billing had risen from 13% to 18%, while payroll had dropped from 21% to 11% and stock control fell from 16% to 10%. Significantly, management information time dropped from 18% to 14% despite the fact that more installations were doing this sort of work.

Despite the curtailment in advanced applications and the slowdown in expansion, 95% of users are either "satisfied" or "very satisfied" with EDP.

The report concluded that computers are "a reliable asset in increasing the efficiency of offices and so aiding substantially the efficient and profitable control of business."

Packages Hit

In the area of criticism, software packages received a strong attack. At the time of the survey, 50% of the installations were using packaged software, "though usually to a limited extent." But the report noted that often "the benefits the programs offered – in quicker introduction of computer processing and savings in systems analysis and programming time – were more than offset by the cost and time needed in practice to alter the package to suit the needs of the individual user."

The use of packages will not increase significantly, the report warned, "unless packages can be made far more flexible and economical, or unless managements undertake a great change in the policy toward standardization."

Even in-house software proved to require far more time and manpower than expected, and "many installations never did reach a settled state of routine running, with only maintenance and minor modifications of programs to take care of."

The report cited four reasons:

- "Office procedures changed more frequently than was at first thought.
- "Even small changes could demand large time-consuming alterations to computer programs.
- "Often the original project took far longer to achieve than planned.
- "A lot of projects were altered or added to during their implementation."

In part because of the new disillusionment, the explosive growth in the use of computers is over, according to the report. The increase in the number of office computers in the UK has been a steady 500 a year since 1967, and the DE predicted little change in this until the mid-1970s, when the number is expected to drop. The number of office computers will increase by only 340 in 1978.

This prediction should be taken seriously because the DE's past predictions have been very accurate. In 1965, when there were only 605 office computers in the UK, the DE made a similar projection. It was widely criticized for being too low. But in 1969, the last year a complete census is available, there were 2,108 office computers compared to a predicted 2,080.

In our February 28th Software Supplement, *Computerworld* will be taking a hard look at a variety of software sources currently available to EDP users. Payroll packages. Inventory. Accounts receivable. And others. We'll look at their efficiency, costs, ease of installation, and problems. We'll discuss when they might be better than doing-it-yourself, and when they're not.

Edited by *Computerworld*'s software specialist, Don Leavitt, our February 28th supplement will also examine some of the companies that produce and sell software packages, custom programming services, programming aids and remote-computing application services – with an eye to what they do, who works for them, and what areas they serve.

If you use software from outside sources – or are thinking about it – this supplement is must reading. And if you're selling in the software market place, your ad should be there on February 28th. Supplement closing is February 9th. Your Computerworld representative can give you all the details. Or call Judy Milford at (617) 332-5606.

On February 28th, Computerworld takes a hard look at Software.

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'NSF DP Conference' Highlights Research

COLUMBUS, Ohio – The Computer Science Conference here Feb. 20-22, sponsored jointly by the National Science Foundation and 16 universities and industrial organizations, will be primarily devoted to short, current research reports, according to conference organizers.

The meeting format differs from the usual computer science conference in several ways, according to organizers.

It is being held in the winter, to fit into academic schedules, and it is designed to provide a forum for current research in all areas of the computer and information sciences.

The emphasis is on contributed papers, and there will be an employment register and an interviewing facility available.

The four invited papers include extensible languages, by Bernard Galler, University of Michigan and the parsing of deterministic languages, by Michael A. Harrison, University of California.

Joseph Traub of Carnegie-Mellon will speak on recent progress in algebraic and analytic computational complexity, and Allen Newell, also of Carnegie-Mellon, will discuss Merlin and the problem of understanding.

Topics covered in about 370 papers in 41 sessions include user-computer interaction/computer centers, graphics, logic design, artificial intelligence, computer architecture, and applications, such as medicine, education, music and programming languages.

A luncheon for computer science department chairmen will be held Thursday.

Fees for the conference are $10 for non-students and $3 for students. Chairman is Dr. Marshall Yovitz, Ohio State University, 101 Caldwell Laboratory, 2024 Neil Ave., 43210.

A meeting of the Association for Computing Machinery Special Interest Group on Computer Science Education, starting on the last day of the program, lets attendees attend both conferences.

Societies

Calendar

Feb. 22, Washington, D.C. – **Seminars on "Profit Planning and Control Systems" and "MIS Design Strategy," and on Feb. 23 "Cost/Benefit Analysis of MIS" and "Ingredients of Successful MIS Project Management."** Contact: The Society for Management Information Systems, 18 South Michigan Ave., Chicago, Ill. 60603.

Feb. 26-28, Palo Alto, Calif. – **First Annual SicMe Symposium** sponsored by the **Special Interest Committee on Measurement and Evaluation.** Contact: Conference Publicity Chairman, Jan C. Matser, Informatics Inc., 3971 E. Bayshore, Palo Alto, Calif. 94303.

Feb. 27-March 1, San Francisco, Calif. – **Seventh Annual IEEE Computer Society International Conference (Compcon).** Contact: Registration Chairman, Ben E. Britt, IBM General Products Division, Dept. H75/Bldg. 141, Monterey & Cottle Roads, San Jose, Calif. 95114.

Afips Adds Two

MONTVALE, N.J. – The board of directors of the American Federation of Information Processing Societies has elected to member status the Instrument Society of America (ISA) and the Society for Industrial and Applied Mathematics (Siam).

The additions bring the total membership in the federation to 13.

"The change in membership status for ISA and Siam recognizes the important contributions being made to the information processing field by members of the two societies," said Afips President Walter Anderson.

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Symposium to Offer Computer Science Smorgasbord

COLUMBUS, Ohio – The Third Technical Symposium of the ACM Special Interest Group on Computer Science Education (Sigcse) has a little of "almost everything," according to conference coordinator Gerald Engel.

The two-day symposium Feb. 22-23 is being held in conjunction with the Computer Science Conference.

Session topics range from looking at computer science as an entity within the university to its role as a service course to other departments, to the relation of computer science to engineering.

More than twice as many papers have been received as ever before for a Sigcse symposium, Engel said. Papers come not only from the university community, but also from industry and the National Bureau of Standards, he added.

Anthony Ralston, president of the Association for Computing Machinery, and Aaron Finerman, Sigcse president, will deliver the welcoming address Thursday morning.

Sigcse is associating with the Committee on Computers and Engineering Education of the American Society for Engineering Education (Asee), and an opening paper by Harold Bolz, dean of the school of engineering at Ohio State, reflects this liaison in its title, "Computers and Engineering Education."

The other opening paper, by Robert Ashenhurst of the University of Chicago, will examine the implications for computer science departments of the ACM Information Systems Curriculum.

Titles of parallel sessions include: service aspects of the first course; pedagogy; two-year programs in computer science; training of secondary school teachers; discrete structures courses; studies on curriculum; and programs in information processing.

Aspects of curriculum '68 will be treated not only in the opening paper, but in the studies on curriculum session with a report on a study last summer on "A Community/Junior College View of Curriculum '68."

The session on curriculum implementation will also include a paper on computer science education through a rearview mirror: experience with curriculum '68, presented by George W. Gorsline of Virginia Polytechnic Institute and Duff Green III of Virginia State University.

Thursday evening is devoted to special interest sessions, such as in what department should computer science courses be offered?

There is no preregistration. The fee for the conference is $15 for Sigcse members, $25 for ACM or Asee members, $30 for nonmembers and $5 for students.

More information is available from Gerald Engel, Department of Computer Science, Penn State University, University Park, Pa.

Auditors Form National Group

Special to Computerworld

LOS ANGELES – The EDP Auditors Association has adopted a new set of bylaws to permit it to operate as a national organization, with the initial charter chapter located here.

Specifically, the objectives of the association are:

- To promote the education of, and help expand the knowledge and skills of its members in the interrelated fields of auditing and EDP.
- To encourage a free exchange of EDP audit techniques, approaches and problem-solving by its members.
- To communicate to management and to systems and EDP professionals the importance of establishing controls necessary to ensure the effective organization and utilization of DP resources.

Questions relating to membership or the formation of chapters should be addressed to EDP/AA, P.O. Box 15562, 90015.

ACM's Reviews Expands Coverage

NEW YORK – In an effort to cut duplication between societies in the computer industry, the publication committees of the Association for Computing Machinery and the IEEE have announced that *Computing Reviews* will be expanded to provide more material of interest to IEEE members, particularly members of the IEEE Computer Society.

The IEEE has dropped its computer publication, and members may subscribe to *Computing Reviews* for $15, rather than the $25 non-ACM member price.

The publication is expanding its coverage of hardware, software and telecommunications.

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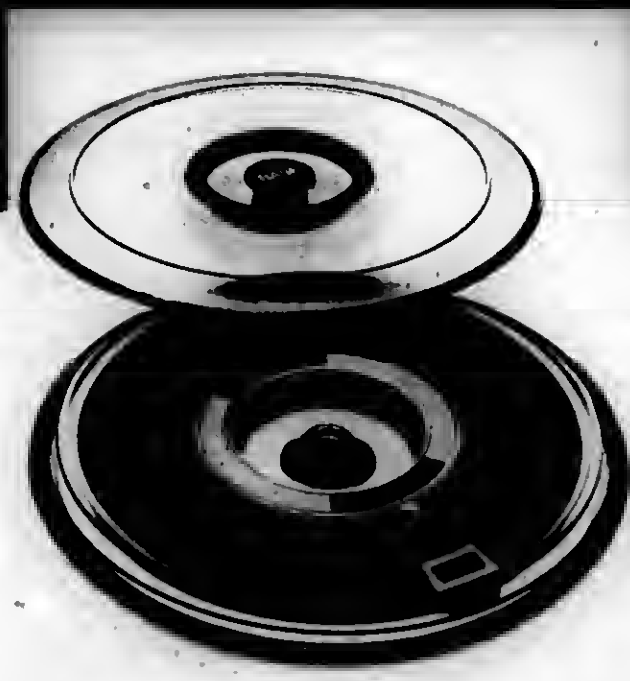

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CI Notes

IBM Sues Telex-Again

TULSA, Okla. – IBM has filed a suit against Telex in the Federal District Court here charging breach of a 1966 patent agreement and is asking for payment to IBM of royalties due under the agreement.

IBM charged that Telex has failed to pay royalties, estimated at $750,000 for the use of patents in magnetic tape and disk equipment.

Telex President S.J. Jatras said the suit "is calculated to divert Telex's financial and manpower resources and to detract from the main antitrust issues raised by Telex's pending antitrust suit against IBM."

Guzy Resigns From Memorex

SANTA CLARA, Calif. – Two top executives at Memorex Corp. have resigned, and President Laurence L. Spitters has "resumed direct operational control," according to a company spokesman.

D. James Guzy, executive vice-president, regarded by some as the firm's chief operating officer, and Alan F. Shugart, vice-president, development, were the latest in a series of executives to resign from the firm.

A spokesman said Memorex is "curbing to a certain extent our development expenses. We cut all expenditures."

Amtote Wins OTB Race

NEW YORK – American Totalisator Co., Inc. (Amtote), a relative latecomer to the race for the single vendor contract from the Off Track Betting Corp., nosed out the two other contenders.

With the announcement last week, all Computer Sciences Corp. terminals were converted to the Amtote system, and Ticketron's terminals will be converted by the end of March.

The selection of a single vendor is expected to reduce OTB's monthly costs by $250,000, according to OTB President Howard Samuels.

Supershorts

Interdata, Inc. has set up a new corporate function, the Planning and Advanced Development Group, which will function as the "avant-garde" for Interdata's long-range planning.

– – –

Magnetic Head Corp. has been awarded patents covering new methods of constructing IBM-compatible magnetic tape transport heads.

– – –

System Development Corp. received a multimillion dollar Air Force contract to develop, install and test the Space Computational Center System Segment of the North American Air Defense Command's Cheyenne Mountain Complex Improvement Program.

'To Curtail IBM Marketing'

CIA Gives Justice Early Relief Plan

By E. Drake Lundell Jr.
Of the CW Staff

LOS ANGELES – The Computer Industry Association (CIA) has submitted to the Justice Department an eight-point plan designed to "retain competition within the data processing industry and to curtail controversial IBM marketing practices pending the outcome of the U.S. antitrust suit against IBM."

The plan calls for releasing IBM customers from all penalty clauses in contracts, publicizing IBM sales statistics and enjoining IBM from such practices as "tie selling," predatory pricing, refusal to deal and making premature product announcements.

The result of a meeting of 52 industry firms, the plan "reflects input from companies with the total of 100,000 employees and 1972 sales of $3 billion," according to Dan McGurk, CIA president.

"This plan for early relief for the industry – both manufacturers and users – is of particular importance now that IBM has obtained destruction of the master index to internal documents subpoenaed by the U.S. Government," McGurk said.

"Without that index, we expect the government will require even longer to prepare its case than before," he added.

"This plan is for early relief and does not in any way address the larger and longer-term relief, which must undoubtedly have structural elements," McGurk added. "Nor does it attempt to solve the problem of interim relief, recognized by the government this fall in a request to the court.

"Interim relief will not be granted by any judge in all likelihood until at least some of the charges in the government's complaint against IBM are proven in court," he added.

The proposals are directed primarily toward improving information in the marketplace and guarding against questionable or clearly illegal tactics, CIA said. Some details of the plan are consistent with orders that were contained in the 1956 Consent Decree and in prior IBM statements concerning its intended pricing policies, McGurk noted. The following relief measures are contained in the plan:

- "IBM must release customers from any cancellation penalties for lease cancellation with 30 days' notice. Any future leases written for more than a year's period will be cancellable at the customer's option on not more than 90-day notice, after the first year, without penalty.
- "IBM must make the following information public: complete specification of the interface between all IBM products, both software and hardware. These specifications must be made available at the time of announcement or first delivery of any product (whichever comes first) and should be updated if they are changed to engineering change orders.
- "IBM is enjoined from tie selling. Each functional unit of hardware, software and service must be separately priced. Functional units include CPU, memory, channels, features, devices, system control program, data management system, maintenance programming, compilers, application program and man hours of senior systems analyst.
- "IBM must make the following information public: the number of units of each product, by discrete product type, in use by country, as of each Jan. 1 from 1969 through 1973.

In addition, quarterly reports must be filed for each separately priced product, to show shipments to and returns from rental or purchase customers including country of installation.

- "IBM is enjoined from predatory pricing. IBM should be enjoined from pricing a low-profit or non-profit level with the intent or effect of eliminating competition and enjoined from discriminatory pricing.

"Pricing of all products should reflect reasonable cost relationships, and prices among customers should not be discriminatory.

"To insure this, IBM should submit (to the Justice Department or to an outside audit firm) its pricing rationale on every product offered, to include manufacturing costs, amortization of development, expected volume and expected production life.

- "IBM must make the following information public: complete specification on new or changed media. Since IBM establishes the *de facto* standards on media, their specification must be published upon announcement of a new medium."
- "IBM is enjoined from refusal to deal. IBM must sell or rent any product or service offered to anybody, to everybody desiring to purchase or rent the product or service.

This includes selling spare parts to non-maintenance companies as well as maintenance companies, selling physical standards (such as calibration magnetic tape

(Continued on Page 26)

Begins in May

France Prepares for 'Caravane'

PARIS – The Caravane Informatique, the first of three European Computer Caravans, will open in Paris the first week in May and will visit Bordeaux, Marseille, Lyon, Strasbourg and Brussels.

Patterned after the U.S. caravans, the traveling user's forum and exposition is sponsored by *Computerworld* and the French publisher, *Zero Un Informatique.*

It is particularly appropriate that France is the first country to have a Computer Caravan in Europe because all the previous expositions have been centered around Paris while major areas of growth and the installation of new computers in recent years have been outside of Paris, noted Gilbert Christini, editor and chief of *Zero Un Informatique* and forum director. The Caravane Informatique will allow the users in key regional areas to meet and exchange ideas and view the latest products and services for the first time, he explained.

As applications of computers move away from standard record-keeping to on-line teleprocessing, people become much more important in achieving successful results with computers, he said.

The Caravane will allow users to exchange ideas and the latest techniques in such areas as systems organization, industrial applications of minicomputers and the effective use of service bureaus.

Octave Py, French marketing manager for the Caravane Informatique, expects to book all 70 booths before the end of the month. Companies such as Univac, Honeywell, Siemens and Data General have reserved space, he said.

The English Language Caravan and the West German Computer Caravan will be launched in the fall.

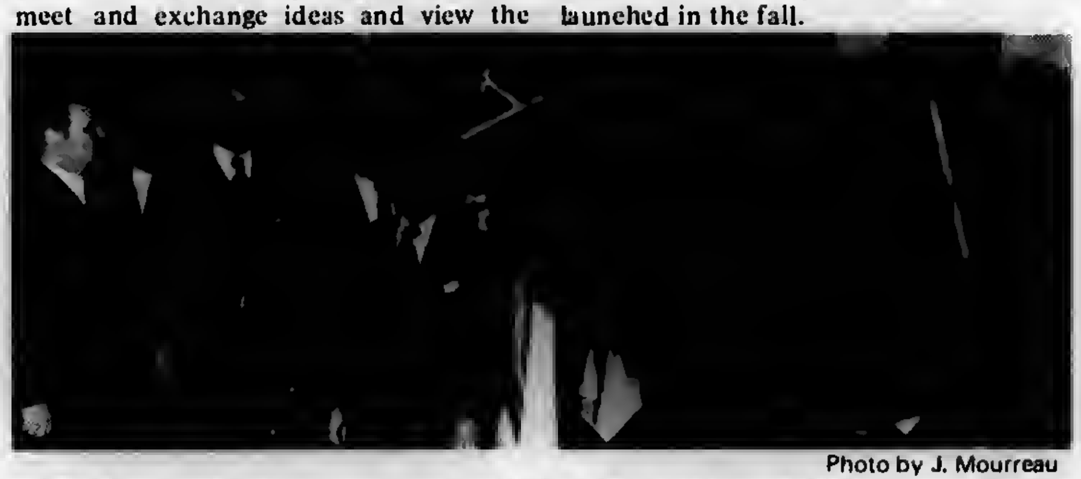
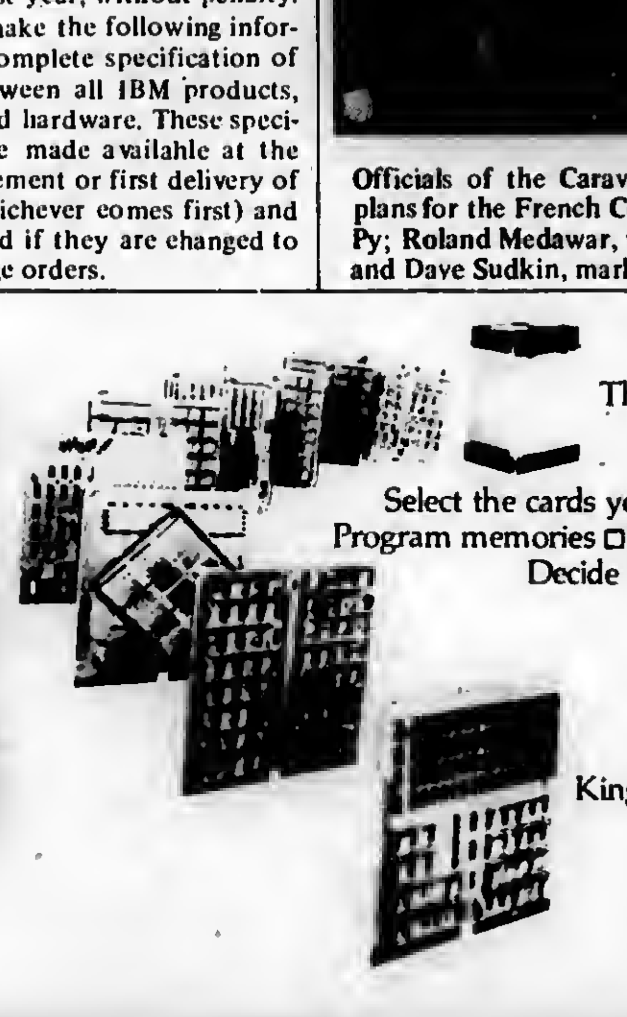


Photo by J. Mourreau

Officials of the Caravane Informatique and an interested visitor gather to discuss plans for the French Computer Users' Forum and Exposition. Assembled are Octave Py; Roland Medawar, vice-president; Patrick McGovern, president; Gilbert Christini; and Dave Sudkin, marketing manager of European Caravans.



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Adapso Sees Service Bureau Profits Rising as Part of '73 Growth Phase

NEW YORK – While the Control Data take-over of IBM's Service Bureau Corp. provided the biggest fireworks recently in the service bureau industry, signs show that the entire industry is in a growth phase.

Sales revenues for the computer services segment of the computer industry are expected to exceed $3.5 billion in 1973 with a sharp increase in profitability for the firms in the industry, according to the Association of Data Processing Service Organizations (Adapso).

Profit Rise

In its preliminary forecast for the year the group indicated that pre-tax profits for the firms in the business should average 7% of revenues during 1973, as opposed to the predicted 4.5% profits on revenues in 1972, according to J.L. Dreyer, executive vice-president for the organization.

"Batch processing will account for 44% of the volume; on-line processing 15%; software 16%; facilities management, keypunch, OCR and COM 15%" during 1973, he predicted.

200 New Firms Seen

Preliminary figures for 1972 indicate there were around 1,700 firms engaged in the services business in 1972 and that they generated revenues of approximately $2.75 billion, Dreyer indicated.

In 1973, he forecast, 200 new firms will get into the business and will help boost the sales of services by 27% with profits being up 42% during the year just begun.

Many Software Entrants

Of the increase, software houses will account for more than 50% of the new entrants; data centers 25%; on-line firms 10%; with the rest of the new companies in the facilities management or other specialized service areas, he said.

Present trends indicate a continued consolidation in the industry, but there will be fewer business failures in the field than in the past, Dreyer said.

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Early Relief Plan Submitted to Justice

(Continued from Page 25)

and magnetic disk packs) to any company willing to pay a reasonable price, and renting features of computers and devices to owners of IBM equipment.

In addition, priority for delivery should be determined strictly by receipt of order. Priority to order received on day of announcement will be given to manufacturers and service firms."

- "IBM is enjoined from blocking competition; manufacturing date must be reasonably certain before a new or modified product is announced either formally or informally. Results of performance tests, first delivery date, price, expected years in production – as well as the requirement of number two above – must be made public on any announcements of a new or modified product, whether officially announced or revealed to a single customer by an IBM employee.

"Search performance, price and delivery must be adhered to by IBM for the product; substitutions of alternate products must not be permitted."

Matter of Survival

In releasing the details of the plan McGurk said: "The consensus of executives at our meetings was that early action must be taken. It was of the kind and in the priority we have initiated. There was agreement that without such relief the industry cannot survive as a competitive force during the lengthy course of the government suit."

Some of the items in the government's motion regarding the destruction of the index in the IBM/CDC case seem to indicate, legal sources said, that the Justice Department may be leaning toward some type of early relief while it tries its full case in court.

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Swedish DP Market Awakening

STOCKHOLM, Sweden – Computer sales in Sweden, which have been sluggish during 1972, are expected to pick up during the coming year, the U.S. Department of Commerce reported.

The sluggishness in the computer market was blamed on "the general business recession of the past two years which has had a marked dampening effect on business investment," the department noted.

However, the department said, "late in 1972 indications were that recovery from the recession was under way, although slower than had been expected. Local trade sources anticipate that 1973 will be a better year in terms of sales volume."

Computer use in Sweden – 800 computer installations at the beginning of 1972, not counting minicomputers – "has grown by at least 20% annually in recent years, and this rate of increase may well continue through the seventies," the department said.

"However, since the replacement machines are so much more powerful than the equipment they replace, the rate of increase in the value of computers sold (as distinct from their capacity) is expected to slow down, possibly to half the former rate," the department added.

Who Else?

The Swedish computer market continues to be dominated by IBM, the department said, with approximately 57% of the business. ICL follows with 12%, then Honeywell-Bull with 9% and the domestic Datasaab with 8%.

The report noted, however, that the Swedish government is now placing greater emphasis on local industry.

"In October 1972 the Swedish government, contrary to the recommendations of the Supreme Military Commander and the National Revenue Board who advocated the use of IBM equipment, announced its decision to award a defense contract to Swedish-owned Datasaab for two computer systems" worth $3.7 million, the report said.

"The decision was explained in terms of the current high unemployment and the government's desire to support the domestic computer industry," Commerce added.

The best prospects for U.S. suppliers in the Swedish market during 1973, however, will continue to be for computer systems.

"A recent market study showed Swedish purchases of DP hardware in 1970 amounted to $92 million. Of this about $88 million was imported equipment, of which a third originated in the U.S. and a large proportion of the balance from European plants of American companies," the report said.

Investors Skeptical of Antitrust Suits

LOS ANGELES – Security analysts "show extreme skepticism that the various suits against IBM will significantly change IBM's control over the industry during the next decade," according to the newsletter of the Computer Industry Association (CIA).

After a series of meetings with investors, the association concluded: "Almost any restraint imposed on IBM's unrestricted use of its market power during the course of the litigation would be considered indicative by Wall Street that a viable and ultimately competitive computer industry might someday become a reality.

"The power to unlock the money markets thus rests with the Department of Justice and Judge Edelstein of the U.S. District Court," the newsletter said.

The association urged the computer industry to start to consider how standards for product specifications will be determined, assuming the Justice Department wins its antitrust suit against IBM.

It noted that a legal precedent applicable to the computer industry might evolve from the Bell & Howell suit against Eastman Kodak, which alleges that Kodak sets de facto standards to harm competitors.

On the recent settlement of the suit by Control Data Corp. against IBM, the newsletter said: "If we assume that CDC is depending upon the government's suit to make the necessary changes in the computer industry so that it will be a reasonably competitive marketplace, then this settlement must be reviewed as a fairly good return on the investment that CDC has made over the past four years in prosecuting the suit.

"Naturally, if we assume the government will be unsuccessful in constraining IBM in the future, it would not be as happy an outcome for CDC."

The newsletter can be obtained free from CIA headquarters, 16255 Ventura Blvd., Encino, Calif. 91316.

IDC Establishes Japanese Office Through Acquisition

NEWTONVILLE, Mass. – International Data Corp., a consulting company specializing in analyzing and forecasting the computer industry, has acquired a 50% interest in the Tokyo firm, International Consulting Co.

International Consulting Co., a market research and consulting firm, specializes in analyzing the computer and electronics industries. Its English-language publication *Japan Computer Report* will be retitled *EDP Japan Report*, and subscriptions in the U.S. and Europe will be available through IDC, publisher of *Computerworld, EDP Industry Report* and *EDP Europa Report.*

Contracts

Computer Sciences Corp. has received a three-year, $2.5 million contract to provide analysis and programming services to the U.S. Navy's Fleet Direction System Support Activity.

Hazeltine Corp. has been awarded a $4.2-million contract for 90 AN/TPX-46 Identification Friend or Foe (IFF) Interrogator Systems from the U.S. Army Electronics Command.

Pitney Bowes has awarded a contract to Data Card Corp. for the development and manufacture of encoding equipment that will be used to print the Pitney Bowes machine-readable bar code (Codabar) on credit cards.

Interdata Inc. has signed a three-year OEM purchase agreement with Servo Corp. of America. Servo will purchase New Series minis for use in its system for control and scheduling of railroad freight cars.

Ampex Corp. has received a $240,000 contract from Modular Computer Systems for core memory stacks to be used in Modular Computer's Modcomp II minicomputers.

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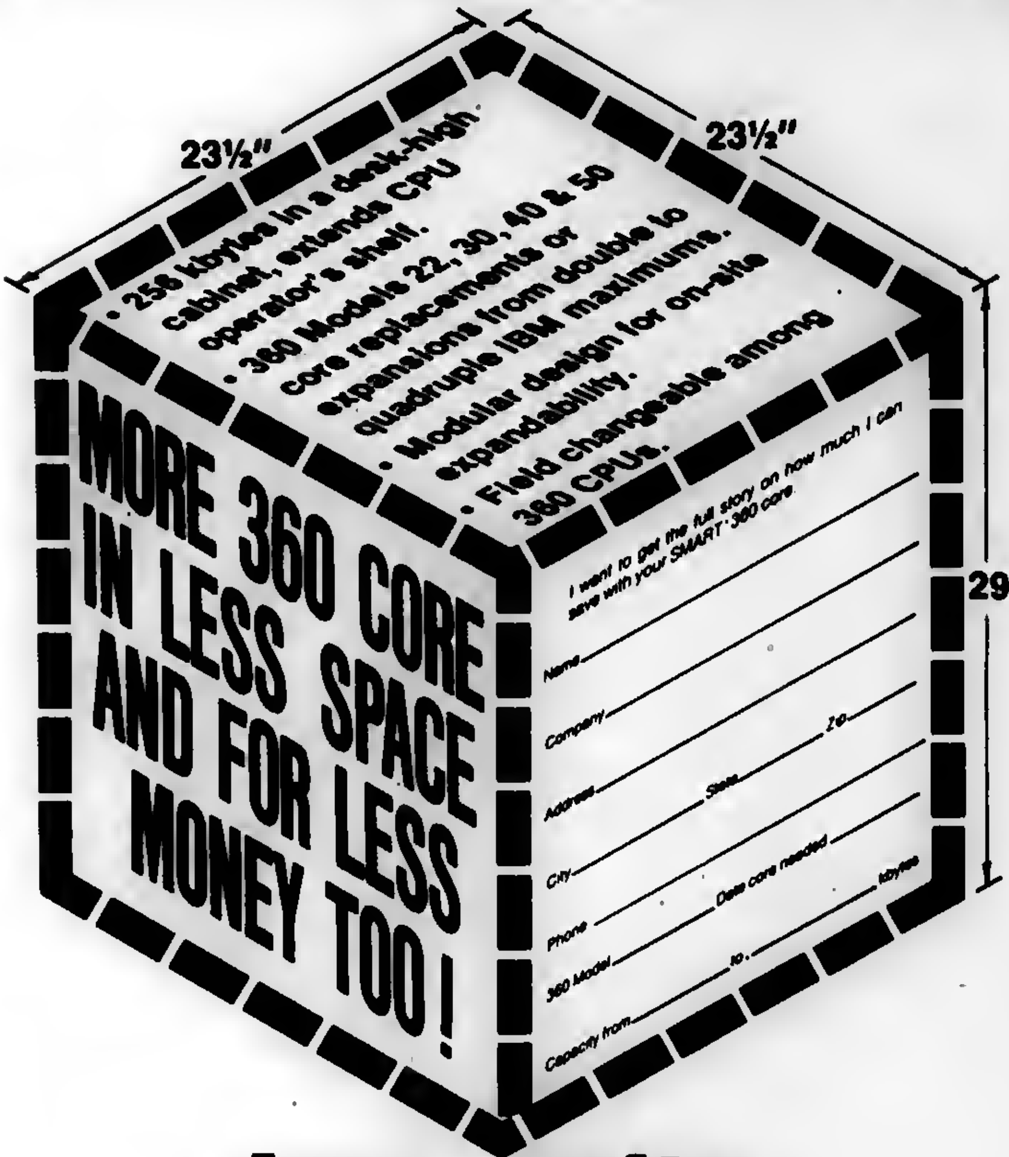
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Potter Names George May Chief

MELVILLE, N.Y. – George W. May has been named president and chief operating officer of Potter Instrument Co. John T. Potter, who has held these posts since the company's founding in 1942, remains as chairman and chief executive.

May was previously president and chief operating officer of Victor Comptometer Corp. His election as president "substantially strengthens Potter's management in its expansion efforts in the data input field," Potter commented.

Future emphasis will be on stand-alone systems, such as off-line printers, magnetic disk data stations, interactive terminals and similar equipment, he said.

Other Appointments

■ Floyd H. Jean has been named vice-president, communications electronics center, for the Systems Division of Computer Sciences Corp.

■ Philip S. Abrams, codeveloper of the APL time-sharing system, has joined Scientific Time Sharing Corp. as director of research.

■ William J. Ballard, David J. Eskra and James M. Snodgrass have been named vice-presidents of Globe Decision Services, Inc.

■ Stephen Schaub has been appointed senior vice-president, finance, of Boothe Computer Corp. He retains his position as president of Boothe Financial Services, Inc.

■ Raymond F. Sebastian has been named executive vice-president and chief operating officer of Itel Corp.'s Leasing Division.

■ Donald L. Eichler has been appointed vice-president of On-Line Business Systems, Inc.

■ John W. Keogh has been named vice-president, marketing, and B.K. O'Brien vice-president, sales, at Basic Four Corp.

■ Robert L. Hooper has been named vice-president, corporate marketing, at Compata, Inc.

■ Robert J. Johnson has been named vice-president, advanced development, and Alan J. Olkin vice-president, operations, for Datacraft Corp.

Executive Corner

■ Naomi J. Spinner is the new president and chairman of the board of SDA Information Sciences, Inc. She was previously treasurer of SDA as well as a member of the board.

■ George H. Milne has been elected chairman of the board of Infonational, Inc., a San Diego-based computer services company. Infonational President Gary L. McMullen, who has been serving as chief operating officer, was elected chief executive officer.

■ John B. Kelley has been named president of Technical Reproductions Corp., a wholly owned subsidiary of Burns and Roe, Inc. He will also continue to serve in his present positions as vice-president of Kamack Realty Corp. and assistant to the president (Burns and Roe, Inc.).

■ James M. Hansell Jr., formerly general manager, has been elected president of Data Recognition Corp., manufacturer of OCR and data input systems.

■ J. Thiel Sullivan has been named president of PRC Information Sciences Co. He was formerly vice-president of PRC and general manager of the firm's Information Systems Division.

■ Richard D. Silverman has been named vice-president of operations for Data Products Corp.'s Telecommunications Division.

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Nickels & Dimes

Computer Automation's backlog grew to over $9 million with the receipt of orders from five manufacturers totaling more than $3.3 million for its Naked Mini and Alpha minicomputers. Current production is around 200 unit/mo, the firm said.

$$$

Microdata's second offering was snapped up, for a gross of $2.1 million. Funds will be used to repay short-term debt and for working capital.

$$$

Bunker Ramo has raised subscription rates for the National Association of Securities Dealers Automatic Quotation System (Nasdag).

$$$

Hewlett-Packard shareholders will receive a regular semiannual 10 cent dividend April 16 on each share of common held March 26.

$$$

Techtran Industries' first-quarter sales were more than half of the total sales for all of the preceding year. Revenues for the quarter ended Nov. 30 totaled $254,532 with earnings of $40,501. Techtran makes cassette terminals.

$$$

University Computing has replaced a $20-million line of credit repayable 1973-74 with a three-year $25-million revolving credit from banks, led by First National City Bank, N.Y.

$$$

Princeton Time Sharing Services changed its name to Octo, Ltd., as it no longer offers T/S services.

$$$

Sperry Rand plans to offer $60 million of 15-year convertible debentures to foreign investors.

$$$

Intertel started off its fiscal year with receipt of modem orders valued at $1.4 million.

$$$

Autex, operator of a trading information system for securities dealers, saw earnings soar in 1972 to $317,565 compared with $44,490 for the previous year ended Sept. 30.

$$$

Compuscan has installed over 70 Model 170 OCR systems, compared with 14 as of last April.

$$$

Sycor has obtained a $3-million linc of credit from the First National Bank of Boston to finance leased equipment. The company also has increased from $1.5 million to $3.5 million its credit line at the Central National Bank of Cleveland, which is used to support investment in receivables.

$$$

DEC Quarter, Half Nets Rise 26%, 21%

MAYNARD, Mass. – Sparked by demand for the Decsystem-10, Digital Equipment Corp.'s second period and half earnings were up 26% and 21%, respectively, on revenue rises of 34% for both periods.

"During the six-month period, our large computer system, the Decsystem-10, has grown more rapidly than our expected rate in both orders booked and revenues," acknowledged President Kenneth H. Olsen.

"The time-sharing market is particularly strong along with an increasing customer base in on-line commercial data processing applications," he noted.

In the second quarter, earnings reached $4.6 million or 42 cents a share compared with $3.6 million or 35 cents in the year-ago period. Revenues rose to $60 million from $44.9 million.

In the half, earnings totaled $8 million or 75 centa a share compared with $6.6 million or 64 cents a share in the 1971 period. Revenues climbed to $111.8 million from $83.3 million.

"We feel that based on the current high level of business, we will be able to report continued improvement in both sales and earnings for the balance of the year," Olsen added.

Communications Makers Show Rise In Earnings, Revenues for Year

Communications equipment makers Milgo Electronie Corp. and Wiltek, Inc. reported improved earnings and sales in fiscal 1972. Milgo continued the trend, with record first-quarter sales and earnings.

Milgo's earnings jumped dramatically in the year ended Sept. 30 to $2.1 million or $1.32 a share from $240,000 or 15 cents a share last year – all this on a revenue rise to $13.8 million from $9.1 million.

Modem lease revenues totaled $4.3 million in 1972 compared with $1.4 million in 1971.

For the quarter ended Dec. 31, Milgo's earnings almost doubled to $704,000 or 44 cents a share from $370,000 or 23 cents a share in the comparable year-ago period.

Revenues reached $4.8 million from $2.4 million a year ago.

At Wiltek, sales for the year more than doubled to $6.4 million from $2.7 million in the period ended Oct. 31, 1971.

Earnings climbed to $331,600, including a special charge of $21,000, from $319,700 in the year-ago period. In 1971, there was a $104,000 tax credit.

The rate of orders for terminals continued to increase during the fourth quarter, according to President Robert J. Amman. Orders during the year exceeded $9 million, bringing the Oct. 31 backlog to over $5 million, he said.

Data Products Doubles 9-Month Net

WOODLAND HILLS, Calif. – Data Products Corp. doubled its earnings for the nine-month period ended Dec. 23, while revenues continued at a record pace.

Earnings rose to $1.2 million or 18 cents a share compared to $488,000 or 7 cents a share in the year-earlier period. Revenues climbed to a record high of $41.8 million, up nearly 14% from the $36.8 million in the same 1971 period.

Data Products is witnessing an expanded market for its current products, according to President Graham Tyson. Two new families of line printers and several new core memory products introduced in late 1972 will provide substantial growth and an increased share of market in the future, he said.

Wang Labs Lifts Sales, Earnings

TEWKSBURY, Mass. – Higher volume generated by an increased sales force was a large factor in boosting Wang Laboratories Inc.'s sales and earnings for the second quarter, according to President An Wang.

In the period ended Dec. 31 earnings reached $835,381 or 21 cents a share on sales of $12.1 million. In the comparable year-ago quarter, earnings totaled $555,721 or 14 cents a share on sales of $8.5 million.

For the six months, a first-quarter loss of $116,626 dragged down earnings to $18,755 or 18 cents a share compared with $1.1 million or 28 cents a share in the year-ago period.

Sales in the half year reached $20 million, up from $16.4 million last year.

The firm's newest calculator line, the 2200 Series, is scheduled for initial delivery in the fourth quarter, and the firm will announce several peripberal devices for this line in the third quarter, Wang said.

The loss during the first quarter resulted from a delay in delivering peripheral devices for the 700 Series of calculators, increased marketing expenses related to cassette typewriters and lower sales, Wang said.

MDS Expands Credit Limit to $112 Million

HERKIMER, N.Y. – Mohawk Data Sciences has boosted its borrowing capacity to $112 million from a previous $65 million.

"The new credit arrangements assure the continued financing of the rental program for our successful System 2400, as well as other rental equipment," President R.P. Rifenburgh said.

A credit line up to $65 million from banks led by First National of Boston at .75% above tbe prime rate is complemented by a multicurrency agreement of $35 million in Europe from banks led by the First National Bank of Chicago. In addition, Mohawk can borrow up to $12 million outside the two agreements.

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Computerworld Stock Trading Summary

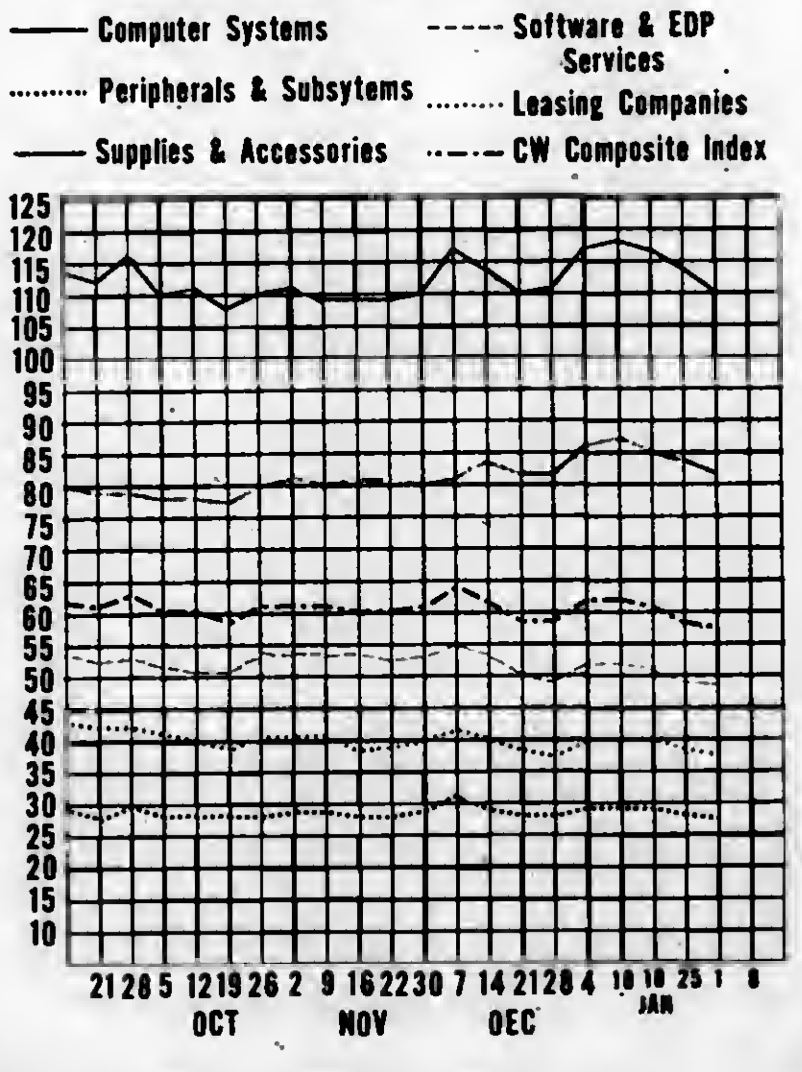
All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, FEBRUARY 1, 1973

EXCH		1972 RANGE (1)	PRICE CLOSE FEB 01 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	2	0	0.0
A	APPLIED DATA RES.	3- 7	3 1/4	0	0.0
O	APPLIED LOGIC	1- 4	2 3/4	0	0.0
N	AUTOMATIC DATA PROC	70- 99	72 7/8	-14	-16.1
O	BRANDON APPLIED SYST	1- 2	3/4	0	0.0
O	COMPUTER DIMENSIONS	4- 14	3 1/2	0	0.0
O	COMPUTER DYNAMICS	1- 4	1	0	0.0
O	COMPUTER NETWORK	3- 7	3 1/4	0	0.0
N	COMPUTER SCIENCES	4- 10	4 3/8	- 1/4	-5.4
O	COMPUTER TASK GROUP	1- 2	1 1/2	+ 1/8	+9.0
O	COMPUTER TECHNOLOGY	2- 8	2 3/8	- 3/8	-13.6
O	COMPUTER USAGE	7- 14	7 3/4	- 3/8	-4.6
N	COMPUTING & SOFTWARE	11- 28	11	+ 1/4	+2.3
O	COMRESS	1- 3	1	0	0.0
O	COMSHARE	5- 10	8 1/8	- 7/8	-9.7
O	DATATAB	4- 9	3 3/4	- 1/4	-6.2
O	EDP RESOURCES	2- 8	1 3/4	-1	-36.3
A	ELECT COMP PROG	1- 5	1 5/8	0	0.0
N	ELECTRONIC DATA SYS.	43- 65	51 1/2	-1 1/4	-2.3
O	INFORMATICS	5- 11	4 1/2	- 1/4	-5.2
O	I.D.A. DATA CORP	1- 3	5/8	- 1/8	-16.6
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	9 3/4	-1	-9.3
O	LOGICON	4- 9	3 1/2	- 1/4	-6.6
A	MANAGEMENT DATA	4- 10	3 3/4	- 1/8	-3.2
O	NATIONAL CSS INC	8- 36	32 1/4	-1 3/8	-4.0
O	NATIONAL INFO SRVCS	1- 5	2	- 1/4	-11.1
P	ON LINE SYSTEMS INC	8- 28	24 1/4	- 1/4	-1.0
N	PLANNING RESEARCH	5- 17	4 7/8	0	0.0
O	PROGRAMMING METHODS	20- 25	22 1/2	-1 1/4	-5.2
O	PROGRAMMING & SYS	1- 2	1	+ 1/4	+33.3
O	RAPIDATA INC	5- 27	22 1/2	- 3/4	-3.2
O	SCIENTIFIC COMPUTERS	2- 4	1 5/8	+ 1/8	+8.3
O	SIMPLICITY COMPUTER	1- 5	3 3/8	- 1/8	-3.5
O	TBS COMPUTER CENTERS	3- 6	3 1/2	- 1/4	-6.6
O	TCC INC	1- 3	3/4	+ 1/4	+50.0
O	TYMSHARE INC	7- 12	9 3/4	-1 1/8	-10.3
O	UNITED DATA CENTER	5- 8	6	0	0.0
N	UNIVERSITY COMPUTING	8- 26	7 3/4	- 3/4	-8.8
A	URS SYSTEMS	6- 10	6 1/4	+ 1/2	+8.6
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	27- 49	26 5/8	- 3/8	-1.3
O	ADVANCED MEMORY SYS	12- 23	19 5/8	-1 5/8	-7.6
N	AMPEX CORP	5- 15	6 1/8	+ 3/8	+6.5
O	ANDERSON JACOBSON	4- 8	4 3/4	0	0.0
O	BEEHIVE MEDICAL ELEC	1- 8	6 1/4	- 5/8	-9.0
A	BOLT,BERANEK & NEW	5- 21	10	- 5/8	-5.8
N	BUNKER-RAMO	9- 14	8 1/2	- 5/8	-6.8
A	CALCOMP	9- 25	10 3/4	0	0.0
O	CAMBRIDGE MEMORIES	9- 15	11 1/4	-1 1/2	-11.7
O	CENTRONICS DATA COMP	6- 28	23 3/4	+ 1/2	+2.1
O	CODEX CORP	6- 25	17	- 1/4	-1.4
O	COGNITRONICS	2- 5	2 1/8	- 1/8	-5.5
O	COMPUTER COMMUN.	1- 7	3 1/8	- 1/4	-7.4
A	COMPUTER EQUIPMENT	2- 4	2 5/8	+ 1/8	+5.0
O	COMPUTER MACHINERY	7- 13	10 1/2	- 1/8	-1.1
O	COMPUTER TRANSCEIVER	2- 9	3 3/4	- 3/4	-16.6
A	COMPUTEST	3- 9	3 3/4	0	0.0
N	CONRAC CORP	24- 39	26	-1 1/2	-5.4
A	DATA PRODUCTS CORP	3- 7	3 7/8	- 1/8	-3.1
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 3/4	- 1/8	-3.2
O	DI/AN CONTROLS	0- 8	3 7/8	0	0.0
N	ELECTRONIC M & M	3- 8	4 1/2	- 1/8	-2.7
O	FABRI-TEK	2- 5	4 1/4	0	0.0
O	GENERAL COMPUTER SYS	6- 16	7 1/2	- 1/4	-3.2
N	GENERAL ELECTRIC	59- 74	68 1/2	0	0.0
N	HAZELTINE CORP	7- 13	8 1/2	+ 3/8	+4.6
O	INFOREX INC	17- 36	17 3/8	- 3/8	-2.1
O	INFORMATION DISPLAYS	1- 5	7/8	- 1/8	-12.5
O	INFORMATION INTL INC	8- 25	11 1/2	-1	-8.0
A	LUNDY ELECTRONICS	8- 14	8 1/8	- 5/8	-7.1
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
A	MILGO ELECTRONICS	15- 44	22	+1	+4.7
N	MOHAWK DATA SCI	9- 27	9 1/4	- 5/8	-6.3
O	ODEC COMPUTER SYST.	5- 12	4 5/8	- 1/8	-2.6
O	OPTICAL SCANNING	5- 16	5	- 1/4	-4.7
O	PERTEC CORP	7- 17	6 5/8	- 3/8	-5.3
O	PHOTON	3- 15	3 3/8	- 5/8	-15.6
A	POTTER INSTRUMENT	7- 21	8 1/4	+ 5/8	+8.1
O	PRECISION INST.	2- 13	2 1/2	- 1/2	-16.6
O	RECOGNITION EQUIP	5- 15	6 1/2	+ 1/4	+4.0
N	SANDERS ASSOCIATES	13- 21	13 3/4	- 3/4	-5.1
O	SCAN DATA	3- 13	3 1/2	- 1/8	-3.4
O	STORAGE TECHNOLOGY	17- 39	27 1/2	- 1/2	-1.7
O	SYCOR INC	7- 11	10	- 1/4	-2.4
O	TALLY CORP.	8 15	11 1/8	-2 1/8	-16.0
N	TEKTRONIX INC	34- 64	49 3/8	-2 1/4	-4.3
N	TELEX	5- 15	5	- 3/8	-6.9
O	WILTEK INC	10- 26	15 3/4	+1 3/4	+12.5
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	7 1/4	- 3/4	-9.3
A	BARRY WRIGHT	9- 14	10	- 1/8	-1.2
A	DATA DOCUMENTS	17- 26	21 3/8	0	0.0
O	DUPLEX PRODUCTS INC	8- 16	8 1/4	-1	-10.8
N	ENNIS BUS. FORMS	6- 10	7 1/2	- 3/8	-4.7
O	GRAHAM MAGNETICS	15- 27	17 3/4	0	0.0
O	GRAPHIC CONTROLS	11- 15	11 1/8	- 1/8	-1.1
N	3M COMPANY	76- 88	82 1/4	-4 1/2	-5.1
O	MOORE CORP LTD	42- 57	56 3/8	+ 3/8	+0.6
N	NASHUA CORP	48- 62	55 1/4	- 1/2	-0.8
O	REYNOLDS & REYNOLD	37- 77	47 1/2	- 1/8	-0.2
O	STANDARD REGISTER	14- 20	19 1/2	+ 3/4	+4.0
O	TAB PRODUCTS CO	14- 23	19 1/4	-1 3/4	-8.3
N	UARCO	20- 28	21 5/8	+1 1/8	+5.4
A	WABASH MAGNETICS	6- 11	6 1/8	- 3/4	-10.9
N	WALLACE BUS FORMS	21- 26	25	0	0.0
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-230	219 3/4	- 7/8	-0.3
N	COLLINS RADIO	14- 27	23	+1 1/4	+5.7
N	CONTROL DATA CORP	43- 78	55 1/8	- 1/8	-0.2
O	DATA GENERAL CORP	56-130	120	-1	-0.8
O	DIGITAL COMP CONTROL	5- 25	4 1/2	- 3/4	-14.2
N	DIGITAL EQUIPMENT	72-101	96 1/4	- 1/4	-0.2
N	ELECTRONIC ASSOC.	6- 13	8 1/4	+ 1/8	+1.5
A	ELECTRONIC ENGINEER.	6- 14	8	- 1/2	-5.8
N	FOXBORO	23- 41	29 1/2	- 5/8	-2.0
O	GENERAL AUTOMATION	13- 54	52 1/4	+5 1/2	+11.7
O	GRI COMPUTER CORP	2- 5	2 1/2	0	0.0
N	HEWLETT-PACKARD CO	46- 94	88 3/4	-1 5/8	-1.7
N	HONEYWELL INC	118-170	119 3/4	-9	-6.9
N	IBM	333-444	429	-7	-1.6
O	INTERDATA INC	8- 16	10 5/8	-1	-8.6
N	MEMOREX	14- 38	13 5/8	-3 1/8	-18.6
O	MICRODATA CORP	5- 10	8 1/2	- 7/8	-9.3
N	NCR	28- 38	28 1/4	-1 1/4	-4.2
N	RAYTHEON CO	27- 47	30 7/8	+ 5/8	+2.0
N	SPERRY RAND	30- 50	43 1/8	-4 5/8	-9.6
A	SYSTEMS ENG. LABS	6- 16	5 1/2	-1 3/4	-24.1
N	VARIAN ASSOCIATES	14- 22	17	- 3/8	-2.1
N	WANG LABS.	23- 61	29	- 1/2	-1.6
N	XEROX CORP	121-172	151	-1 1/2	-0.9
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	2 5/8	- 3/8	-12.5
O	BRESNAHAN COMP.	1- 3	1 3/8	0	0.0
O	COMDISCO INC	3- 18	13 5/8	-2	-12.7
O	COMMERCE GROUP CORP	5- 11	4 7/8	- 1/2	-9.3
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	6- 14	6 1/8	- 1/4	-3.9
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	7 1/2	0	0.0
M	DATRONIC RENTAL	2- 4	2 1/8	- 1/8	-5.5
A	DCL INC	2- 10	2 3/8	- 1/4	-9.5
A	DEARBORN-STORM	16- 26	21 3/4	- 3/4	-3.3
A	DPA, INC.	5- 8	6 7/8	0	0.0
A	GRANITE MGT	5- 11	5 3/8	- 1/4	-4.4
A	GREYHOUND COMPUTER	5- 11	5	- 5/8	-11.1
A	ITEL	7- 12	10	-1 1/8	-10.1
N	LEASCO CORP	13- 24	13	-1 3/4	-11.8
O	LEASPAC CORP	6- 15	6 1/4	- 1/2	-7.4
O	LECTRO MGT INC	1- 4	1 3/4	- 1/8	-6.6
A	ROCKWOOD COMPUTER	2- 7	2 3/8	0	0.0
O	SYSTEMS CAPITAL	3- 20	10 3/8	- 3/4	-6.7
N	U.S. LEASING	19- 35	32	- 1/2	-1.5

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

UNIVERSITY COMPUTING
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	.....	$.15
bRevenue	$26,392,000	31,041,000
Disc Op	(1,780,000)	(476,000)
Spec Chg	d21,151,000	.....
Earnings	(38,859,000)	1,144,000
9 Mo Shr	.....	.69
bRevenue	82,147,000	92,346,000
Disc Op	(3,662,000)	(1,355,000)
Spec Chg	d21,151,000	.....
Earnings	(26,193,000)	5,237,000

a-Restated to reflect acquisition of Results Inc. on a pooling basis and to reflect discontinued operations. b-From continuing operations. d-Anticipated losses on the proposed sale of the company's communications equipment manufacturing subsidiary and life insurance subsidiary.

BRESNAHAN COMPUTER
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.31	$.20
Revenue	5,774,000	5,221,000
Disc Op	.....	(114,000)
Earnings	615,000	391,000
3 Mo Shr	.08	.08
Revenue	1,474,000	1,315,000
Earnings	154,000	162,000

COMPUTER USAGE
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.57	$.30
Revenue	3,640,897	4,108,222
Tax Cred	233,000	116,000
Earnings	498,541	255,031
3 Mo Shr	.27	.14
Revenue	1,020,234	847,891
Tax Cred	104,404	57,000
Earnings	230,633	119,003

TEKTRONIX
Three Months Ended Nov. 11

	1972	1971
Shr Ernd	$.37	$.22
Revenue	42,205,000	36,101,000
Earnings	3,052,000	1,783,000

NATIONAL COMPUTER SYSTEM
Three Months Ended Oct. 31

	1972	1971
Shr Ernd	$.39	$.20
Revenue	1,464,274	1,401,750
Tax Cred	101,000	51,000
Earnings	203,641	102,524
9 Mo Shr	.53	.33
Revenue	3,467,452	3,345,469
Tax Cred	138,500	87,500
Earnings	277,179	175,069

MILGO ELECTRONIC
Year Ended Sept. 30

	1972	1971
Shr Ernd	$1.32	$.15
Revenue	13,824,000	9,083,000
Earnings	2,107,000	240,000
3 Mo Shr	.43	.21
Revenue	4,880,000	2,842,000
Earnings	685,000	333,000

ELECTRONIC ASSISTANCE
Three Months Ended Oct. 31

	1972	1971
Shr Ernd	$.09	$.03
Revenue	10,366,000	9,541,000
Spec Chg	1,000	2,000
Earnings	173,000	47,000
9 Mo Shr	.....	.13
Revenue	28,802,000	27,561,000
Spec Cred	14,000	35,000
Earnings	(127,000)	245,000

DATA TECHNOLOGY
Six Months Ended Oct. 28

	1972	a1971
Shr Ernd	$.06	$.13
Revenue	6,244,000	5,689,000
Disc Op	.....	(95,000)
Spec Cred	.....	142,000
Earnings	85,000	156,000

a-Restated.

ENNIS BUSINESS FORMS
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.16	.....
Revenue	10,813,677	$11,013,288
Spec Chg	.....	a137,523
Earnings	395,667	5,353
9 Mo Shr	.42	.....
Revenue	30,988,398	31,369,141
Spec Chg	.....	a1,394,178
Earnings	1,038,685	(1,794,374)

a-From writeoff of investments and advances to affiliated companies; plus sale, abandonment and liquidation losses from discontinued operations.

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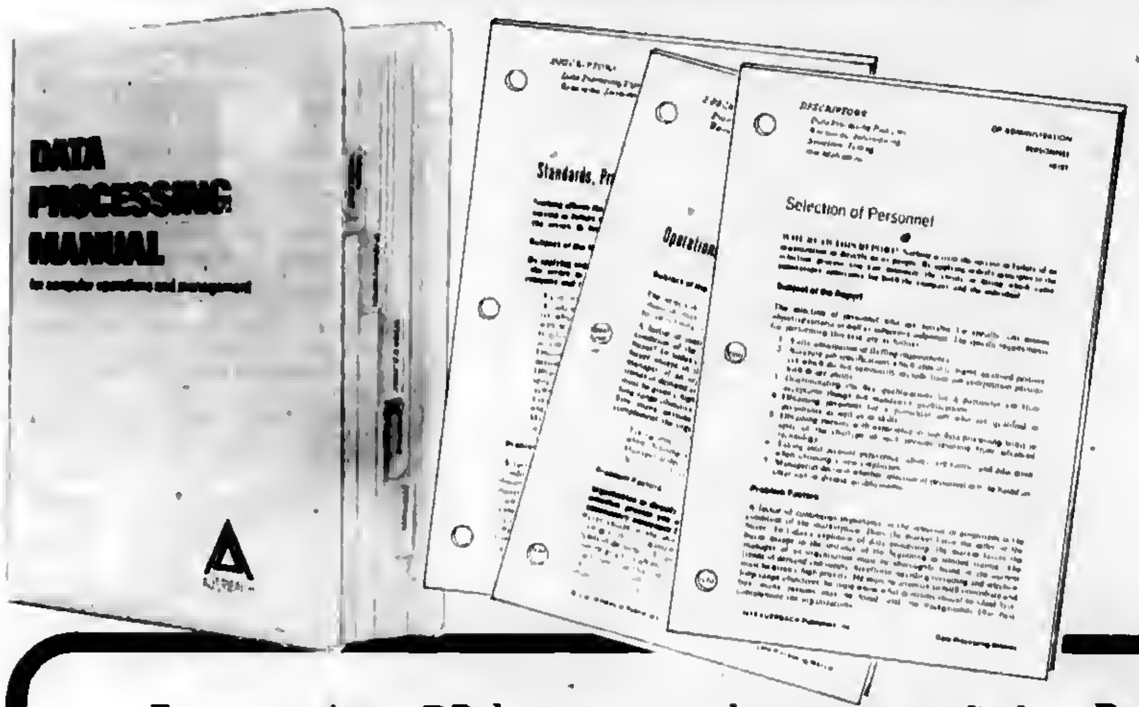

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- **How to convert smoothly**
- **When to start documentation and its cost**
- **How to prepare correct clauses for purchases or lease contracts?**

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COMPUTERWORLD

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NEWSPAPER

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NEWS IN BRIEF

Prop[illegible]ased For Cobol Data Base

MONROEVILLE, Pa. – The Data Base Language Task Group of the Conference on Data Systems Languages (Codasyl) Programming Language Committee (PLC) has released its recommendations for the inclusion of a data base facility in Cobol. PLC would like to hear from potential users.

The proposal is based on the concepts and facilities described in the Codasyl data base task group report of April 1971.

PLC Chairman Ronald Hamm of Honeywell has said, however, his committee will defer action on the proposal until after July 15.

Copies of the proposal are available for $2.50 each from the Receiver General for Canada. Requests should be addressed to the Technical Services Branch, Department of Supply and Services, 5th floor, 88 Metcalfe St., Ottawa, Ontario, Canada, K1A 0S5.

Reactions to the proposal, Hamm said, should be addressed to PLC, through Codasyl, P.O. Box 124, 15146.

IBM Plans to Show At June NCC in N.Y.

MONTVALE, N.J.—IBM, absent for two years from the joint computer conferences, will be among the more than 150 exhibitors in the June National Computer Conference and Exposition (NCC), according to the show sponsor, the American Federation of Information Processing Societies (Afips).

IBM last exhibited at a joint computer conference in the Fall of 1970 in Houston, Afips added.

Approximately 80% of capacity, or about 560 booths have been reserved for NCC, successor to the joints, an Afips spokesman said. In January alone Afips sold about 30% of its capacity.

The show will be at the New York Coliseum June 4-8.

On the Inside This Week

Cobol, PL/I, Fortran Standards Shaping Up –*Page 14*
IBM Increases 370 Memory, Doubles Disk Drive Support –*Page 21*
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Systems/Peripherals 21

Information on flight schedules, number of seats available and their prices is displayed by the Sirena system.

Central Brain of the Sirena System

Novosti Press Agency Photos

Ticket Agent's Terminal

Senior technician Lydia Barabanova feeds information on airplane traffic into the computer.

Aeroflot Flies Sirena

Russia's Sirena computer system for the booking of airline reservations is now operating with 256 terminals installed in all Aeroflot ticket offices in Moscow and in 28 cities throughout the country. The Sirena also provides information on ticket prices and plane schedules, cancels reservations, and totals receipts, the number of seats sold and the number of unfulfilled ticket orders. The computer handles up to five requests a second. Each request entails 10,000 operations.

Approximately 300%

IBM Maintenance Markups Revealed

By Alan Taylor

Special to Computerworld

NEWTONVILLE, Mass. – A search for some of the contents of the Control Data data base, access to which was destroyed by Control Data, has produced a remarkably complete picture of the gross profit margins used by IBM in manufacturing, maintenance and rental cases.

An analysis of the data indicates that maintenance and labor costs, as of February 1972, were being marked up by IBM approximately 300% (the users of the models 20, 1800 and 1130 getting a slightly less markup than the users of the other 360 and 370 machines). For example, IBM was paying an engineer $8/productive hour and was charging $32/hr for his services.

These figures taken from the different IBM depositions for the case, and considered with known facts such as IBM's normal writeoff periods of four years, provide the basis for a look into as current as possible IBM internal pricing structures and maintenance strategies.

It Began With a Suit

The search for the documents actually started with some of the IBM depositions in the Advanced Memory Systems case. Early in 1972 Advanced Memory Systems, together with Itel Corp., sued IBM to prevent the company from withdrawing maintenance from systems with add-on Advanced Memories over 64K. Toward the end of February 1972 the case was settled, with IBM agreeing to give "best efforts" maintenance. By then, however, a number of depositions had been filed with the court.

One of these made explicit reference to the Control Data index, and included details showing IBM had reported it was maintaining 95% of the 35,129 Model 30 and larger computers it had built.

During the original trial preparation these figures had been expected to be strongly emphasized to show an apparent monopoly situation.

The review of the depositions turned up a complete salary scale for the overall maintenace force used by IBM, together with the number of persons in each of the 30-odd categories, the cost of the Model 30 program, the cost of upgrading from a 32K Model 30 to a 64K system, and even the national averages for maintaining the 32K and 64K Model 30 systems.

Secrecy Violated

During the case IBM had protested strongly about providing much of this data, claiming it was secret, and agreeing only to provide it under seal. No one, however, thought to tell the IBM analyst that the IBM national averages for the

(Continued on Page 2)

Thinking of 370 Lease? It's Cheap but User Can Suffer

By Ronald A. Frank

Of the CW Staff

NEWTONVILLE, Mass. – The attractive lease terms available to prospective 370 users can also have some unfavorable side effects for the unwary lessee.

Many users enter into third-party lease agreements strictly for the low price, and many times that is all they get.

One of the newer lease arrangements (usually completely transparent to the user) is the leasing partnership which gives some attractive tax shelter advantages to the partners while severely restricting the user for the life of the lease.

"The partnership which owns the user's machine may not be interested in spending any cash to upgrade the user's machine," according to one leasing expert.

These partnerships are carefully arranged between a financing institution and an investor looking for tax writeoffs. The bank usually gets most of the cash flow from the user while the investor gets the needed tax writeoffs. The investor may get some revenue but he will also get some offsetting cash expenses to balance it out.

"The partnership may have established a pay-back curve to break even in the eight-year life of the partnership," the expert said, "and since the partnership owns the computer system there are some serious problems for the user. The partnership may not want to add an upgrade feature to the user's system unless the feature can be paid out in full over the remaining time of the lease," he said.

And most users traditionally begin to outgrow their systems during the tail end of the eight-year leases. "If a user wanted to add another disk subsystem to a leased CPU that had only three more years to go until full pay-out, the charges could be very high," the leasing expert said.

In order for the partnership to recover the cost of the disk in three years, the user might have to pay double or even triple the IBM rental price. And the partnership is not interested in hearing about

(Continued on Page 2)

370 Leases Could Save for User but Still Cost Him

(Continued from Page 1)

DP problems; like any lessor, it is only interested in its money.

Fine Print

"In his haste to sign on the dotted line, the user often overlooks any equipment obsolescence he may face during the eight-year term of the lease," the expert said.

Attorney Roy Freed agrees that the user should guard himself against burdensome leasing restrictions. "The user has to recognize that he is locked in," Freed said. "And he has to make a deal very carefully with the equipment supplier on the warrantees of performance, patent infringement, spare parts availability and other goodies that he may require."

The best protection for users is advice from their attorneys before they sign a lease agreement, Freed suggested.

"The user who gets a low rental is locked in for a fixed term and he can't get out," Freed said. Normally the lease terms will not prevent the addition of "plug-in" peripherals, but some of these cannot be attached without adapters which must be hardwired and can alter the configuration, in the eyes of the systems' owners.

Wheeling and Dealing

Lease plans are usually written as full pay-out leases which means the equipment owners have calculated they will recover their full investment during the term of the contract. "The partnership has to get the value of the system down to below a 10% residual or it can't take all the tax benefits," the leasing expert said.

While most of the full pay-out lease plans have non-cancellation restrictions, others with "operating leases" give the user an out for a price to be determined by the market value.

Under its "Plan 370," MDC Leasing Corp. allows the user to terminate his agreement "at any point" during the life of the lease. When the lessee terminates the contract, MDC "reserves two options," according to Tony Pettine, vice-president.

MDC will take back the system (or just the CPU) at no penalty to the user if it has another lessee for the system. If there is not other user, MDC will sell the system in the marketplace.

"We have a table of declining residual value built into the lease," Pettine said. If the proceeds of the sale equal the residual amount, the user has no penalty to pay. But if the proceeds are less than the stipulated residual value, then the lessee pays the difference, Pettine said.

Most of the 370 lease plans include all-IBM configurations. This means the user will probably have to do without independent add-ons unless they are of the non-hardwired plug-in type.

The choice of IBM equipment is also strictly a financial consideration. One leasing company representative said: "Our money backers understand the value of IBM equipment. They have never heard of the others, so they want systems that they think will retain their value."

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Maintenance, Labor Markups for Users Approximately 300%

(Continued from Page 1)

maintenance of these two models were secret. He included the details in his testimony (which tended to show that adding AMS memories greatly added to the maintenance time necessary).

Among the revelations from these depositions:

- The cost over a four-year period of either buying the hardware, and having a maintenance contract, or else of simply renting the hardware, yielded a gross markup to IBM of over 1000%, the only difference being that IBM continued to own the equipment if it had been rented, while the buyer owned it otherwise.
- Contract maintenance on the Model 30s turned out to be an expensive proposition with the contract user effectively paying more than twice as much for the hours spent on maintenance than he would have done under a plain-time contract. Apparently, from the figures, user maintenance would be most economical under a time-basis contract despite the large markup IBM uses.

Industry observers recently noted that the overall picture, which had not been evident during the original trial, did not greatly surprise them. "It is not very different than what we have been saying," said one former IBMer. "But now we can refer to the actual documents, and the IBM numbers instead of having to use our memories."

Time Service Contracts – 300% Markups		
Charge for Engineering Services		$32/hr
Cost/Productive Hour to IBM ($1,120/mo Salary for 140 Productive Hours)		- 8
Gross Markup Over Cost		$24
Gross Markup Percentage		300%
Maintenance Service Contracts – 440% Markups		
Charge for Maintaining 64K Model 30		$145/mo
Cost of Labor to Maintain (2.4 Hours at $8/Productive Hr)	$19.20	
Cost of Parts to Maintain (5% of Maintenance Charge)	7.25	
Cost of Maintenance Service to IBM	$26.45	- 26.45
Gross Markup Over Cost		$118.55
Gross Markup Percentage		440%
Hardware Sold – 1,220% Markups		
Charge for Upgrading Model 30 From 32K to 64K		$52,790
Cost of Upgrade to IBM (does not include development cost allocation)		- 3,954
Gross Markup Over Cost		$48,836
Gross Markup Percentage		1,220%
Hardware Rented for Four Years – 1,240% Markups		
Charge for Rented Upgrade of Model 30 From 32K to 64K		$60,000
Cost of Upgrade to IBM (does not include development cost allocation)	$3,954	
Cost of Labor to Maintain ($6.40/mo for 48 Months)	308	
Cost of Parts (5% of Maintenance Increase)	202	
Cost of Maintained Upgrade to IBM	$4,464	- 4,464
Gross Markup Over Cost		$55,536
Gross Markup Percentage		1,240%

Gross Markups Used by IBM for Various Operations
(as of February 1972)
The chart shows the gross margins of various IBM computer pricing market areas, as indicated in the IBM depositions and evidence filed by IBM when it was being sued by Advanced Memory Systems in 1972. For this analysis, the percentage of productive time (which does not include attending seminars, training, etc., but which does include travel time) is estimated as 140 hours out of the engineer's 176-hour month, and the parts cost at 5% of the maintenance charge. These figures are based upon industry estimates, and are believed to be overstated. The gross margins indicated by the analysis range from 300% to 400% for engineering services, and over 1,000% for hardware whether bought outright or rented.

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370 Users . . . Ampex Offers These Problem Solvers

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And, of course, the TM-34 is also available as a stand-alone unit with data rates up to 320 KB.

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360 Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement. For IBM models 22, 30, 40, 50, 65, and 67. ARM-22 expands the 360/22 to 64K; ARM-30 can expand the 360/30 to 128K; and ARM-40 can expand the 360/40 to 448K. The ARM-50 works to 1½ megabytes, and the ARM-2365 is designed for use with IBM models 360/65 and 67.

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Attendees Agree:

Human Factors Need Work

By Mike Merritt
CW Correspondent

SAN JOSE, Calif. – The technical problems of computer communications are pretty well in hand; it is the human, end-user problems that call for work. This was the conclusion echoed repeatedly at the second annual Computer Communications Conference held here recently.

Computer Communications Conference

"We're going to have to rethink what we want these conferences to do," said conference chairman Donald T. Comer.

The traditional technical papers on line costs, self-repairing time-sharing systems and interactive programming languages shared the program with papers ranging from human factors in selecting terminals to "Sociological Spin-Off from Computer-Communications Systems Engineering," all dealing in some way with how T/S systems affect people.

The seminar, Time-Sharing: Past, Present Future, was sponsored by the San Francisco chapter of the ACM, a San Francisco Group of the IEEE and San Jose State University.

Other topics at the conference were conferencing techniques, and a novel T/S-based "knowledge workshop," designed to increase the productiveness of "knowledge workers" in their daily activities.

Computer Crimes

Privacy and security was another prime subject at the conference.

"it should become increasingly difficult to pull computer crimes in the next few years," according to Donn Parker, a Stanford Research Institute computer specialist who has been studying criminal acts done on and with computers. The number of data thefts, time thefts and computer-assisted embezzlements should go down, due to better security, more complex systems and greater computerization, Parker said.

He warned, though, that when the crimes do occur, it is likely that the dollar losses will be much greater, noting the possibility of millions of thefts a second once a system has been penetrated.

Parker described the computer criminals he has met as generally young, bright and highly motivated. They frequently don't feel their criminal acts are immoral, he said. One reason is a feeling that hurting organizations isn't had.

Another reason is the free and easy ethics of the computer industry. He quoted the prosecutor of one computer crime who said "he had never seen a field where so many illegal and unethical acts go on."

Backward Laws

Current laws often aren't adequate to cope with computer crimes, Parker said. "What is a theft? Does it happen once when an embezzler cracks the system – or does it happen each time his program takes money from one of the thousands of accounts being processed?" he asked.

Many state laws, as written, wouldn't allow a data thief to be prosecuted for theft, he noted. The statutes simply don't cover data as a stealable, valuable item.

He also noted one case where a judge threw a computer crime out of court because nobody could understand what was going on – the subject was just too technical for the judge, lawyers and jury.

Many companies contribute to data or program theft through lack of the simple precaution of inserting a comment card reading "this program property of XYZ Corp," he added.

Lower Line Costs?

The technical side of the conference was certainly not lacking. The near- and long-term future of line costs, for example, was the subject of a presentation by Dieter Lohr, also of the Stanford Research institute.

There are a number of technological developments that could reduce long haul, high volume transmission costs sharply, Lohr said, naming coaxial cables, waveguides, satellites and fiber optics as possibilities.

These developments could increase

(Continued on Page 5)

Computerniks Not People-Oriented

SAN JOSE, Calif. – "The growth of computer communications is being impeded because, among other reasons, the computer fraternity appears to dislike communicating with people," hypothesized A.J. Lipinski of the Institute for the Future, at the Computer Communications Conference. Lipinski suggested that computer types "appear to favor the interests of computers over people."

Lipinski cited log-in procedures as an example of the supercilious attitude of computerniks, noting their complexity, lack of standardization and "nit-picking" demands for precise usage. "Only the most racist or exclusive clubs . . . would dream of employing such haughty entry procedures," he opined.

He also scored the negative reinforcement common in diagnostic procedures, where mistakes are noted as "illegal" and "improper." "Positive reinforcement is unheard of, and even politeness is rare," he added.

Because of these and similar tendencies of computer system designers, Lipinski claimed, non-computerniks, whose feelings about computers are mixed at best, are put off from really learning to use Interactive systems.

Engineers, and particularly computer engineers, won't be able to solve these problems, Lipinski claimed. It will be necessary to give "final authority on system communication to humanists" with computer system knowledge, he suggested.

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Illiac IV 'Expected to Work' But Now Failing at High Rate

By Mike Merritt
CW Correspondent

Computer Communications Conference

SAN JOSE, Calif. – Illiac IV, the 64-processor supercomputer, currently has a mean time between failure of about five seconds, according to Loren G. Bright of the Nasa/Ames Research Center, home of the experimental machine. The "fabrication contract" for the Burroughs-built machine was completed early in December, and the staff at Ames is currently testing and setting up the system, Bright told attendees at the Computer Communications Conference.

Bright said he expects the machine to be working – "but still fairly flakey" – by the beginning of March, and in full operational mode by October. The objective mean time between failure, he noted, is four to six hours.

Linked to Arpsnet

The huge parallel processor will be hooked into the Advanced Research Projects Agency Network (Arpanet) [CW, Aug. 30, 1972] through a PDP-10, and will use a Burroughs B6700 for compiling, Bright said. The computing power of Illiac IV will be about 100 times that of a CDC 6600, he noted.

The Ames staff is now "striving to develop an operating system" using the B6700 as a softwere simulator.

Ames hopes to be able to "retail" the resources of Illiac IV "to any and all comers," Bright said. Since both the machine and the Arpanet were developed with government funds, however, there are definite legal problems to be overcome in this area.

N.Y. Rent Control Faces Lawsuit—Again

By a CW Staff Writer

NEW YORK – This city's computerized rent control system faced another in a long series of setbacks recently when three of the city's largest landlord organizations filed suit asking for a 7.5% rent hike for the one million tenants who have not received computerized rent orders.

A similar suit last year resulted in a 15% increase for tenants whose rent levels had not been set by the computer.

The landlords charged the city's administration of the rent control program had fallen apart and demanded thst the system be taken out of the city's hands.

Meanwhile, the rent operation was attacked from another front recently when a special state report blasted both landlords and the rent control operation.

The state commission, hesded by lawyer Stuart Scott and requested by Gov. Nelson Rockefeller, called the overall management of the computerized rent program a "failure."

In the past landlords have charged that the computerized system had delayed rent increases that were due to them, but the Housing and Development Administration charged the delays were due to faulty input from the landlords themselves.

The commission charged that implementation of the computer systems had tested the capability of the housing administration and found those capabilities "wanting."

The delays in getting out the notices for increased rentals upset "the expectations of tenants, landlords and building employees resulting in legal snarls, makeshift arrangements and exacerbated tenant-landlord relations," the commission found.

But at the same time, the report placed some of the blame on the landlords, noting the city grossly overestimsted the "city's ability to get reliable and accurate information from landlords."

It's Human Factors That Call For Work

(Continued from Page 4)

transmission capacity by orders of magnitude over present equipment, he said. A comparable increase in local transmission capacity, or comparable lowering in price doesn't seem likely though.

The effect of new technologies on end-user costs depends on two competing factors, he claimed. The first is the tremendous investment – some $70 billion – in existing common carrier facilities. This amount cannot be written off quickly; it has to be paid for.

Increased Competition

The other factor is increased competition in data transmission, Lohr noted, citing data carriers such as Microwave Communications Inc. and Datran, and domestic satellite operators.

The common carriers are already reacting to the potential competition, Lohr said; with the projected data-under-voice service.

Lohr came to several conclusions:

- Prices for wideband service will drop
- Prices for voice, dialed, switched networks will rise at the inflationary rate
- Prices for 50 kbit/sec lines will drop
- There may be some shift of costs from institutional users to individual customers.

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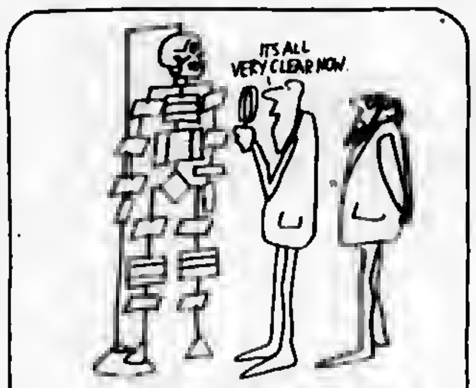
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Minicomputer Takes the Driver's Seat

NEW YORK – In an effort to correct frequent and costly human errors, the Ferrari racing team is using a minicomputer to accurately evaluate its position in each race.

"At the Indianapolis 500 this year, five recordkeeping errors on the part of the officials changed the finish position of 23 cars," commented Dr. Ennio Gheradi, manager of Ferrari's factory racing team.

"And at the Pocono 500 in August they had the wrong driver in the winner's circle until they found their error," he said.

From these and other experiences, Ferrari decided to modernize its own timekeeping function with a PDP-8/L mini.

Using the mini, the Ferrari team keeps track of eight cars plus the leader, and can, at the completion of each lap, get a printout of number of laps completed by each car, the time it took to complete the last lap and the number of laps and time (to the msec) that the car is behind.

This data is produced by the mini in response to the button-pushing of one person who is equipped with a 12-key button pad. He observes the race and presses the appropriate button whenever a car passes a certain point on the course, makes a pit stop or resumes racing.

The new system has already shown positive results as several times during one endurance race officials kept telling the Ferrari team it was a lap behind, but the computer printout showed it ahead.

"If I had listened to the officials instead of the PDP-8, I might have pushed the cars too hard and broken them down," a Ferrari official explained.

As it was, the Ferrari team won the race.

Ferrari team driver Sam Posey studies lap count and time data from a PDP-8/L minicomputer.

'Damn That Decibel Dementia'

EAST LANSING, Mich. – The word "pollution" usually brings to mind visions of black smoke, oil slicks or mounds of garbage along the highways. But another kind of pollution – noise pollution – can be just as serious a problem, especially for large manufacturing industries.

Merritt Enterprises here is applying computer technology to help diagnose and control "decibel dementia." By using a computer graphics technique, explained Donald Merritt, concentrations of noise in various manufacturing operations are located and a contour map is made showing location, origin, radiation, extremes and characteristics of the noise.

The company can then take the necessary steps to improve the working environment in compliance with Federal Occupational Safety and Health Laws.

It takes about five days to survey one million square feet of space in a manufacturing facility and another four or five days to assemble, interpret and feed data into the computer.

Merritt has done these studies for several automotive concerns, including General Motors and Ford Motor.

Recount Avails Nothing

THURSTON COUNTY, Wash. – Two contested computerized elections had some tempers flaring here recently but a recount settled the matter.

Following the November elections, Orville Armstrong, who ran second to George Yantis for county commissioner, asked to have the election recounted. The county canvassing board then asked for a total computer recount of that race and a second senatorial contest.

County Auditor Wes Leach agreed to do the recount but said he wanted the court to authorize him to do the recount and to approve expenditure of the necessary funds.

In the interim Armstrong charged undue delays in getting the votes counted. He claimed there was no "expenditure" problem since the programming for the recount had been donated, the paper donated and costs of computer time were estimated at only $200. Armstrong noted he had posted $675 to have the vote recounted.

Leach said a hand recount was done with a one vote difference noted at the end of 49 precincts. Nevertheless, a computer recount was done. The result: no difference from the original election.

Sorry, Orville.

NYC Combing Streets For Maintenance Data

NEW YORK – Currently some 90 highway department employees are combing every street of the five boroughs of this city to prepare "the most extensive inventory of street and highway information of any city in the U.S."

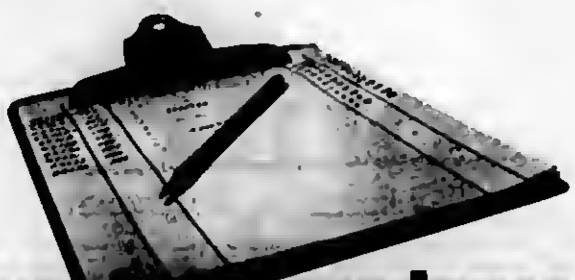
The aim, according to transportation administrator Constantine Sidamon-Eristoff, is part of Mayor John Lindsay's plan to "facilitate a vastly improved street maintenance system by feeding the information into a computer.

"The information that will be gleaned from this comprehensive survey will enable the city to plan resurfacing on a scientific basis," Sidamon-Eristoff said. "Also, it will make it easier to check on pothole repairs and street cuts by utility companies and city agencies."

State Registry Proposed To Reduce Welfare Fraud

NEW YORK – A proposed relief unit of the New York State Department of Social Services – the Public Assistance Service Corp. – would incorporate a central computer registry system statewide to clear and control welfare applicants and recipients.

The state welfare inspector general and developer of the plan, George T. Berlinger, said the computer system would reduce fraud and abuse by continuously checking its files against other records and by initiating a checkless system with local banks, saving check-preparation and mailing costs and preventing lost or stolen checks.



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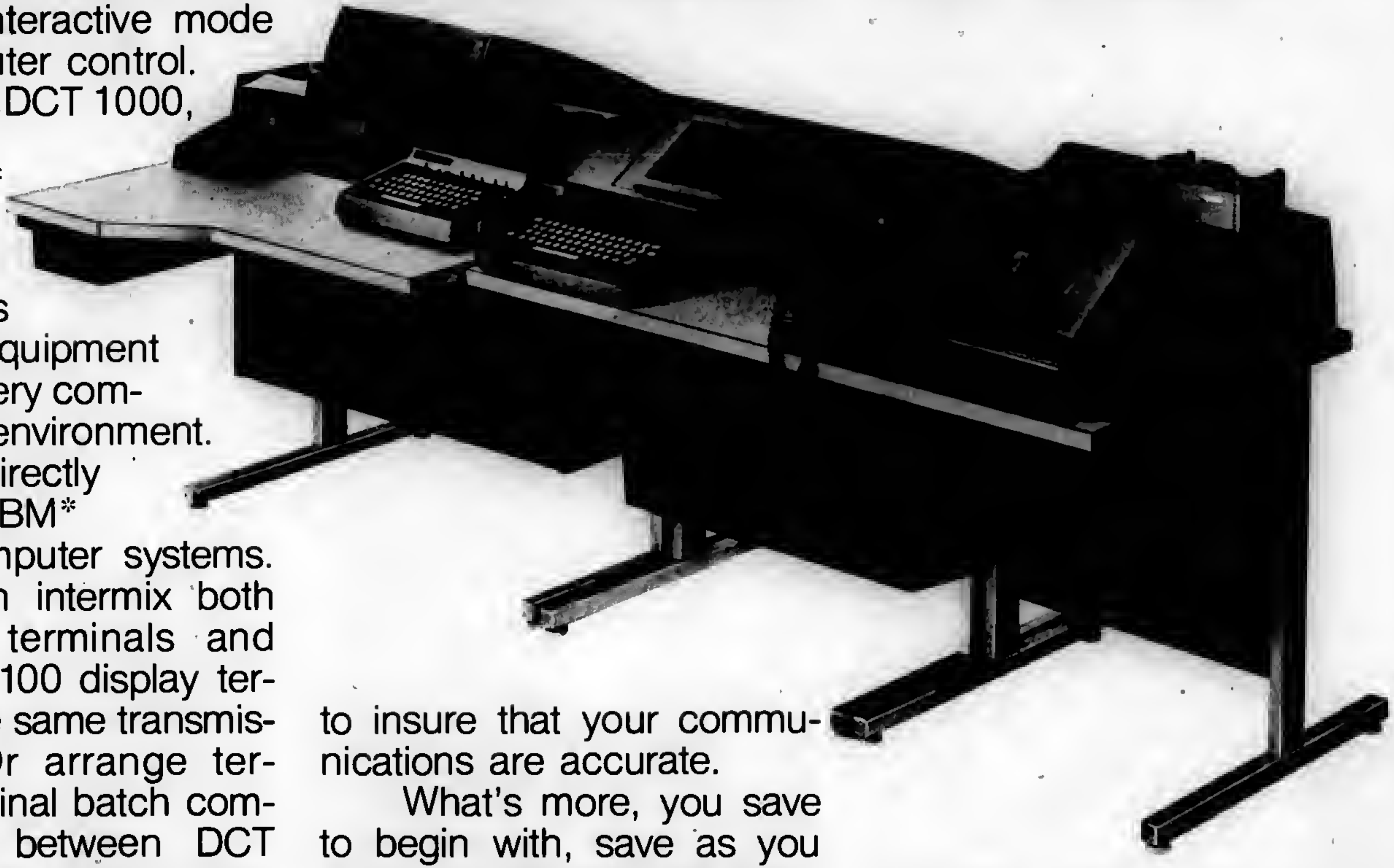

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California Users, Vendors Still Wonder

No One's Certain About Software Tax Interpretation

By Marvin Smalheiser
CW Correspondent

LOS ANGELES – The crisis last year over the taxing of software in California appears to be returning to plague computer users, hardware and software companies and tax officials.

Emergency legislation enacted late last spring to exempt certain software from taxation has subsequently been interpreted by state tax officials in a way that has some computer users and companies wondering whether the tax exemption has been neutralized.

At least one state association, the Western Electronics Manufacturers Association (Wema), has begun drafting legislation to eliminate or minimize the taxation of computer programs in the state.

Several users and software companies are already predicting that the issue will eventually have to be decided in the courts.

At the heart of the matter is whether software is tangible, personal property and thus taxable as personal property.

And if it is, as the state contends, then how is its value established?

The issue in California is cited as crucial nationally and related to the recent Supreme Court ruling that software constitutes ideas and is therefore unpatentable.

1970 Preeedent?

Opponents of a software tax have been quick to cite the Supreme Court case and the 1970 District of Columbia case in which software was ruled intangible and exempt from *ad valorem* taxation.

In California, legislation sponsored by Assemblyman Joseph A. Gonsalves (D-La Mirada) was thought to exempt most software for 1972 and 1973.

But at a recent hearing in San Diego on future software legislation, according to testimony the law has been interpreted in such a way that significantly alters the original concept of the exemption.

Jim Case, president of Dylakor Computer Systems, testifying on behalf of Wema, urged that the state legislature should enact a statute exempting all software from property taxation.

At the very least, Wema said, the current law should be extended as is, with a more equitable definition of basic operational programs.

The current law states that basic operational programs are taxable because they "are like law books or other standard reference books and have value which is measurable."

The definition of basic operational programs was left to the state Board of Equalization (BOE) which decided they are computer programs which are "fundamental and necessary to the functioning of a computer."

Application programs were not considered as basic operational programs, but computer industry representatives have argued that the line between the two is fuzzy at best and unworkable for tax purposes.

Another source of dispute is a related BOE rule which says that software is tangible property and is subject to property taxation in the same manner as other tangible property.

Both rulings have prompted vigorous opposition from Wema, which feels computer programs are ideas and thus not taxable. It claims the definition is ambiguous.

Ronald B. Welch, the BOE's assistant executive secretary for property taxes, said he was disappointed by the opposition since he felt major efforts had been taken to work out difficulties with computer experts beforehand.

"We have done the best we could. A complete and unmistakable definition of basic operational programs is virtually impossible," Welch said.

The BOE, Welch said, would like to see the present law extended for three years "as is" until the problems can be studied further.

But the California Manufacturers Association (CMA) and several aerospace companies have sought to clarify the situation.

William B. Sprague, assistant treasurer and director of taxation for the CMA, said the group wants to eliminate all tax provisions affecting in-house software programs.

According to L.W. Haire, corporate director of Computer and Communications Planning for Lockheed Aircraft Corp., Burbank, "The whole field of software is such a morass of intangibles we don't think you can ever write a law that can define it reasonably well."

John Bennett, vice-president of information services for Transamerica Corp., Los Angeles, said he doesn't see how an assessor can establish the value of programs.

"They are in a continual state of change . . . some are well done, some poorly done."

Evan Linick of Informatics, Sherman Oaks, Calif., a software house, said the way in which the BOE has worded its rulings will "cause us a lot of confusion. People won't know what to do."

Lester L. Kilpatrick, president of Calcomp, said it is "dangerous when taxing agencies start taxing intangibles and value is so much a matter of opinion."

Software, he noted, is so intangible, so difficult to interpret, it causes confusion.

Orange County, like most of the counties in the state, has been taxing bundled software. But it has also assessed and taxed as personal property the application programs created by Calcomp for the past three years.

Jack Vallerga, Orange County assessor, said the county is keeping an open mind on the taxing of software.

"We're not making a decision until the March lien date," he said.

More Trouble Ahead?

MIAMI BEACH – The winter conference of the Association of Data Processing Service Organizations (Adapso) has been warned that states may turn to taxation of software in their search for new tax bases.

Paul Rosenthal, chairman of Adapso's California Software Tax Committee, told the conference that the California experience could foreshadow actions of the taxation authorities in other states. He suggested that the data processing industry must be prepared to testify in its own behalf on short notice at statewide taxation hearings or face serious financial consequences.

The California experience, Rosenthal said, was valuable since the very real possibility existed that companies would move their business to other states where no software taxation is in effect.

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News Wrapup

Computer Aids Police In Hit-Run Search

DETROIT – A computer in a state office is helping local police track down a car suspected of being involved in a hit-run accident here recently. Witnesses told the police the car's license number contained the letter "F" and the numbers "6" and "1." This information was fed into the computer in the registration section of the secretary of state's office. The computer came up with 4,400 registrations.

Inspector James Martin, head of the Detroit accident prevention section, said they have narrowed the list down somewhat but it may take a month to check out all the possibilities.

He indicated the car described by witnesses may not have been the only car involved in the accident which killed a family of five.

N.Y. OTB Hopes Amtote Will Triple Phone Accounts

NEW YORK – The final award of the off-track betting contract to American Totalisator Co. [CW, Feb. 7] had some additional benefits for the telephone accounts branch of the Off-Track Betting Corp.

Anticipating increased flexibility with the Amtote system, OTB hopes to triple the number of accounts handled by telephone, said Sid Gross of the special projects and telephone accounts office.

Formerly, Gross said, telephone bettors had to wait two days until deposited money was credited to their accounts. Now it only takes an hour; the bettor can make a wager the same day he deposits his money.

Under the old system, a potential bettor needed $25 to open a telephone account; now he needs only the traditional $2.

"We presently have 22,500 telephone accounts," he added, "and can handle another 40,000 bettors."

Produce Growers Produce

DURHAM, N.H. – Vegetable and fruit growers who wish to make the most of the New Hampshire produce market can receive computerized assistance from the University of New Hampshire here.

Using a portable terminal and his own retrieval system, Dr. Sherrill B. Nott, economist in farm management, supplies growers with information about the volume of produce consumed by towns, cities and counties. He helps them plan how to capture the portion of the market which they can profitably supply and helps them estimate crop budgets.

Consumption data and sales patterns are available for 28 fruits and vegetables.

Some of the factors involved in Nott's analysis are the number of suitable acres available to the grower, costs of raising various crops and the profit margin based on the estimated market price.

Pourquoi est-ce que je dois changer de langue? Il m'a pris dix ans pour apprendre celle-ci.

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(Why is EDP getting more and more expensive?)

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Editorial

Helping Oneself

The success of the Government's suit against IBM will partly depend on evidence of what are alleged to be illegal or anticompetitive marketing practices on the part of IBM.

If such practices do in fact exist, as the department alleges, then users should be the ones most affected by them and therefore should have the most knowledge of the practices.

Users who feel IBM is a monopoly which has used its market power to injure them can therefore do something about it.

They can inform the Justice Department of instances where they feel they have been injured by illegal or pressure marketing tactics.

If in fact IBM has been a monopoly and has been charging high prices because of this position, then users can collect damages for the amount extra they have been charged.

By helping the government, users might also be helping themselves.

'Now that we've selected a new computer, can we have the DP department's recommendation by the 15th, Hoskins?'

Letters to the Editor

About That VS Support — It May Not All Be So Good

IBM's announcement of VS support on its Series 370 provides interesting food for thought.

The alleged reasons for providing this enhanced capability are to make more efficient use of core memory, provide better utilization of the system resources and relieve the programmer of the burden of controlling the size of programs to fit in available memory.

What is thus likely to happen is that users will be tempted to upgrade to a 370 configuration to take advantage of these virtual enhancements. This could be a costly error.

It may well be that the new models offering VS support will provide more efficient use of the system resources, but it is also possible that a reduction in performance may result.

Unless careful control is exercised on virtual operation, a degradation in performance could easily result from excessive paging (thrashing) and cycles of activation/deactivation.

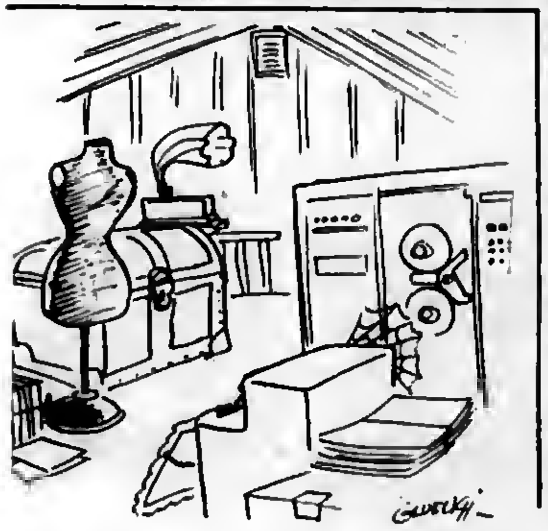
The programmer's task may become more complicated, for now programs must be carefully structured in order to fully realize the benefits of virtual operation. JCL has increased, significantly adding to the programmer's burden.

The operator's task has also become more complex and it is likely that more operators will be needed to ensure the smooth running of the system.

Without doubt, the announcement of VS support will have an adverse effect on those companies producing software now provided by the DOS/OS "standard" VS system. The need to add core memory may also diminish for users of VS systems.

Only time will reveal IBM's true intention of reducing constraints imposed by system hardware by offering virtual storage to the DP industry.

Jagjit Singh
San Francisco, Calif.



Why Not Take Some Time For Honest Self-Evaluation?

J.T. Rigo's letter regarding the CDP [CW, Jan. 24] is the same old, tired argument offered by many people in many fields for many years. I'm sure the accounting field, CPAs and the insurance actuary society had their problems when they attempted to have individuals in the field prove their professionalism.

Those who are privileged to wear the CDP key can say, "At some time in my career, I voluntarily submitted myself to a measure of my professionalism." Those who have not sat for the CDP can scoff and sneer just as the blacksmiths did who were convinced the automobile was not here to stay.

Since my first exposure to computers, in 1946, I've seen a lot of so-called hot-shot professionals; many who were hot in the sixties are mighty cold today.

Maybe if they had taken a little time for honest self-evaluation and submitted themselves to a test of their degree of professionalism, we in the industry wouldn't be submitted to much of the justified criticism we receive today.

C.W. Davies Jr., CDP
El Paso, Texas

Young DP Professionals Very Socially Concerned

Regarding Richard Fyfe's Jan. 24 "Viewpoint" article:

First of all, while it is true that the data processing industry has been a leader in allowing the entry of minority group personnel into its ranks, the majority of user organizations continues to demonstrate a lack of courage in its middle- and upper-level management selection.

This is true, not only in Joseph Rigo's "rockhide-bound" banking industry where, incidentally, tremendous strides have been made, particularly in the huge New York City institutions, but of virtually all major industry groups. Certainly all of us in the DP industry must accept the challenge and responsibility for that situation.

Secondly, Fyfe asks: "Since when is it the responsibility of a particular profession to take upon itself social challenge?" My question is, "Is he really proposing that we leave the social challenges to the sociologists, lawyers and politicians?" The rationalization that we are merely "responsible for handling and analyzing data, . . . not the cause . . . ," conjures up some thinking of the early 1940s that is downright frightening to me!

Finally, I would say in our firm's experience we have found the young DP professional to be highly motivated by social concern. What is even more encouraging is the willingness to articulate that concern where it affects them most – in their careers and pocketbook.

James B. Webber
Asst. to the President
The Berton Group, Inc.
New York, N.Y.

'How Things Really Are'

Imagine what went through the mind of the judge who, having learned of the IBM-directed destruction of the CDC data base, read the following IBM advertisement in a news magazine:

"No one can take the ultimate weight of decision-making off of your shoulders. But the more you know about how things really are, the lighter the burden will be. IBM. Not just data, reality."

Stanley R. Zegel
Cedar Rapids, Iowa

'More Power to the 360!'

I found the Jan. 31 supplement on "The 360 Lives On" quite interesting and informative, and consistent with data I obtained in a recent study, i.e.:

	Performance Ratios	
	Computerworld	Littrell
360/30	1.00	1.00
360/40	1.25	1.30
370/135	1.69	1.60
370/145	1.75	1.70

In reference to the article by E. Drake Lundell Jr., even at IBM prices the 360/50 is only about 5% below the 370/145 in terms of price/performance.

R. Fred Littrell, Programming Mgr.
Division of Management
Information Systems
State Board of Education
Raleigh, N.C.

The article quoted a leasing company executive who probably atated the most ideal comparison.. But you apparently agree users should consider a 360/50 before acquiring a 370/145. Ed.

Filling In the Holes

I recently came across an article on the front page of the Jan. 24 issue on "370/115 Expected – at Under $7,000/Mo." The article interests me and my company very much.

I was unsuccessful in obtaining any information from IBM regarding this subject. Would you elaborate on this matter?

Anthony Chianese
DP Manager
AAA Trucking Corp.
Trenton, N.J.

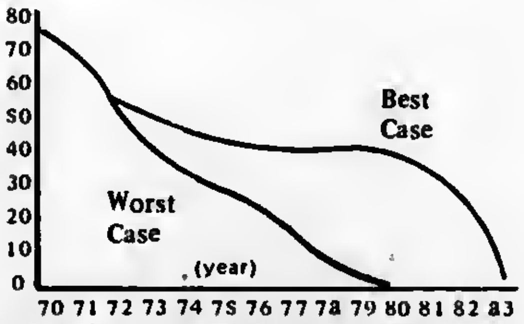
We endeavor to provide users with the best available information from outside sources on equipment expected from IBM. IBM as a matter of policy does not provide information on unannounced products. Ed.

Parenthetically Wrong

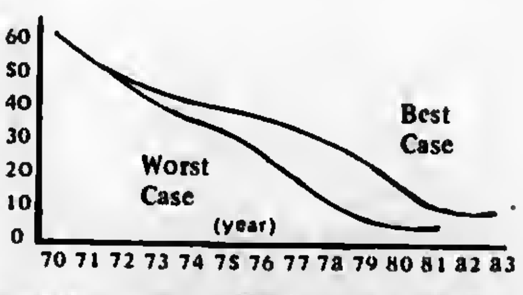
An article on predicted price levels of 360/30s and 40s in the Jan. 31 issue contained two graphs taken from the Readers' Report, part of the Computer Price Guide. The phrase "($ in thousands)" along the ordinate of the graph was added after it left our office. This phrase completely destroys the meaning of the graphs, since the trend lines represent percentage of list price over time, and not actual dollars over time.

William P. Hegan
President
Time Brokers, Inc.
Elmsford, N.Y.

The graphs are reproduced here correctly. Ed.



Forecast of 360/40 Price Levels Expressed as a Percentage of List Price – 1973 to 1983



Forecast of 360/30 Price Levels Expressed as a Percentage of List Price – 1973 to 1983

'Greatest Opportunity Ever'

Computer Foundation Can Bring Order to DP Profession

The plan for the Computer Foundation released recently by DPMA's John Swearingen and ACM's Fred Harris represents the greatest opportunity ever given to a growing profession to establish order in the profession.

The Taylor Report

By

Alan Taylor, CDP

If we DPers do not succeed in straightening ourselves out with this plan, supported as it is by our two largest professional organizations, I shall be most disappointed.

But I believe we will succeed, and the historical dates of the establishment of the Certification & Testing Advisory Committee (C&TAC), the Swearingen & Harris proposal, and the successful incorporation of the foundation under broad-based control will be to data processing professionalism what the 1952 Census Bureau's installation of the first Univac machine was to computer hardware.

Our first thoughts must be to express our gratitude to those whose actions over the past years have made this opportunity possible. To DPMA and ACM leaders for melding the ideas of two such different organizations into a common policy. . . To the members of the C&TAC, who laid down some of the major principles. All need to be thanked by word, but even more important and long-lasting, by action.

It is the actions of the data processing profession during the next few months that will decide the structure of the Computer Foundation. This structure is being designed to contain not only the certification programs currently being handled by DPMA, but certification of practitioners in other areas.

It is being designed to handle precertification research on certification criteria. It is also being designed to handle the research into data processing standards.

In general, the foundation is going to be designed to handle the most important professional activities.

Unique Opportunity

In other technical professions such as engineering, such opportunities for collaborative work have either never occurred, or if they have occurred, have not been accepted. Engineers are now acustomed to dealing with numerous bodies each running their own programs.

As Dave Goldman, a friend of mine who serves on some of the professional engineering societies said recently: "No one is prepared to stop what they are doing, so we just cannot get them together."

His is a very understandable attitude and one which is defensible. Each of the various engineering areas does have its own needs and its own responsibilities which only its practitioners really understand.

The language the different areas speak and the items they discuss may be the same, but the related responsibilities they have may be as different as a discussion of diagnostics between a compiler designer, and an on-line systems shift-leader. Under the C&TAC concept this disparity in professional outlooks will be managed by providing the various societies with their own equal voices.

I cannot pretend that everyone likes this method. Frankly, some members of the Society of Certified Data Processors have told me they think a foundation whose primary immediate activity is carrying on the CDP program should give a much stronger voice to the CDP holders than to other societies.

I see the CDPers' point and, as far as these particular programs are concerned, some stronger voice for the particular society may well be warranted, but only in the particular program.

What is really important is the profession. The profession of data processing, in all its diversity, is much bigger than any single program – even one as outstanding as the CDP. In the Computer Foundation program all professionals can be interested and active.

The time to be professional is now and the way to do it is to support the professional society or association of your choice, telling them what you want your profession to be.

There are many societies, but some which have already indicated support of the foundation project are listed in the adjacent table, together with brief details of membership qualifications and interests. At the top of the list you will find the two societies, ACM and DPMA, who have started the ball rolling. Following them are the societies who are now ready to pick it up.

I suggest you look over the list, make up your mind about which you feel can most represent your professional interests, and join today if you are not already a member.

Don't forget to make whatever comments on how you want your profession organized. The societies certainly need your support, and can profit from your opinions on how this great opportunity should be exploited.

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Professional Groups Support Foundation

The following professional societies have expressed support for the Computer Foundation.

Data Processing Management Association

Membership open to data processing professionals and those in associated occupations, with some restrictions. Annual national dues $25, local dues $5-$25.

Association for Computing Machinery

Membership open to college graduates and those with 5 years DP experience. Annual dues $35, no local dues.

Association of Computer Programmers & Analysts

Membership open to programmers and analysts. National dues $15-$35.

Society of Certified Data Processors

Membership open to CDP holders. Annual dues $20.

Society of Data Educators

Membership open to data processing teachers, and those interested in data processing education. Annual dues $12.

Society of Professional Data Processors

Membership open to practicing data processors and data processing instructors. Annual dues $20.

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Churches Will Work on Ethical Issues

About one month ago I suggested in this column that technically competent people might like to volunteer for service on committees to advise various religious groups on the existence of ethical problems, such as privacy, in the data processing area.

Most of the comments received stated what their particular denomination was and that the respondant would be happy to serve on committees warning of data processing dangers.

Altogether, nearly two dozen denominations now have people available who can advise them on the technical problems involved in computer ethical standards. These include: United Pentacostal, Roman Catholic, Conservative Baptist, United Methodist, Episcopalian, Southern Baptist, Religious Society of Friends, Evangelical Free Church, Christian Church Brotherhood, United Church of Christ, Buddhist, American Baptist, Presbyterian, Christian Scientist, Baptist, Lutheran (Mo-Synod) Unitarian, Assembly of God, Unitarian/Universalist, Reform Jewish, International Church of Four Square Gospel, Plymouth Brethern and United Pentacostal.

More volunteers in these and other denominations are most welcome. Please send your name to Alan Taylor, c/o Computerworld, 797 Washington St., Newton, Mass. 02160.

Some Reader Comments

"I am aware that the Dec. 22 Taylor column is concerned primarily with areas in standards and the public interest.

The Readers Respond

"However, as in the case where American Express Credit Card holders are represented by the American Express Co., the churches themselves may have computer systems in their backgrounds of which the congregations know nothing.

"Large denominations such as the Roman Catholics and Mormons are extensively involved in private enterprises. Local ministers and local congregations would be fine for this service; bishops and higher I would not trust with the service" – Felix A. Beiner, Riverdale, Ill., project manager, Roman Catholic.

"Will work on committee or research and write up results" – Sidney W. Frost, San Antonio, Texas, criminal justice consultant, Episcopalian.

"I am a certified director of Christian education" – B. Frank Mattes, Wooster, Ohio, DP instructor, United Methodist Church.

"Willing to help all denominations as I consider us all brothers in Christ" – William A. Pease Jr., Charles Heights, S.C., senior programmer analyst, Southern Baptist.

"I'm not sure I understand all the implications of your article, but I am willing to do what I can do for my church and DP" – M. O. Cantrell, Tyler, Texas, DP manager, Southern Baptist.

"I'm interested in all levels of privacy" – Irvin F. Charpiot, St. Louis, Mo., analyst, Christian Church Brotherhood (Disciples of Christ).

"Will be willing to work on a committee, area of interest is varied; from standards to data use" – Donald R. Diesel, St. Louis, Mo., supervisor/computer specialist, United Church of Christ.

"We at the church have already discussed something like this, but nothing yet existed on paper. Please keep me informed about current status. I would like to help, although my time is somewhat limited" – Norman H. Swirin, Los Angeles, Calif., software programmer, Unitarian/Universalist.

"The prophetic tradition is one of scrutiny of authority and insistence on action for the common good. Count me in" – Norman Weinberg, La Grange, Ill, director of computer services, Reform Jewish.

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Keep IBM Together, Protect User

By Wesley T. Saville

Special to Computerworld

Viewpoint

Break up IBM? Nonsense. From a shortsighted point of view and on the surface it may seem a good idea. But breaking up IBM would hurt the consumers, mainly the ones in the outlying areas of the U.S. and the world. IBM will support and service each and every consumer regardless of location if it has to go via kite. IBM acquired its market through support and service in addition to its well-trained marketing force.

So you will not think I am biased I must point out that at present I have in-house five computers; one large and four medium systems, none of which is IBM.

During my over 20 years in the DP business, however, I have used much IBM equipment. In support, service and knowledgeable intelligent marketing, IBM is far superior to the other manufacturers.

Selling Solutions

What really makes IBM different and number one in the industry is that it sells solutions; it solves problems; it believes it is in business to keep the user in business; it (from top to bottom) works hard to make certain the user is a satisfied customer; its support people are good to outstanding idea people; and, further, it has by far the very best documentation and training in the industry.

IBM is successful because its personnel have the proper attitude of being customer-oriented; in addition, its people who interface with a customer know their jobs from A to Z. It is not IBM's processors which put IBM in first place by a large margin, but its people which include management – i.e., chairman of the board, president, executive vice-presidents and down to the floor sweeper.

I have not mentioned IBM hardware and software mainly because I don't believe it is the heart of the crying that is going on in the industry. There is nothing as great as success which IBM has had from the very beginning of its existence. It is mainly the unsuccessful or not so successful who claw at and resent the highly successful such as IBM.

People and Pride

Most of the computer manufacturers have processors as good as, better than, and far better than IBM's. IBM's processors are good, but not outstanding; however, they will do the job they were meant to do with ease. Again it is IBM's people who put it far ahead in the industry. There is a pride these people have; a pride of being part of IBM, and as a result, this pride drives them to achieve certain standards and goals.

IBM's peripherals are probably the best in the industry; if not, then they are second to no other manufacturer.

Breaking up IBM would be disastrous to the computer industry and the consumer alike. Equipment prices would get out of hand; software prices would go up, support and services would deteriorate because there would be no need for the other companies to try to compete with IBM.

Service and support for the multitude of consumers (users) of computer equipment is a must. IBM's competitors of all kinds are, in desperation, trying to service and support their customers – with most not doing a good job. With IBM split up, the results for non-IBM users would be disastrous and in time the same would be true for every user.

The name of the game is service and support which is done by people, not computer equipment.

People with the proper customer-oriented attitude and pride – that is IBM.

Univac is in fast pursuit of a highly improved image; doggedly and persistently moving toward a strong position in the industry. Its top management is dedicated to building Univac and improving its support and services. Further, it is doing just that in a quiet but forceful manner.

The Univac face is being remolded from within by a strong forceful leader who knows precisely what he is doing; and what's more, he is moving ahead. Not wasting his time over the "wishing well." Univac is competing in the American way of free enterprise; a foundation block of our country.

The "wishing well" crybabies had better step back from the well and go to work.

Wesley T. Saville is president of RN-AAA Co. Inc., Chicago.

Police Aim to Buffalo Crime

BUFFALO, N.Y. – This city's newest police department unit – Preventative Patrol – is directed by a computer.

The unit consists of 20 patrol cars financed by federal funds. The computer determines the high risk areas – where and when robberies, burglaries, assaults or auto thefts are most likely to occur – and assigns the cars accordingly.

The unit recorded its first success recently with the arrest of three Rochester residents on drug charges.

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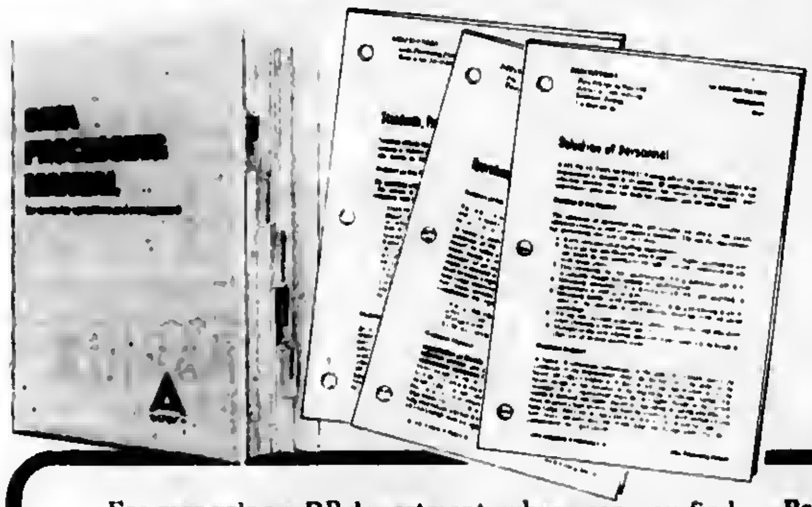

For managing a DP department, where can you find this kind of practical help organized in one place:

- **Guidelines for budgeting and cost control**
- **How to convert smoothly**
- **When to start documentation and its cost**
- **How to prepare correct clauses for purchases or lease contracts?**

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Random Notes

Beloit 'Foresight' Version Lets Users Play 'What If?'

BELOIT, Wis. – An enhanced version of the Foresight financial modeling system is now operational through the Beloit Computer Co. BCC/ATS remote terminal computer system.

All business situations that can be expressed by a combination of lines and columns of data can be processed by BCC/Foresight, the company said. The system includes a statistical analysis capability allowing "what if" testing of possible actions. Beloit service is available through much of the Northeast and Middle West, from One St. Lawrence Ave., 53511.

New Round of Upgrades Planned For Series 70 VMOS, TDOS, DOS

CINNAMINSON, N.J. – Shortly after the release of TDOS-22 – the seventh update of operating system software made available to Series 70 users in the one year Univac has had the old RCA user base – the company announced its plans for the next round of improvements.

VMOS-10, including support for new tape and disk subsystems and better catalog management and space allocation, is to be ready in September. TDOS-22A, planned for August release, will permit 13 concurrent application programs. DOS-16 should include dynamic allocation of disk space. It will be ready in November.

Bonds, Coupons Validated

NEW YORK – Financial accounting agencies can validate bonds and coupons submitted for payment, and monitor which envelopes of expired bonds can be destroyed safely, with the Automated Coupon Paying/Cremation System from Franklin Computer Associates.

The system checks incoming items against stop orders and the possibility of duplicate numbers, as well as basic issue identification. A full range of management reports is included in this $25,000 package, which is written in Cobol and runs in 100K bytes under OS/360-370. Franklin is at 80 Pine St., 10005.

Engineers Can Air Their Needs

SYRACUSE, N.Y. – Consulting engineers are using teletypewriter links between Carrier Air Conditioning agents and the company's home office to review several alternative selections of equipment proposed by the computer to meet the consultant's specifications.

The proposed equipment lists and supporting information are generated overnight at Carrier's offices and sent out so the engineer has the data within 24 hours of his original request. The company is in the Carrier Tower, P.O. Box 1000, 13201.

Cobol Climax ***Basic Begins?***

PL/I, Fortran Standards Shaping Up

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – With the public comment period on the revised Cobol draft standard ended this week, there have been few enough comments so that American National Standards Institute (Ansi) Technical Committee X3J4 Chairman Robert Kearney of Bell Labs foresees the final draft going out for letter ballot and approval this summer.

But Cobol isn't the only language being subjected to standardization procedures this year. A revised Fortran, updating the original 1966 standard, is expected to be ready for public comment by the end of July, according to X3J3 Chairman Frank Engel, an independent consultant.

PL/I Under Scrutiny

An original standard for PL/I – only now beginning to emerge from its IBM-only image – is being developed jointly by Ansi and by a technical committee of the European Computer Manufacturers Association (Ecma). The work is on schedule: an international draft standard should be completed and a public comment period started by the end of the year, X3J1 Chairman Mike Marcotty reported from General Motors Research Labs.

The possibility of starting formal standardization of Basic is still under study for Ansi's Standards Planning and Requirements Committee (Sparc) by an ad hoc group headed by Prof. Thomas Kurtz of Dartmouth, one of the codevelopers of the language.

Comments on the Cobol draft ranged from corrections of typographical errors and questions about the meaning of specific sections to substantive points and proposed extensions. The latter can't be handled by X3J4 and are forwarded to the Programming Languages Committee (PLC) of the Conference on Data Systems Languages (Codasyl), Kearney noted.

The most serious problem raised in the comments, he added, concerns the need for a clearer collating sequence/code translation facility. X3J4 has asked PLC to handle this request on a priority basis.

Fortran Late

The Fortran updating should have been done in 1971, Engel admitted, but said the current work includes several enhancements while maintaining compatibility with features and facilities that were part of the earlier standard.

Marcotty's X3J1 committee has based its work on the original specification of PL/I from IBM but, with its European counterpart, is combining the language definition and standardization processes. With Cobol, these are divided between PLC and X3J4.

The PL/I group has published working papers (entitled Basis/1) and version 8 is available in limited quantities. Marcotty is reluctant, however, to send copies to anyone except the seriously interested compiler builder, for example, who might be able to contribute to the project.

Consideration of standardization for Basic was first proposed about two years ago by Prof. J.A.N. Lee of the University of Massachusetts. The Kurtz-led ad hoc committee is expected to approve the concept of a standard Basic, but its report has not yet been received, according to X3 Secretary Robert Brown, director of standards for the Computer and Business Equipment Manufacturers Association.

Inventory Recordkeeping Linked To Other Accounting Operations

BIRMINGHAM, Ala. – Corporations with multiple units reporting at the division or lower levels can systematize reports on parts, supplies and finished goods, and link these functions with other accounting operations, through the Inventory Recordkeeping System from Computer Wares, Inc.

The package is part of the Computer Wares Automated Total System (Cats) which supports the buildup of various interrelated applications – including accounts receivable and general ledger – around a Cats master controller/scheduler program.

Cats-I/R maintains perpetual inventory records for a large number of high- or low-value items, with an accuracy and low cost that cannot be matched by manual operations, the company said. After editing input transactions and printing an error list, the system prepares a daily transaction list showing beginning and ending balances of all changed items.

Order File Created

As part of its buildup of historic data, Cats-I/R creates a purchase order file and will generate appropriate purchase orders as stock of individual items drops below predetermined reorder points. The system also monitors fulfilling of issued POs, so that management can concentrate on exception situations.

Periodic Inventory Status Reports show on-hand, on-order, order point, order quantity, vendor number cost and promised delivery period for each item supposed to be in stock.

The printout can be even more detailed for each item; at the same time, the report can be limited to just active or just inactive items.

Working through the Cats Master controller, the Cats-I/R user can update his receivable and general ledger records, for example, as automatic byproducts of his work in inventory.

Cats-I/R and the master program, distributed as part of the inventory system, are designed to run on 360/370 equipment in 32K under DOS or OS. The package is available for $5,000 under a perpetual license agreement, or for $175/mo under annual lease arrangements.

Computer Wares Inc. can be reached through P.O. Box 31205, 35222.

'TIC-1' Puts DP Library On-Line

MOHAWK, N.Y. – There is, by the nature of what they are trying to do, a similarity among all tape library control packages, but Advanced Digital Systems' Tape Inventory Control software (TIC-1) differs from most, according to the developer, by being an on-line system.

The files used by TIC-1 are updated by control blocks within OS/360 as tapes are requested and dispatched. The status of any given tape is available not only through fairly conventional reports, but in response to inquiries from the computer console or a remote terminal.

There is no limitation on label types supported by TIC-1. Non-standard labels, non-label and bypass label situations are handled on a file maintenance or console key-in basis.

Additions, changes or deletions can be made by the operator to supplement data gathered by the operating system itself, and the operator can work through either the card reader or a console key-in.

At the other end of the control cycle from data gathering and inquiry capabilities, TIC-1 includes an automatic dump of the disk-based master files to tape, for backup protection. This facility and the corresponding restore operation are, again, available to the user through a console key-in, ADS explained.

The management-type reports generated by TIC-1 include a job setup list and a tape release list along with a tape status report.

TIC-1 operates through any of the OS/360 options – MFT, MVT or VS – requiring between 9K bytes with the simpler systems and 17K bytes with the more complex.

The standard TIC-1 package costs $6,000 and delivery is in 90 days from ADS at 146 West Main St., or P.O. Drawer D, 13407.

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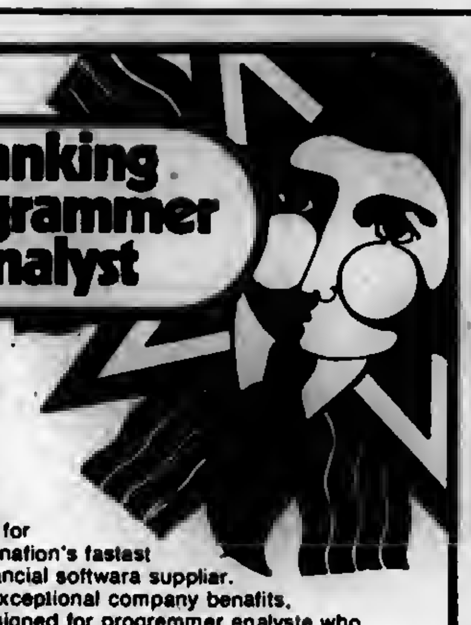

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For 'Multics' Only

HIS Unbundles Some Software, Training

WELLESLEY, Mass. – A Honeywell spokesman has confirmed that most of the language processors, and all of the training related to the Multics system [CW, Jan. 24] carry price tags of their own, apart from the $3.5 million minimum cost of the 6180-based hardware/software Multics configuration itself.

Only the Multics operating system and the PL/I compiler system are bundled into the hardware system price. Everything else costs something, a departure from previous pricing policy, the company admitted.

The unbundling applies only to Multics, however, since it is a specialized system and likely to have a very select user base. Each potential user has different requirements, Honeywell said, and "it would be unreasonable to expect him to incur the cost of features he will not use."

Software and education for all other Honeywell systems continue to be fully bundled and the company has no plans to alter that position, a spokesman added.

Multics is expected to support Fortran, APL and Cobol, as well as PL/1, the source code of the Multics software. Fortran and APL will cost the user $350/mo.

A limited "single-segment" Cobol compiler will rent for $100/mo under the Multics unbundling while a full "native mode" implementation of the business language will carry the same $350/mo tag as Fortran and APL.

System features available separately include support for standard GCOS under Multics ($500/mo); remote job entry ($150/mo) and commercial file systems ($110/mo).

Multics-related training from Honeywell includes an introductory course which will cost the user $225/student, and a fundamentals offering, for $525/student. The next step, an intermediate course, is priced at $900/student, while an advanced curriculum carries a $2,250 ticket.

The courses will range from three to 10 weeks, depending on the subject and the user's requirements. The training program is being managed by Honeywell's Phoenix offices, and the first classes will start this month in Cambridge, Mass., a spokesman noted.

PL/1 training for Multics is to be offered for $700/student. A course dealing with generic Fortran problems will be available without cost, but a class keyed to Multics-oriented specifics will cost $80/student.

Manuals for use in these courses will be separately priced, and charges apparently will be made for CPU time if the training is done at Honeywell site.

The company apparently will provide any of this training at the user site provided at least 10 students are enrolled in each course, and the user pays the instructors' travel expenses. Extra students, beyond the initial 10, may attend for $25/student.

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'Cips' Puts Many Files Into On-Line CIF

SCHILLER PARK, Ill. – DOS/360 banking users can now mesh multiple, conventional single application files into a centralized information file (CIF) for cross-application use, with the Customer Information and Processing System (Cips) software from Weiland Computing Group Inc. (WCG).

Key to the system, according to WCG, is the Cips data base, a multipurpose file that combines all descriptive data and account relationships for each customer into a single record. Any type of data can be stored in any format in this file, a company spokesman said, without concern for actual record layouts. Cross-referencing between the data-base records and accounting master files provides for retrieval of complete customer information from either direction, he noted.

The data base can be accessed from on-line terminals by name, any application account number or alpha-key, or from the batch or integrated application programs being run off-line.

Another module, the Cips Framework, includes logic and support for the Cips data base and application programs.

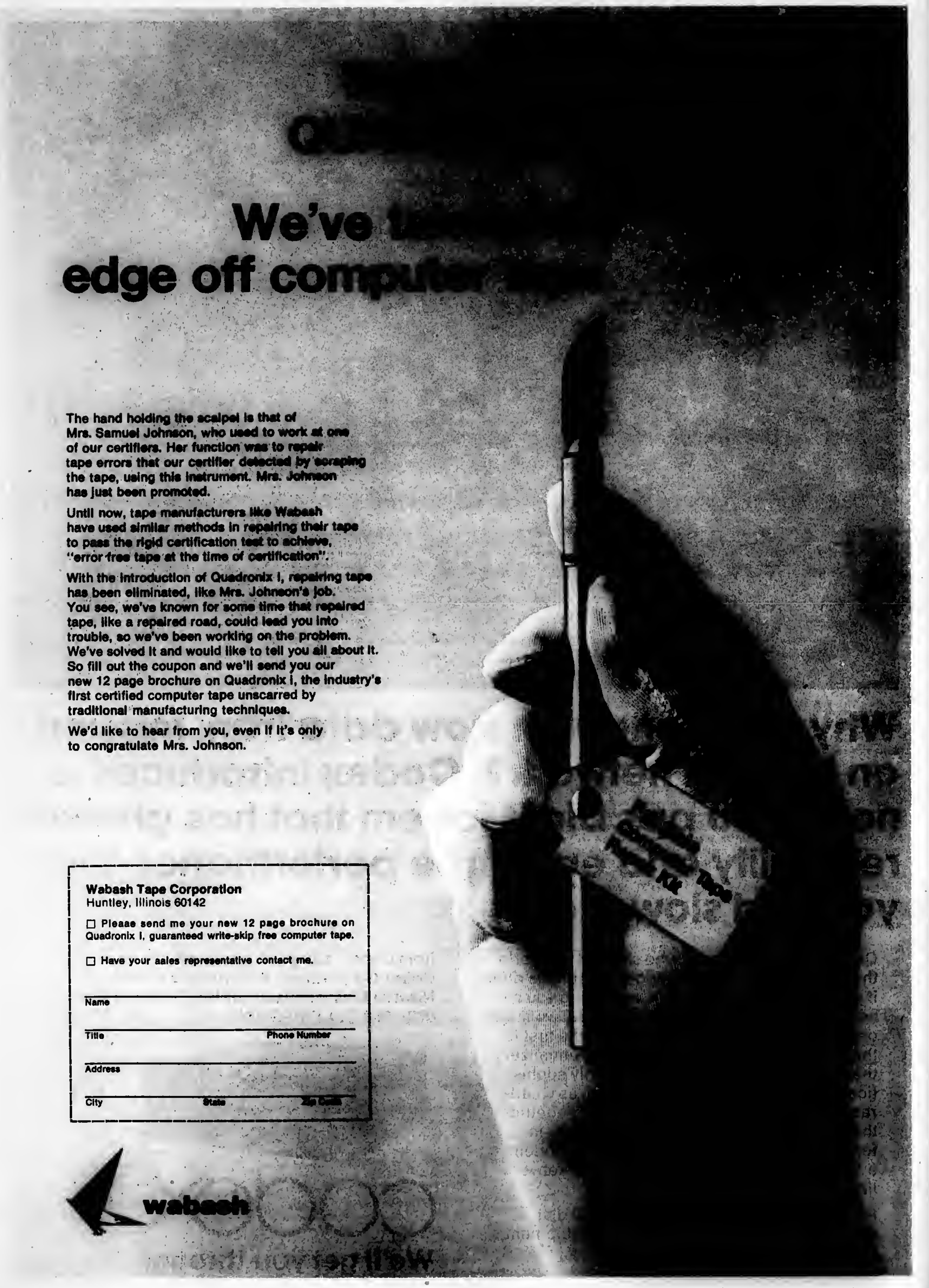
'Multiple Use Programming'

Non-monetary processing of the framework is done through "multiple use programming": root phase programs for maintenance, Edit, Sort and Update with application overlays. Other facilities include system control record generation, a master file reorganizing procedure and various utility routines.

The Cips On-Line Support System uses IBM's Customer Information Control System (CICS) line control conventions.

The minimum system – Cips Framework – is available on a permanent lease plan for $20,000. The On-Line Support System may cost from $10,000 to $20,000 more, ACG said.

The company is at 4825 North Scott St., 60175.



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Data Briefs

Data Services Report Lists TTY-Mini Interfaces

MAHWAH, N.J. – Western Union Data Services Co. has a technical report describing TTY interfaces for minicomputers, card readers, plotters and other DP equipment.

The interfaces can be used with Data Services Model 33 and 35 TTYs and the company's version of the GE Terminet 300. The interfaces add from $1 to $10/mo to equipment rentals from Data Services depending on configuration, the company said.

Data Services is at 16 McKee Drive, 07430.

Multiple Modems Aid Cluster Use

RALEIGH, N.C. – The Comware Division of Terminal Communications, Inc. has a multiple modem package for clustered applications.

The CW-120 unit provides mounting for up to 12 modems compatible with Bell 202-type data sets. It includes a redundant power system.

The CW-120 is equipped with control switches for analog and digital loop-back testing and power system monitor lamps.

Cost for the mounting rack or cabinet is $660; each modem costs $472. Terminal Communications is at 3301 Terminal Drive, 27611.

ACT Speeds Terminal for T/S Use

NEW YORK – Advanced Timesharing Applications, a division of Advanced Computer Techniques Corp., is making available a high-speed terminal to timesharing users on an as-needed basis.

Service is provided on ACT's MDS 2400 terminal, manufactured by Mohawk Data Sciences, which operates in its own mode or emulates the IBM 2780 for input or output.

Terminal usage is $24/hr, exclusive of T/S vendor fees. ATA is at 437 Madison Ave, 10022.

Bank Welcomes Electronic 'Tellers'

HOLYOKE, Mass. – Community Savings Bank recently became one of the first financial institutions to install NCR 270 electronic teller terminals.

The bank installed four of the on-line data terminals which will be linked over telephone lines to a Century 200. The terminals will be used to process depositor transactions and to update accounts.

GTE Offers Modem Rental

WHITE PLAINS, N.Y. – GTE Information Systems has a 12-month rental plan for its 103/300 modem line.

Costs run $12.75/mo for the acoustic coupler mudel and $89/mo for a 10-data set/master station configuration. GTE is at 4 Corporate Park Drive, 10604.

TP User Links S/7 to 360 to Poll Net

DP, Instrumentation Applications Handled

NORTON, Mass. – Fernandes Super Markets, a chain of 31 food stores and warehouses, has interfaced a System/7 with its 360/22 to handle both DP and instrumentation applications on one system.

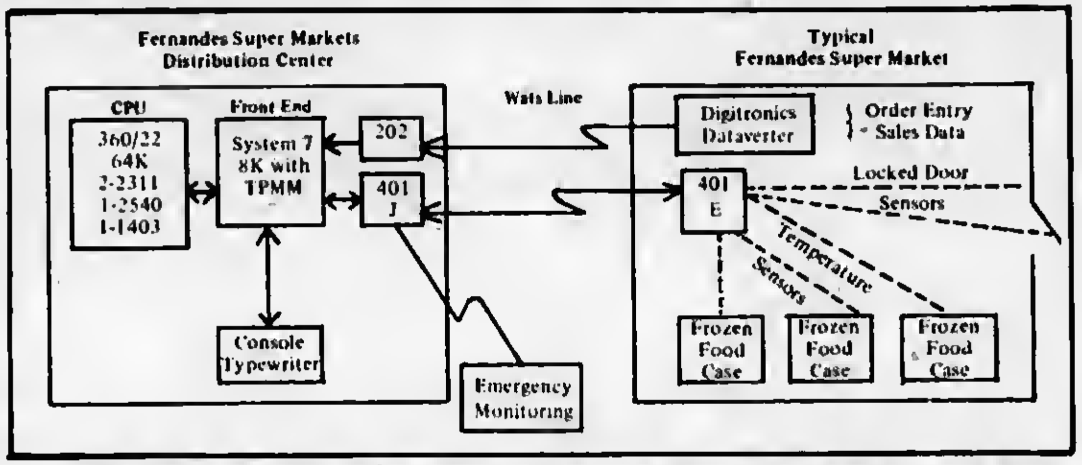
The company had a 360/30, according to Joseph G. McDonald, DP manager, and IBM recommended an upgrade to a 370/125. But instead, Fernandes installed a Model 22 because it had the "selector channel and storage protect features that we wanted," McDonald said. The storage protect was needed for a multiprogramming capability, he said.

The S/7 was interfaced with the Model 22 using the IBM Teleprocessing Multiplexing Module (TPMM), which is available as an RPQ with the S/7, the user said.

In addition to providing an interface to the 360, the TPMM also allows the front end to poll the Fernandes markets to collect orders and information on the previous day's sales.

Each store uses a Digitronics Dataverter to assemble data on tape for later transmission to the central DP site. "Each store has an appointed time when they call into the S/7," McDonald explained. A store order of 1,000 items can be transmitted within the basic three-minute dial-up phone rate, he said.

If the S/7 is ready to accept data, the operator at the store acoustically couples the Dataverter to the phone and the contents of the tape are transmitted to the DP center at 1,200 bit/sec.



System processes business data and also monitors cold storage and locked doors.

In Norton the data is received through a Bell 202C data set and entered into the 8K S/7. From there it is entered into the 360 when files are updated, or as needed, McDonald said.

The S/7 will also be used to monitor the condition of cold storage lockers during nighttime hours when these facilities are unattended, McDonald said. The S/7 will poll a temperature sensor in each store at least once every two hours to be sure the perishable items are being kept at the proper temperature.

The S/7 will also act as watchman for the chain's stores. Sensors will be attached to all doors when the stores and warehouses close each evening. Any unauthorized opening of a locked facility will immediately send an alarm signal to the S/7 which will then print out a warning message on its console, McDonald said.

The sensors have not yet been installed, but they will probably be supplied by independent vendors. The 360/22 and the S/7 are leased from IBM, but the mainframe has 64K of storage which includes a 32K add-on from Cambridge Memories, McDonald said.

The Model 22 costs about $1,500/mo and the S/7 costs about $1,700/mo including $320/mo for the TPMM, McDonald said.

Interface '73 Set

DALLAS – A three-day conference for data communications users will be held here March 6-8 for communications managers, DP managers and others interested in teleprocessing.

The Data Communications Interface '73 Conference will include sessions within such specific application areas as manufacturing, banking, retailing, wholesaling and computer services.

Details about Data Communications Interface '73 are available from the conference manager, Datacomm Interface Inc., 181 South Franklin Ave., Valley Stream, N.Y. 11581.

Analysis-Part II

New Networks May Aid Smaller Users

By Ronald A. Frank

Of the CW Staff

WASHINGTON, D.C. – The would-be value-added network companies led by Packet Communications Inc. (PCI), which has already applied for Federal Communications Commission approval, have some significant advantages they feel will benefit the teleprocessing user. They point to the much more efficient utilization of wideband facilities they can get by configuring a packet-switched network.

They compare this with private-line networks which often are used only a small percentage of the time by their users. And they point to the network economies they can offer the small user who today cannot justify the cost of a private net and must rely on dial-up facilities.

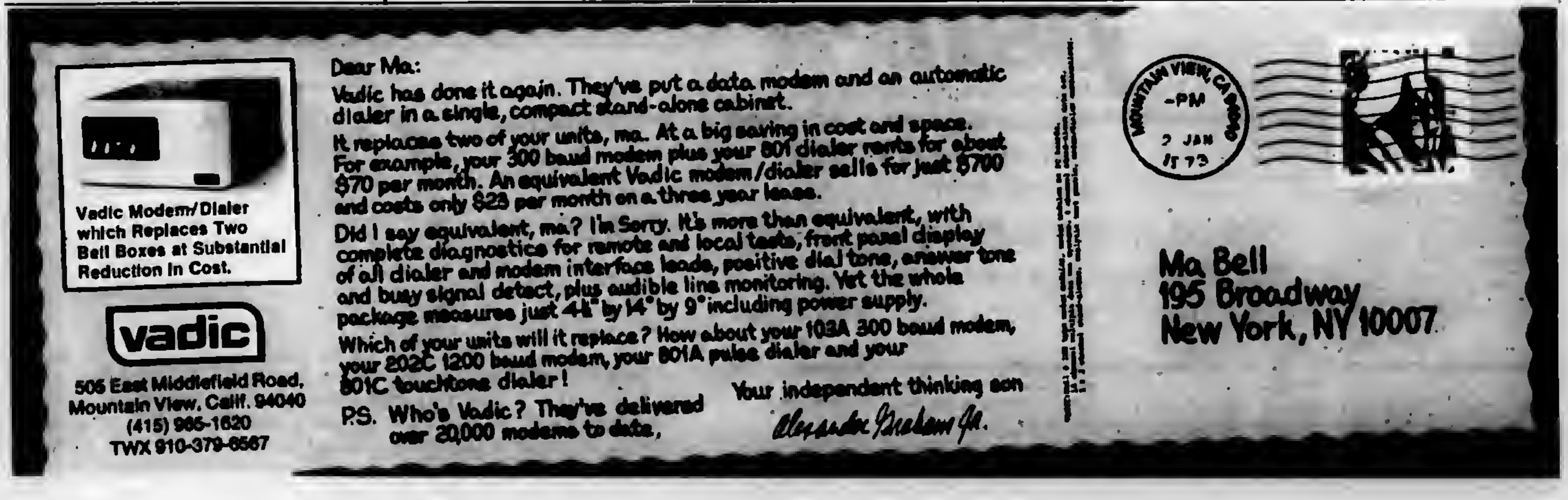
While the concepts of the value-added contenders appear promising to potential users, some observers are skeptical. They point out the Advanced Research Projects Agency (Arpa) net is losing money even with the benefit of its Department of Defense discount on lines. And many of the universities operating their CPUs on the Arpanet admit that operating delays and other problems have kept the government system from running as efficiently as originally planned.

There are presently 30 CPUs of various types operating on the Arpanet. PCI estimates it will begin to make money when it has 100 CPUs on its network. PCI thinks that goal will be reached by 1975 (assuming FCC approval).

Even if AT&T gives PCI, and others that follow, its blessings, observers feel other carriers, especially Western Union, will object to the value-added networks. And the specialized carriers who are also interested in serving the private-line user could also object.

Perhaps the most significant and optimistic comment was made by a spokesman for Tymshare, a company that is already providing time-sharing and other services to its network subscribers. "We have no problem with the PCI filing. We believe in the future of value-added network service as a new industry, and we have been operating a similar service for about a year with our Tymnet system. Any steps to strengthen this concept will solidify this new industry," according to Max Beere, director of telecommunications systems for Tymshare Inc.

It remains to be seen how the FCC will consider the PCI filing and who will object to its proposed services. But all those concerned hope a lengthy regulatory proceeding can be avoided.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Did I say equivalent, ma? I'm Sorry. It's more than equivalent, with complete diagnostics for remote and local tests, front panel display of all dialer and modem interface leads, positive dial tone, answer tone and busy signal detect, plus audible line monitoring. Yet the whole package measures just 4½" by 14" by 9" including power supply.

Which of your units will it replace? How about your 103A 300 baud modem, your 202C 1200 baud modem, your 801A pulse dialer and your 801C touchtone dialer!

Your independent thinking son
Alexander Graham Jr.

P.S. Who's Vadic? They've delivered over 20,000 modems to date.

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User Learns to Program in 30 Minutes, Then Firm Cuts Inventory by $500,000

NEW ORLEANS – Metal Service Corp. has reduced its inventory level by more than $500,000 with a small computer that the firm's president said he learned to program in 30 minutes.

A significant feature of the system is the computer's ability to scan the inventory status of the 4,000 items in stock daily, ordering only those needed for the immediate future and eliminating unprofitable lines, President Jack Ellis said.

"In the past, we had to check individual card records for each inventory item. It took four weeks to complete an inventory check, and we frequently were not able to reconcile some areas.

"We simply couldn't complete the inventory review fast enough manually, so we had to order as much as six months out ahead with no precise idea of our needs," he explained.

Metal Service is also using the computer to keep a running tally of profit margins for each inventory item.

"There's no price book in our area," Ellis added. "Everything we sell is almost an auction-type transaction, so each salesman must know just how far he can negotiate and still meet our profit targets.

"Our people now have the benefit of computer-produced information, updated daily, that gives not only the current and replacement cost of each product but also advises them precisely of their standings against monthly sales targets, expressed in terms both of dollars and tonnages.

The Small Systems User

A study of work standards and job labor costs will be the firm's next computer project.

Ellis said his firm's use of an in-house computer is unique among single-plant steel service centers.

"When we first started in the business in 1968, I didn't think we were big enough to have our own computer – or maybe I didn't think there was a computer small enough for a company our size. We used outside DP services for a couple of years. But information simply wasn't available as we needed it so we looked into getting our own system."

"The monthly cost of the IBM System/3 is about $400 lower than fees we formerly paid for outside services," said Fillmore J. Delaup, vice-president of finance, "and our administrative expenses have been reduced $500 a month despite a 20% rise in sales.

Who Needs a Programmer?

"I see no reason for a business our size to have a full-time programmer," Delaup said. "We worked with two IBM systems engineers in developing our programs, and now there are three of us – who had never used a computer – who can write just about any program we might need."

Ellis and Delaup modified an IBM program called Optim (Order Point Technique for Inventory Management) in developing their initial programming.

"People have recently told me it takes a lot of training and experience to write computer programs," Delaup commented. "But we didn't know any better, so we just went right ahead."

"It's fun," said Ellis. "I recently wrote my son that I'm working on my golf game and playing with my computer."

Small User Helps Youth Find Identity

CINCINNATI – A small computer is helping a company whose product is "servicing the growing identity crisis under way today, particularly among young people," noted Richard Moser, president of Velva Sheen.

Moser's product is silk-screened or sewn decals, letters, names and other images on more than five million T-shirts and other outerwear.

"The computer gives us greater flexibility in responding to orders, regardless of size, and expediting the production," Moser stated.

With 20,000 active customers ordering an average of $100 to $200 per day, the company said it processes from 400 to 500 invoices a day.

All Needs Served

Such volume also necessitates maintaining sufficient inventory to serve the short-term and long-range production needs of the company, he added.

When an order is received, the information is keypunched onto a card about the size of a credit card. The card is then fed into the S/3 which is programmed to produce picking orders and invoices. It updates inventory on the basis of materials needed to fill the order, Moser explained.

The system also handles a variety of financial support functions, including analysis of sales by each salesman and according to items sold by geographic area.

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Quantor will be displaying a fully operational 105 off-line microfiche recorder/processor. The Quantor 105 converts computer output tapes to finished microfiche in one rapid operation. It delivers cut, dried microfiche ready to display or duplicate. The 105 contains its own automated photo development lab. Also displayed will be Quantor microfilm viewers.

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Penril's 4800B-1 modem pictured above has been selected by the U.S. Internal Revenue Service for use in its nationwide data communications network.

Bits & Pieces

CDC Unveils Add-On Memory for 370 Users

MINNEAPOLIS – Control Data Corp. has introduced a group of interchangeable monolithic memory units for IBM System 370 computers.

The 33100 Series Main Memory Systems are available for IBM 370 models 135 through 168 and range in storage capacity from 49K to over 4M bytes of on-line memory, the firm's spokesman said.

Present users of 370 processors can use the 331000 Series, priced an average of 15% below the cost of IBM mainframe memory, to increase capacities up to and beyond the IBM limits, the spokesman said.

Monthly lease price for CDC add-on units ranges from $695/mo (for a 370/135 with 48K bytes of memory) to $4,330/mo (models 155 and 165 with 512K bytes) on a two-year lease.

Purchase prices for these units are $33,100 and $198,000, respectively.

Availability by mainframe model is: 370/155, February 1973; 165, March; 145, June; 135, August; 158, December; and 168, February 1974.

Time Card Punched Automatically

MOUNTAIN LAKES, N.J. – A unit to automate the keypunching of time card data is available from Datron Equipment.

In a typical example, employees entering a company would insert a standard 80-column tab card into the Model 401 Automatic Keypunching Time Recorder to generate a three- to seven-digit time and data record – in hours and 1/100ths of hours – immediately ready for computer processing, the firm's spokesman said.

The Model 401 can be rented on a 90-day trial basis and/or purchased for $1,859 from 100 Rt. 46, 07046.

For a Cleaner, Brighter Disk

PALOS VERDES PENINSULA, Calif. – The Randomex Model 335 automatic disk pack cleaner cleans 1316, 2316 and 3336 type packs in a five-minute cycle, according to the firm's spokesman.

It removes more than 97% of the contaminants from disk surfaces and will not damage data stored on the pack, he maintained.

The unit costs $3,750 with leasing arrangements possible from 27303 Warrior Drive 90274.

Centronics Printer, U-100 Connect

HUDSON, N.H. – The Centronics Uniscope 100 interface allows Univac U-100 CRT Terminal users to connect any Centronics printer directly to the terminal.

Up to eight printers can be daisy-chained with printer locations up to 200 feet from a U-100 terminal or any device on a U-100 auxiliary interface, he said.

The $415 Centronics interface is available from One Wall St., 03051.

IBM Increases Memory, Disk Support

•Doubles Memory On Larger 370s

WHITE PLAINS, N.Y. – IBM has unveiled main memories for its 370/145, 370/158 and 370/168 models which allow users to double previous maximums in each case.

Main memory for the 370/158 has been increased to over 4M characters – or 8M characters for the multiprocessing version of the Model 158 [CW, Feb. 7].

The 370/168 has been increased to more than 8M characters – or 16M characters for the multiprocessing version.

New versions for main memory of the 370/145 bring main memory capacity to over 1M character.

Monthly rental for the new Model 158 central processing units will be $47,300 with 3,077K characters and $52,500 with 4,096K characters, Purchase prices will be $2,238,700 and $2,468,500.

Monthly rental for the new Model 168 central processing units will range from $81,625 with 5,120K characters to $97,225 with 8,192K characters. Purchase prices will range from $3,869,500 to $4,558,900.

First customer shipments for both new models are scheduled to begin in March 1974.

Monthly rental for the new Model 145 central processing units will range from $14,055 with 256K characters to $21,955 with 1,024K characters. Purchase prices will range from $674,640 to $1,053,800. First customer shipments are scheduled for June.

•Doubles Disk Drives For 135 and Up

WHITE PLAINS, N.Y. – IBM has announced new features for the 3330 disk system which allows 370 users – Model 135 and up – to double the number of drives they can support on any single attachment.

To have this doubling capability, the user's IBM CPU must be able to support OS, OS/VS1 or OS/VS2.

The features include:

- A string switch allowing a 3333 disk storage and control and its associated 3330 disk storage drives to be switched dynamically under program control between two attachments.
- The 32-drive expansion feature permitting four 3333s and their associated 3330 disk storage units – up to 32 drives – to be controlled by a single direct-access attachment.
- Remote switch attachment for attaching of the 3333 string switch to the configuration control panel of the new 158MP (multiprocessor) or 168MP.

The 32-drive expansion feature operates under OS, OS/VS1 and OS/VS2. The 3333 string switch feature is supported by the same operating systems supporting the 3830 storage control. The remote switch attachment requires no programming support.

Prices for the 3333 string switch are $170/mo under the extended-term plan and $200 and $8,000 for monthly rental and purchase respectively.

There is no charge for the 32-drive expansion feature, but it requires a control store extension in the 3330 disk controller, available at a monthly rental ranging from $300 to $500 and costing between $14,400 and $28,800.

There is no charge for the remote switch attachment.

All features are field-installable with initial deliveries and field installation of the 3333 string-switch feature and 32-drive expansion feature scheduled for August 1973 for attaching to models 145, 158 and 168.

Deliveries for attaching to the 135 are set for October 1973 with general field installation to begin in November.

Remote switching will be available with initial delivery of all new 158MP and 168MP systems.

Interface Modules Offered PDP-11 Users

MAYNARD, Mass. – Digital Equipment Corp. has introduced two I/O interfaces for PDP-11 users which permit interfacing digital voltmeters, multimeters and other similar remotely programmable instruments.

The M1623 works from the processor out, generating signals to control the operation of these devices, a spokesman said.

The M1621 works in the other direction, transferring data and status information from a voltmeter, multimeter or similar device into a PDP-11 minicomputer under interrupt or program I/O control.

This interface allows the computer to monitor the equipment readings at periodic intervals or upon demand. The device contains all the bus drivers, and multiplex and interrupt logic necessary to accept 34 bits of TTL-level information and transfer this information to the computer's Unibus.

Cost of the M1623 is $150, and $125 for the M1621 with delivery off-the-shelf.

HIS Enhances 6030s and 6040s

By Michael Weinstein
Of the CW Staff

WELLESLEY HILLS, Mass. – Honeywell Information Systems has announced memory expansion and "fail-soft" protection enhancements for models 6030/6040 computers.

Both enhancements were previously available only on the top-of-the-line models in the HIS Series 6000.

The 6030 and 6040 are designed for use in multidimensional business/scientific batch transactions, time-sharing processing and multiprogramming applications with the 6040 including an extended instruction set for faster processing speed of Cobol-written programs, the firm's spokesman said.

Doubling System Memory

Memory capability can be expanded to a maximum of 1M byte (262K words) on both models, which is twice the previous capacity, the spokesman said.

This memory upgrade is available on all new installations and is optional on presently installed models, he said.

Memory which operates at 1.2 μsec cycle time with a 36-bit word structure can be increased in two increments of 262K bytes (65K words) from the previous maximum of 524K bytes (131K words), to reach the new maximum of 1M byte, he said.

Monthly rental on a five-year lease ranges from $10,054 to $21,850 for the Model 6030 and from $11,288 to $23,000 for the Model 6040.

Honeywell uses the term "fail-soft" to define a system with at least two of every system module. The failure of any one module – or one of every type of module – still leaves the user with an operating computer system, the spokesman asserted.

The entire configuration is controlled by a single operating system – General Comprehensive Operating System (GCOS), the spokesman added.

GCOS allows the system to continue to operate by moving processing functions away from the faulty module and through the backup.

This concept also allows on-line testing of modules: one module can be removed for diagnostics while the system continues to operate using the other identical module, the spokesman said.

A complete system includes two of the standard models 6030 or 6040. Each has a processor, a system controller, an IOM, memory ranging from 262K bytes to 524K bytes and associated parts and connecting cables. Maximum system memory is 1M byte, the spokesman said.

Unlike a "dual" arrangement that has two distinct systems, this is actually one large system with multiple components – all of which are used at all times.

A given program might have either processor working on it from one instant to the next, he explained.

Monthly rental on a three-year lease for the minimum fail-soft systems starts at $31,400 for the Model 6030 and $34,000 for the Model 6040.

First deliveries are expected by the end of 1973 for fail-soft systems.

An 1800-line-per-minute run for your money.

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1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
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12 Communications/Printing/Publ.
13 Other:________________

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03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:________________

2. Please check the appropriate city:

____ Boston	Feb. 13-15 (Tues, Wed, Thur)	Sheraton-Boston Hotel
____ Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
____ New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
797 Washington Street
Newton, Mass. 02160

For additional registrations, copy this form – or write for extra copies.

SPACE SAVER

FOR THE 1973 COMPUTER USERS' FORUM & EXPOSITION – The National Computer Conference that's coming to you.

If you're interested in more efficient EDP operations, then you should be reserving your space right now for The Computer Caravan/73 Users' Forums. This unique program will soon be in a city near you – with shirtsleeve workshops, panel discussions, user-oriented experts, and an exchange of information that will benefit you and your company.

Each day of the three-day show will feature a different topic. You'll be able to air your problems, and learn how others have solved theirs. You'll ask questions, give opinions – and get answers. And you'll come out of the Forum with some new ideas on making your EDP operation more efficient.

FORUM TOPICS

Day 1 – Data Entry
Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 – Communications
Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management
Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Forum Attendance is limited
In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

'City, County Urged to Share'

By a CW Staff Writer

FORT COLLINS, Colo. – City and county governments should forget their political and personal differences and share a common computer facility, according to the local county commissioner.

With the mountains of data to be processed by any government agency, William Manuel feels "computerization is a must, even for routine work. But because of the insular attitudes among agencies, each usually goes its own way for data processing."

'Separate but Identical'

In attacking the costly "separate but identical work practices," Manuel noted, "tax records, real estate transactions, law enforcement reporting, departmental inventories and payrolls are just a few areas of processing common to most city and county governments.

"For example, once a program is running on the city computer, all the county has to do is add its own particular figures to substantially cut the cost of programming an outside machine for the same batch processing."

To put this philosophy into action, Larimer County acquired a PDP-10 to meet the internal needs of the county and worked successfully to convince city and nearby counties that they could profitably use the shared processor, Manuel stated.

"We can point to terrific time and money savings in about every category of the computer's use," he said.

"On our welfare enrollment of about 3,500, the computer keeps up-to-date records on all those eligible, breaking down personal and social factors for the benefit of caseworkers, and issues monthly financial reports and writes all checks, figuring deductions for food stamps.

Everyone's Happy!

"Before we used the computer, welfare recipients would receive their checks, then come in and wait in long lines to buy their food stamps. Now that the computer can calculate food stamp deductions before writing the checks, these people get their food stamps without having to come in here. They are happy; we are happy. And the computer does all this in about 10 minutes – it would take two people several days to accomplish the same chore with far less accuracy."

Similar Improvements are cited in the handling of motor vehicle titles, property transactions and inventory and payroll.

"In the past, when property changed hands, the transaction was entered by hand into county records. We were getting about 150 transactions per day, so when a person wanted to check the record for a property transaction, he had to know the day that record was entered, because we could not alphabetize the records by hand.

"If he didn't know the date of the transaction, it could take weeks of poring over the books to find what he was looking for. Some people, the unlucky ones, simply never found the transaction they wanted," he stressed.

"Now thanks to the computer, the county clerk's office can alphabetically update transactions every six months under three cross-references: reception date; grantor name; and grantee name.

The computer can now print out the time, record page number, fees, buyer and seller of any property transaction requested.

On a typical working day the Decsystem-10 is processing clerk and recorder business, utility billing updates, welfare rolls and county assessor records for Larimer County. On a typical school day starting this fall, the computer will additionally be used for math instruction by remote terminals at local high schools.

Convinced that the Larimer computer can save money for other city and county governments in the same fashion, Manuel will go to the administrative bodies with impressive results in his efforts to centralized computing resources.

"Our purpose in the long term," he says, "is to keep our operating costs 25% less than those of outside bureaus."

PDP-15 Add-On Allows Multiple Requests

LEXINGTON, Mass. – Dimensional Systems, Inc. has introduced a Multi-Port option to its DMS-15 Add-on Core Memory for the DEC PDP-15 computer.

Allowing up to four "users," the Multi-Port option accepts memory address requests from the various "controllers" and maps these addresses to a pre-determined block of memory. If two requests are received simultaneously, access is granted to the port with the highest assigned priority.

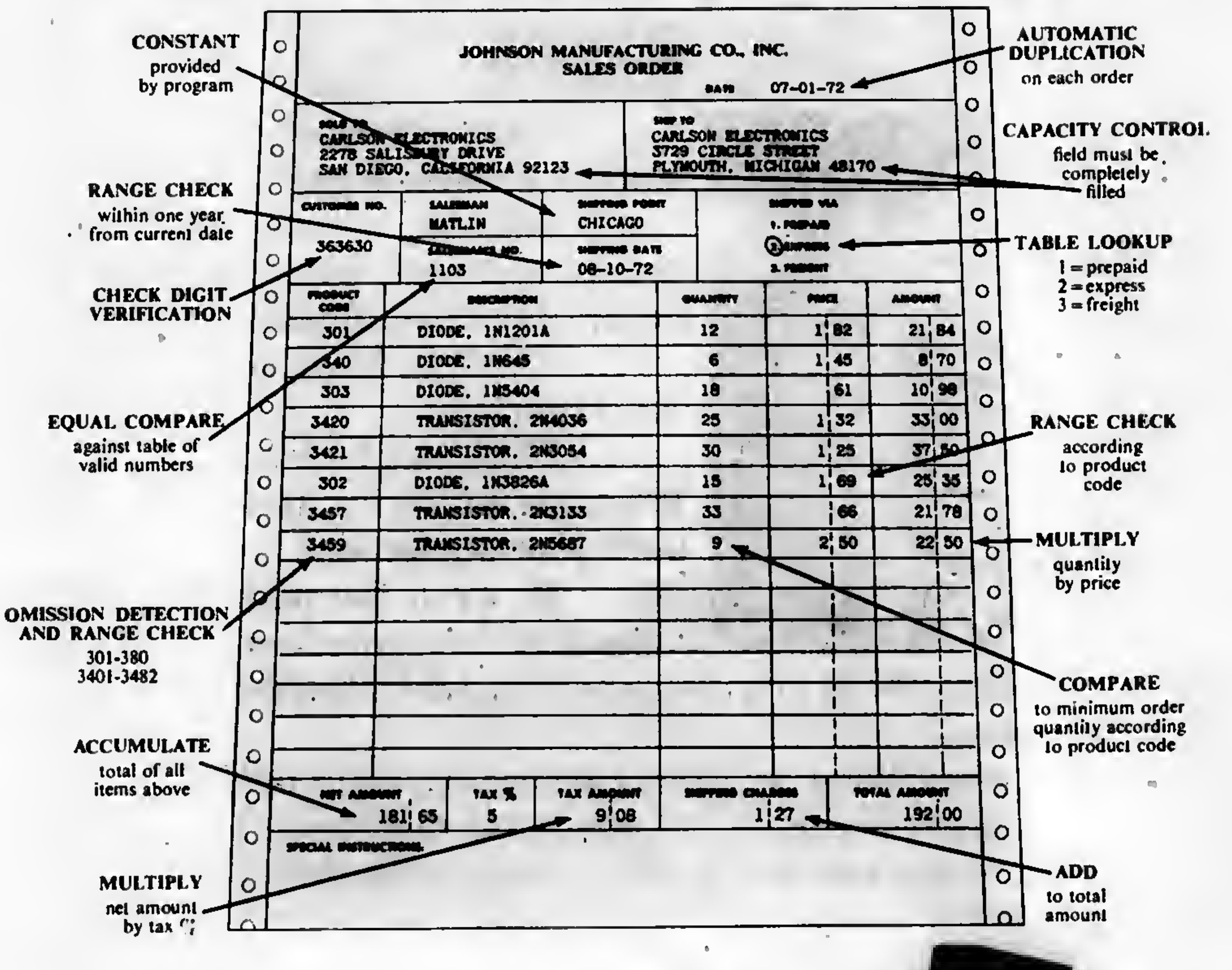
The system operates on an interlocked request/grant basis and has the ability to address up to 128K of core without additional hardware. It is completely compatible with the CPU and all peripherals.

By allowing more than one memory address to be simultaneously active, the Multi-Port option, coupled with the DMS-15 core memory provides a modular method of increasing the total memory bandwidth of the computing system. Cost is $4,000 from 31 Hartwell Ave.

Why you should go to the Computer Caravan.

The new iomates. See all 13 in Boston, Feb. 13-15.

HERE'S WHY THE SYCOR 340 IS SO POPULAR FOR ORDER ENTRY.



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303	DIODE, 1N5404	18	61	10 98
3420	TRANSISTOR, 2N4036	25	1 32	33 00
3421	TRANSISTOR, 2N3054	30	1 25	37 50
302	DIODE, 1N3826A	15	1 69	25 35
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The Sycor 340 Intelligent Communications Terminal.

Three MDS Print Stations Enable Off-Line Operations

UTICA, N.Y. – Mohawk Data Sciences (MDS) has added three models to the low end of its line of off-line print stations.

A print station – as defined by MDS – is composed of a printer tied to a read-only tape drive so users can create tapes on-line, load them at the print stations and perform all printing off-line.

The units differ from previously offered off-line print stations in that the printer is slower – 900 line/min compared to 1,250 line/min – and the price has been reduced about 30% for the newer units.

Two Units Lock User In

The 7160-2 and 9160-2 print stations are connected to read-only 7- and 9-channel MDS magnetic tape units respectively.

The 7-channel drive handles tapes recorded at 200- or 556 bit/in. while the 9-channel unit is designed for 800 bit/in. tape.

When a user orders either of these units, MDS will modify the units to read tape produced by his processor – e.g., IBM, HIS, etc., the spokesman said.

Once set for a specified computer system, the user cannot have his print stations changed to handle tape produced by another vendor's equipment, the spokesman stated.

Both drum printers feature 160 horizontal print position capability and 64-char. IBM A/H print drum – IBM 1403 standard.

One Unit for All Mainframes

The MDS 7160-2 is equipped with an IBM A code converter, and the 9160 with an IBM S/360 code converter, the spokesman added.

In addition, optional features are available for code and verticle format command compatibility to allow the user to use these units in facilities built around mainframes from manufacturers other than IBM, he asserted.

The 2501-2 is a programmable print station which is essentially the same as the 7160-2 and 9160-2 except that 4K bytes of memory are included.

The unit can thus be programmed to handle a wide variety of tape formats to serve the multivendor computer user, the spokesman said.

The 2501-2 reads magnetic tape in densities from 200- through 1,600 bit/in.

The 7160-2 and 9160-2 cost $30,000 and $32,000 respectively with monthly rental and maintenance at $880.

The 2501-2 ranges in price from $43,000 to $47,000 depending on which of the four magnetic tape units is employed.

Rental and maintenance prices range from $1,200 to $1,360/mo. All inquiries are directed to corporate headquarters, Box 362, 13503.

Mag Tape Stripper Takes It Off

WOODLAND HILLS, Calif. – A magnetic tape stripper that removes and destructs up to the first 1,200 feet of a tape on a reel is offered by Data Products Inc.

Cutting away the front portion of a tape increases reliability by disposing of the most used portion of the reel, the firm's spokesman said.

Due to the nature of programming, the first 1,000 feet of tape are normally used on a continuous basis in the read/write operation. However, basic economies dictate that tape be purchased in 2,400-foot reels, he explained.

To optimize the use of the entire tape, the Tape Stripper is used on a periodic basis to remove 100 feet or more, he continued.

Previously this operation was done by hand and took 10 times as long, the spokesman added.

Price of the unit is $890 from 6219 De Soto Ave., 91364.

Miss E.D. Pea (alias Joie Bishop) (left) and Miss Maggie Tape (alias Fran Sinatra) welcome a new stripper (alias Magnetic Tape Stripper) at the Pink Pussy Cat in Los Angeles.

I/O Interface Board Offered Nova Users

ORANGE, Calif. – A general-purpose I/O interface board for Data General minicomputer users, available from MDB Systems, contains all necessary circuitry to connect the user's logic to the I/O bus of any Nova series mini, the firm's spokesman said.

The I/O logic board provides for mounting up to 105, 14- and/or 16-pin wire-wrap sockets – 60% more than the comparable Data General board – with allowances for mounting 24- to 40-pin sockets, the spokesman stated.

In addition to the basic circuitry to interface to the I/O bus, the user has the option of up to four 16-bit registers with byte packing and unpacking. Other options are a data channel interface and counter logic for zero word count detection, he added.

Price of the basic board is $250 without pins and sockets. Delivery is from stock from 981 N. Main St., 92667.

Unit Recreates Paper Tape Over Phone Lines

SAN GABRIEL, Calif. – Two stand-alone paper tape transmitters from Addmaster Corp. allow users to transmit and recreate paper tape over telephone lines.

The Models 606 (parallel) and 608 (serial, RS232) incorporate their own power supplies with controls for forward/reverse and user-specified 10-, 15-, 30-, 60- or 120 char./sec asynchronous operations, the firm's spokesman stated.

Both units operate with 5-, 6-, 7- or 8-level tape in standard widths in fanfold or reel.

An RS232 interface allows the user to plug directly into a modem or in some cases the I/O port of a computer. The parallel interface is compatible with most minicomputers, the spokesman asserted.

Single unit cost for the Model 606 is $496 with the Model 608 selling for $605. Volume discounts are available. The firm is at 416 Junipero Serra Drive, 91776.

A lot of companies have inventors. But only one communications company has Bell Labs.

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Societies/ User Groups

'Approaches, Techniques'

Compcon: Networks and Networks and...

SAN FRANCISCO – Compcon 73, the Seventh Annual IEEE Computer Society International Conference Feb. 27-March 1, will be dedicated entirely to examining networks.

"We wish to present a total picture of networks now in existence or under construction. The aims, experiences and problems encountered should be part of this picture," said Chairman Sidney Fernbach, head of the computation department at Livermore Laboratory.

"Failures or near successes should be recorded, as well as successes. We want to be up-to-date, but avoid paper studies. The major topics of interest are approaches and techniques tried enough to be evaluated," he observed.

Back to Class

A special one-day tutorial on Monday is designed for those who feel their knowledge of networks needs some updating on the essentials, he noted. The presentation will cover introduction to networks, data communications, teleprocessing computers, software issues, telecommunication network analysis and design and future directions. Enrollment in the tutorial is separate.

Concurrent sessions and panels are scheduled for Wednesday and Thursday.

The keynote address Tuesday will be given by Dr. Ruth Davis, director of the Institute for Computer Sciences and Technology at the National Bureau of Standards.

Single sessions of "broad topical interest" are scheduled Tuesday, on network viability, network examples and network components and design considerations.

On Wednesday, attendees may select both a session and a panel discussion on network security. Other sessions focus on university-developed networks and legal aspects of networks.

A session on performance in computer communication systems will examine the relationship and trade-offs of parameters such as message traffic, channel characteristics, multiplexing techniques, architecture and communication software.

A panel discussion titled "How Not to Run a Network" will be chaired by Max Beree, Tymshare Corp.

A session on examples in the business community on Thursday morning will give attendees a chance to learn about "Computer Networks for Retail Stores" from Vernon Schatz, Jewel Companies, and "Microprocessor Utilization in Transaction Terminals Nets" from Allen Cuccio, Honeywell Information Systems, Inc.

With advance registration before Feb. 15, the conference fee for IEEE and ACM members is $40, nonmembers $50. Otherwise the fee is $10 more for each category. Student fees are $15. Registration chairman is Ben E. Britt, IBM General Products Division, Department H75/Bldg. 141, Monterey & Cottle Roads, San Jose, Calif. 95114.

The price of the one-day tutorial is $60, which includes luncheon and text materials. More information is available from Joseph P. Fernandez, Manager, Central Scientific Services, IBM Research Division, Department K-01/Bldg. 028, Monterey & Cottle Roads, San Jose, Calif. 95114.

San Francisco Meeting To Delve Into Simulation

SAN FRANCISCO – The newly established Simulation Technical Committee of the IEEE Computer Society has been formed to address the use of simulation in the development, installation and tuning of computer systems and the use of computers for simulation in other application areas.

Interested professionals may attend the first meeting Feb. 28 at the Jack Tar Hotel here.

Chairman of the group is William T. McClelland, IBM, P.O. Box 100, Kingston, N.Y. 12401.

Gordon Smith Leaves ACM

NEW YORK – The Association for Computing Machinery's executive director, Gordon Smith, has resigned from his post. Irene Hollister is serving as acting executive director.

"During Gordon's term as executive director, ACM has continued to grow in both the quality and quantity of its activities," ACM President Anthony Ralston observed.

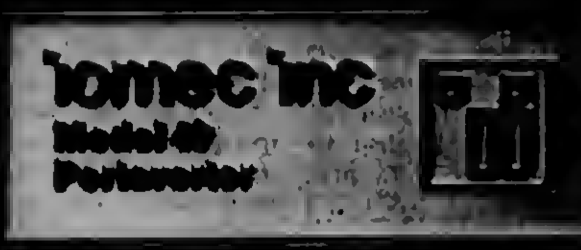
"Among the important new activities begun during his term was the Ombudsman Program in which he has taken a close interest," he added.

Acpa Adds Five to Board

SADDLE BROOK, N.J. – The Association of Computer Programmers and Analysts (Acpa) has elected five new members to its board of directors and named the executive committee.

The executive committee consists of Geoffrey B. Thomas, national chairman; Richard Thomas, vice-chairman; Dianne Halloran, secretary, and James Manley, treasurer.

Why you should go to the Computer Caravan.



The new iomates. See all 13 in Boston, Feb. 13-15.

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ASM Management Seminars to Reach Four Cities

CLEVELAND – A one-day seminar on advanced project management, sponsored in four different cities by the Association for Systems Management (ASM), is directed at managers and other senior staff members working on large-scale projects, and has "limited application to smaller-scale EDP or programming projects," according to ASM sources.

Part of the association's Professional Education Program, the seminar is organized into four sessions, each of which includes a lecture, group discussion, question/answer period and case study material. Taken as a whole, the emphasis is on achieving intended results, on time and within budget, ASM added.

Management in Focus

The program opens with a session on Decision Analysis for Project Management, which attempts to put management in perspective and to spell out the role of the analyst and the decision-maker. The program then considers when to apply decision analysis, the parameters that should be used and the intricacies of decision trees.

Session two delves into project modeling techniques, starting with a review of basic probability and statistics, then considering the strengths and weaknesses of system models. Some time will be spent on Monte Carlo techniques, but the handling of subjective estimates and the analysis of output from various models will also be considered.

The use of forecasting techniques and suggestions on how to gauge probability of success are covered in the session on modeling for time, cost and performance. From there, the participants go into project network analysis and network logic, particularly as it relates to input and output.

Typical Project

The case study is introduced in the third session and the students and instructors spend the remainder of the day analyzing the time, cost and performance factors of what ASM considers a typical project. Finally, through simulation, the participants gain "hands-on" experience in applying the tools and techniques they studied earlier.

The seminars will travel from Greenville, S.C., to Boston, to Des Moines, Iowa, and then to Mansfield, Ohio. In all four cities, the discussions will be led by John M. Cockerham, chairman of his own consulting firm, and Truman W. Howard III, chief, systems and cost analysis department, of the Army's School of Logistics Science, Ft. Lee, Va.

The classes will be held in Greenville, Feb. 19, at the Colonial Quality Court Motel, and in Boston, Feb. 20, at the Sheraton Boston Hotel. The Des Moines stop, Feb. 22, will be at the Holiday Inn as will the Mansfield seminar, on Feb. 23.

The seminars are cosponsored by the ASM chapter in each area, but are open to both ASM members, for $50, and to nonmembers, for $65.

ASM's Education Department is at 24587 Bagley Road, 44138.

Direct Access Filing Covered By Net Courses

NEW YORK – The library of multimedia training courses available to "subscribers" of the Data Processing Education Network (DPEN) has recently been extended in two different directions. New courses include a broad-brush User's Guide to DP Project Management, and a review of the details of Direct Access File Structure and Design.

DPEN is geared to providing specific subject material in courses based on student interaction with a "responsive TV" unit at the user site. Each course is presented on a mix of color video cassettes, audio tapes, student workbooks, pre- and post-course tests and an administrator's guide.

Project Development

The DP Project Management course describes the development of a project and defines the responsibilities of the end user and the DP department in each phase. It is written specifically for the user manager who wants to gain a better understanding of projects using DP. No prior knowledge of DP is required, according to DPEN.

The second course, on the other hand, is an in-depth discussion of the basic direct access devices, file organizations and equipment selection. It also considers the external problems associated with the choice of a file organization and with creation of a file, regardless of which equipment is chosen.

The course is meant for the programmer-analyst with a knowledge of sequential file structure, and now needs information about direct access systems.

DPEN is at 437 Madison Ave., 10022.

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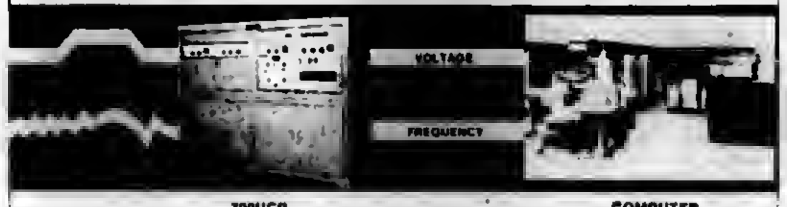

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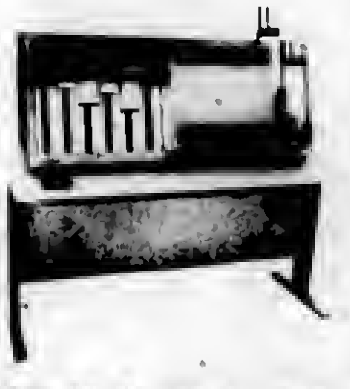

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California to Monitor Illegal Drug Flow With Data From Wholesalers, Druggists

Special to Computerworld

SACRAMENTO, Calif. – The state has begun implementing a computerized system to help halt the flow of illegal barbiturates to street and underground markets.

Operated on a Univac Series 70/45 used by the state Board of Equalization, the system will monitor the flow of drugs into the state and provide alerts if it appears the drugs are being illegally diverted.

A state spokesman said the system, delayed by red tape for almost two years, will receive data from manufacturers and wholesalers as the drugs move to retail and then from some 5,000 pharmacies in the state.

Initial specifications for the data base estimated as many as 19,000 different drugs could be reported, but plans call for reports at first on 3,000 to 4,000 dangerous drugs from 108 manufacturers.

The system may cost as much as $1.5 million a year to operate. The Federal Government provided a grant of $119,588 for development and implementation.

As structured, information from the manufacturers and wholesalers will be checked with lists from pharmacies and from drug purchasers to determine what has been received.

If discrepancies turn up, narcotics agents will investigate.

The computer is also programmed to react whenever a regular drug purchaser places a much larger order than usual.

Australian Group to Focus On Problems in Outback

By William A. Scholes

Special to Computerworld

MELBOURNE, Australia – The Building Research Division of the Australian Commonwealth Scientific and Industrial Research Organization (Acsiro) has established a Remote Communities Environment Unit to study the problems of remote communities in mining projects in the Outback.

The unit's studies are intended to assist decision-makers such as company managers, government officials, town and regional planners and architects.

"Human settlements operate as highly complex systems comprising a whole range of smaller entities such as social, economic, technological and communications subsystems," an Acsiro official said. "These in turn are made up of a network of interacting components, usually connected within the same subsystem, but often with components in other subsystems."

New techniques have evolved recently, he noted, which enable the performance of complex systems to be understood and permit fairly accurate predictions of the consequences of changing any of the components.

It is possible, he noted, using computer techniques to evaluate rapidly the ultimate worth of many possible changes to different parts of a system. The changes taken together are called the "systems approach" which forms the basis of the work of the Remote Communities Environment Unit.

As one researcher in the unit said: "Our goal is to demonstrate how conditions can be created in remote communities in tropical Australia such that people will be attracted to these towns and residents will enjoy a quality of life as good as or better than that which will be their expectation in developed centers anywhere in Australia."

Vocational Planners To Show Missourians How

JEFFERSON CITY, Mo. – A statewide computer-based system has begun here to help vocational planners train Missourians to meet the needs of the present labor market.

The program, called Missouri Occupational Training Information System (Motis), will provide information about individuals enrolled in vocational and technical programs as well as data on the kinds of jobs presently available.

Lawmakers Get Printing Aid

ANNAPOLIS, Md. – Maryland legislators expect to save $50,000/yr with a computer to help print their legislation.

In the past, all bills were printed by an outside firm, said Carl N. Everstein, director of the Department of Legislative Reference. This year all bills will be entered into a computer through a teletypewriter. The copies produced by the TTY are camera-ready; they can be photographed and run off on offset printing machines purchased by the department.

In addition, all the bills will be available through the computer for amendment or retrieval.

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Name__________ Title__________
Company__________
Address__________
City__________ State__________ Zip__________
Phone__________

Oil Transactions Secured

TAMPA, Fla. – A wallet-sized plastic card that passes information through a mini-based computer system helps provide billing information, loading control and security at Marathon Oil Co.'s wholesale products products distribution terminals here.

When a tank truck enters the terminal, the driver takes it to the loading position that dispenses the petroleum products he wants.

The driver inserts two plastic cards that identify him, the hauler he works for, the company, the customer and the products the customer is authorized to draw. The driver dials in a five-digit bill of lading code.

When all the information has been validated, the computer activates fuel dispersal circuits and the driver can begin withdrawing products. If the driver is not authorized to get the product selected, the computer will not activate the circuits.

As the truck is being loaded, the mini, a Data General Nova/1200, monitors the fuel flow and logs the net and gross gallons in the transaction file. The data from the transaction is compiled by the computer, typed out on a teletypewriter and recorded on punched paper tape.

Courthouse Renovation Picks Up Speed

BELVIDERE, N.J. – Computerized planning in architecture is playing a leading role in speeding up the renovation of the Warren County Courthouse complex here.

Architect Stanley John Lacz of Architecture/Engineering/Planning estimated computer techniques saved 57 man-days of work on the project. Decision Resource Service of Zeeland, Mich., provided two sets of questionnaires of 14 questions each, which were given to 180 Warren County employees, and processed their results on a computer. The computer did the job in three days, as opposed to 60 without a computer.

The first set of questionnaires was designed to establish the relationships between departments, as well as personnel relationships within a department, to determine the most efficient and practical physical placements of entities within the courthouse complex. For example, offices relating to the courts were assigned space close to courtrooms and judges' chambers.

The second set of questionnaires determined space requirements of personnel in square feet, by noting sit-down and mobile jobs.

In addition to saving time and money, Lacz commented, "you couldn't match the sophistication and exactitude of the answers" generated by the computer.

Firm Has Greetings for Customers

Special to Computerworld

SYDNEY, Australia – Valentine Holdings Ltd., manufacturer of greeting cards, is using computers to develop a system to handle the distribution of its products.

The greeting cards are distributed to more than 5,000 retailers in Australia, involving chain stores, retail stores and news agents.

Five years ago the company started to convert from a manual system of stock control to a computerized system, and now the company has what it considers the ultimate system in stock control in retail outlets.

In the drawers below each of the 600,000 retail pockets is a computer punched card. When the retailer puts his last cards in the pockets, he sends the cards into Valentine's. Its computer is thus kept informed on all the 600,000 positions as the cards come in at the rate of 12,000 a day.

The company has more than 1,000 different designs of cards current all the time and more than 200 programs in the sweep of programs used in stock control. "The computer can tell how long it has been taking to sell a line and can change slow-selling lines," noted Ted Vogt, chairman and managing director.

Before installation of computers, 60 people were preparing invoices and looking after stock. Now 12 people do the same work.

Valentine's has also introduced a new service with which it plans to supply the complete stationery requirements of a company, through the designing, printing, storing and distribution of all its required stationery forms on a computerized reorder system.

Valentine's computer operation employs 85 people and has three computers which run 24 hours a day for six days a week.

Maine's State Budget Needs New Approach

AUGUSTA, Maine – Maine state budget officials will soon begin working out a system for computerizing the preparation of the biennial state budget document, according to State Budget Officer Rodney L. Scribner.

Scribner expects the planning of the computer operation to take 18 months.

Scribner and his staff of four worked eight hours a day, seven days a week from Oct. 30 to mid-January preparing the material for the document, which in 1971-72 ran to 650 pages and weighed five pounds.

"It's just too big a mountain of data to process by hand," he said.

Russians Take a Look At Mine of the Future

Novosti Press Agency

MOSCOW – "The mine of the future is a complex, mechanized and automated enterprise," according to Professor A.S. Burchakov of the Moscow Mining Institute. "It will be computer-controlled."

During the first stage the plans envisage working 11 coal seams with industrial resources of 198 million tons.

The designs for the buildings of the future mine have already been completed and work is under way on experimental models of certain types of equipment.

Labor productivity in this mine, with a capacity of 6.6 million tons of coal a year, or 22,000 tons a day, will be 10 times higher than in operating mines.

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DOSRELO provides a method of making DOS problem programs self-relocating. DOSRELO accomplishes the self-relocation capability for all programs, regardless of the language, by adding entry point logic to the object code of the program before the Linkage Editor catalogs it on the Core Image Library.

CIMS

The Computer Installation Management System (CIMS) provides a method to supply management with pertinent information in the utilization of their data processing hardware. CIMS accepts data collected by the System Management Facility (SMF), formats the data and presents the data in varying sequences and formats. Reports for job accounting, multi-programming throughput, hardware analysis, and others are provided.

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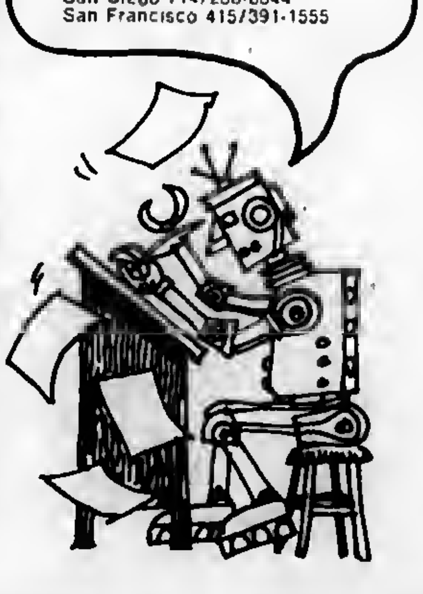

CI Notes

CIA Expects to Grow

ENCINO, Calif. – The Computer Industry Association will be announcing some new members very soon.

The organization, plagued by being called just a representative of the independent peripherals makers, will be adding firms in the software business and in the terminal and data entry markets as well as several other peripherals firms.

The new additions will increase the membership to around 15.

Singer Gets OCR Patents

NEW YORK – Character Recognition Corp., a subsidiary of The Singer Co., has been assigned two U.S. patents covering technology in the field of optical character recognition (OCR).

"These are landmark patents," according to President William W. Wood Jr.

"We believe that these patents cover a significant portion of the OCR industry. We are currently determining the extent to which these patents affect products already being manufactured by others."

Series 70 Shipments Grow

BLUE BELL, Pa. – The total value of Univac Series 70 computer shipments during 1972 exceeded $130 million.

Shipments for the year included 118 Series 70 processors with a sales value of over $130 million or a monthly rental value of nearly $2.7 million, the firm said.

Over 90% of the former RCA customers have remained with Univac, a spokesman said.

STC to Supply CII

LOUISVILLE, Colo. – Storage Technology Corp. will supply Compagnie Internationale Pour l'Informatique (CII) with magnetic tape subsystems for use with CII computers, under terms of an agreement between the two firms.

The value of shipments under this contract will be about $3 million annually. Shipments will begin in 1973 and extend over a multiyear period.

Supershorts

Computer Machinery Corp. has signed a distributorship agreement with Yung Hsing Trading Co., Ltd. of the Republic of China for sale and service of CMC Keyprocessing Systems in Taiwan.

– – –

MSI Data Corp. and Iomec, Inc. have settled long-standing patent litigation. The litigation involved alleged patent infringement by MSI on three patents owned by Digitronics Corp. and claims by MSI against Digitronics for alleged unfair competition.

– – –

Philips Business Systems Inc. has formed a Data Systems Division headquartered in New York City.

April Trial Delay Seen

Telex Could Suffer From IBM Counter

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – The countersuit recently filed by IBM against Telex in their antitrust squabble may delay the case or at least put a tremendous burden on the Telex management, sources revealed last week.

The case is scheduled for trial on April 16, but the late filing of the IBM counterclaim may delay that date, sources said, because of the large amount of pretrial work that will have to be put behind the motion.

And, the sources indicated, that may well be the IBM strategy – delay the Telex case as long as possible so a settlement can be arrived at out of court.

Why the Delay?

The reason for the delay will be the depositions that must be taken from Telex top management in order for the trial to consider the IBM counterclaim. IBM charged that Telex lured away IBM engineering talent with the promise of very large bonuses if they would reveal information proprietary to IBM.

The firm also charged that Telex had violated the copyright laws and had copied some of IBM's copyrighted documents. In all, IBM is seeking damages of $25 million from Telex.

The deposition process is a long drawn-out affair, where a lawyer from one firm (IBM in this case) questions officers of the other firm concerning the alleged mispractices. The executive being interrogated, of course, must also have a lawyer present during the questioning.

Because it is conducted in a pseudo court-like atmosphere, the evidence garnered in the deposition process is later admissible in the case as if it were taken on the witness stand.

In this case IBM is asking depositions from 138 Telex employees, often the top management of the company.

Because some of these employees are privy to a great deal of data, the questioning could take weeks in each individual case.

With the trial date now just a few months away, gathering depositions from 138 witnesses is a monumental task. At least eight separate deposition sessions would have to be held at one time, every day until the trial, and then the process might not even be complete.

Without the deposition process complete, the trial may not start.

The IBM request for the depositions has left Telex in a tough position. Telex wants an early trial, but to complete the depositions it will have to hire lawyers for each of the eight people being deposed simultaneously. The process will also be a large drain on management talent while it is under way.

However, the late filing of the counterclaim has placed such a large burden on Telex it is hard to see how that firm can comply with the IBM requests and still make the mid-April trial date.

So the betting is that the case will have to be delayed, possibly into the fall, if not later.

Telex Says IBM, CDC in Contempt

ST. PAUL, Minn. – Telex has submitted a brief in the federal court here asking that Control Data Corp. and IBM be found in contempt of court for destroying a computerized index compiled by Control Data as part of its antitrust suit against IBM. The index was destroyed as part of the out of court settlement between CDC and IBM.

An IBM spokesman replied: "Telex's latest filing is essentially the same as their earlier motion, and as we said before, is without foundation."

IBM cited the fact that CDC had offered the index to Telex for $5,000, and Telex had refused the offer.

Meanwhile, back in New York and the Justice-IBM suit, IBM attorney Bruce Bromley has asked Raymond Carlson, attorney for the Justice Department, to substantiate his claim that the destruction of the index has hampered the government's progress in its antitrust suit [CW, Feb. 7].

Bromley asked that IBM's attorneys be allowed to examine "all the department's records relating to whatever knowledge it had, or use it had made, or intended to make, of CDC's" index. "Similarly we would appreciate seeing any records which indicate in any way the extent to which, if any, you relied upon the so-called CDC data base or any other method of organizing your cases."

In a letter to Judge David Edelstein Bromley defended the destruction of the index, observing that the "materials protected by Pretrial Order No. I have been and continue to be scrupulously preserved."

Bromley called the language in Justice's brief on the destruction of the index [CW, Feb. 7] "outrageous."

IBM Must Maintain 30s With Itel Add-Ons, German Court Rules

STUTTGART, W. Germany – The district court here has made permanent an earlier preliminary injunction barring IBM from refusing to maintain its 360/30s with Itel add-on memory, according to Itel.

The order included 360/30s currently installed, or to be installed, with Itel add-on memory. If IBM violates this order, it is liable to a minimum fine of about $165,000 and must pay 97% of court and legal costs, court officials noted.

The court ruling stated:

"In particular, the court is convinced that there are no unacceptable technical or economic obstacles to service and maintain a system caused by add-on memory.

"Finally, it has been shown to the satisfaction of the court that the defendant is a company dominating the market of EDP systems and in the meaning of section 26 of the act against restrictions of competition."

A World Trade Corp. spokesman said:

"IBM Germany continues to believe that its reasons for not maintaining its equipment under such conditions are soundly based, and will decide whether to appeal on receipt of the Stuttgart court's detailed explanations of its decision."

Binger Urges Trade Harmony

PHOENIX – James H. Binger, chairman of Honeywell, Inc., has urged "businessmen, labor leaders and government officials to work for a system of world business that will create jobs all over the world – not in one country to the disadvantage of another."

In his plea for harmony, he stressed the importance of the upcoming talks by U.S. trade negotiators, whose objectives "will remain forlorn hopes" unless they have the "clear backing of the American people and their Congress."

He predicted the protectionist controversy could be resolved positively if the public could come to understand that its self-interest is best served by more liberalized trade policies.

With Congress back in session, the Burke-Hartke bill calling for protectionist measures is generating a considerable amount of discussion.

Hartke, in an effort to demonstrate his willingness to compromise on some points of the bill, this year has introduced the measure as seven separate items, while also leaving the old bill intact.

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Remote Batch Terminal Shipment Growth Pegged at 39%; Lower Prices Forecast

PALO ALTO, Calif. – The growth rate for remote batch terminals should average 39% yearly for the next few years, growing from shipments of 8,700 units in 1972 to 46,000 units by 1977, according to Creative Strategies Inc., a market research firm here.

The corresponding dollar sales volume will grow at a somewhat slower rate, from $245 million to $1.03 billion, due to the anticipated decline in prices over the next five years," the firm added.

Slump Helped Market

The recent economic downturn appears to have stimulated the growth of remote batch terminals, CSI said. Because of the declining business cycle, many companies have moved to reduce computer costs by centralizing their computer centers, the firm noted, adding that remote batch terminals are widely used in these operations.

In particular, intelligent terminals have spurred the growth of this market sector, CSI said.

Since their introduction only three years ago, intelligent remote batch terminals have captured over 20% of the market and are expected to have around 50% of the market by 1977, the firm noted.

To date, the commercial trades and services industries are the heaviest users of such terminals, the study said, with the largest share of the shipments in 1972. By 1975, this industry segment will account for around 55% of all shipments of such terminals, it added.

The study indicated there would be "severe" competition within the industry at least through 1977, with IBM expected to control a 70% share of the market for the next five years.

There will be more than 20 other makers of remote batch terminals competing for the remaining 30% of the market, the study projected.

The firm predicted, however, there would be shakeouts among the non-IBM remote batch terminal makers over the next few years so that in 1977 the top six companies will be shipping 95% of the terminals.

The surviving firms in the business must be able to compete in terms of intelligence, peripheral speed and flexibility, price and numerical processing capabilities, the firm indicated, in order to survive in the business.

Orders & Installations

Michigan Bell Telephone Co. has ordered two computerized telephone traffic data systems from the Alston Division of Conrac Corp. Atemis (Automatic Traffic Engineering and Management Information System) will be used to monitor over 600,000 telephone circuits on a real-time basis.

North Carolina National Bank and the Employment Security Commission of North Carolina have installed GTE Data Services, Inc.'s Automated Tape Library Accounting System. The package monitors the status, location and history of each tape in the user's installation.

Mayo Clinic, Rochester, N.Y., has ordered two Digital Scientific Meta 4/1800 Emulator Computer Systems for its cardiology laboratory.

International Graphics Corp. has ordered Dicomed's computerized photocomposition system for production of real estate sales publications for Multiple Listing Service (MLS) groups.

Northeastern University has installed a Control Data Cyber 70 Model 72 for instructional, administrative and research purposes. The system replaces a CDC 3300.

Lenox Candles Inc., Oshkosh, Wis., has installed an NCR Century 200 for order entry and invoicing applications.

The State of New York Office of General Services has installed 768K bytes of Memory Technology, Inc.'s MTI-755 semiconductor memory as main storage for its 155 and 165 computer systems.

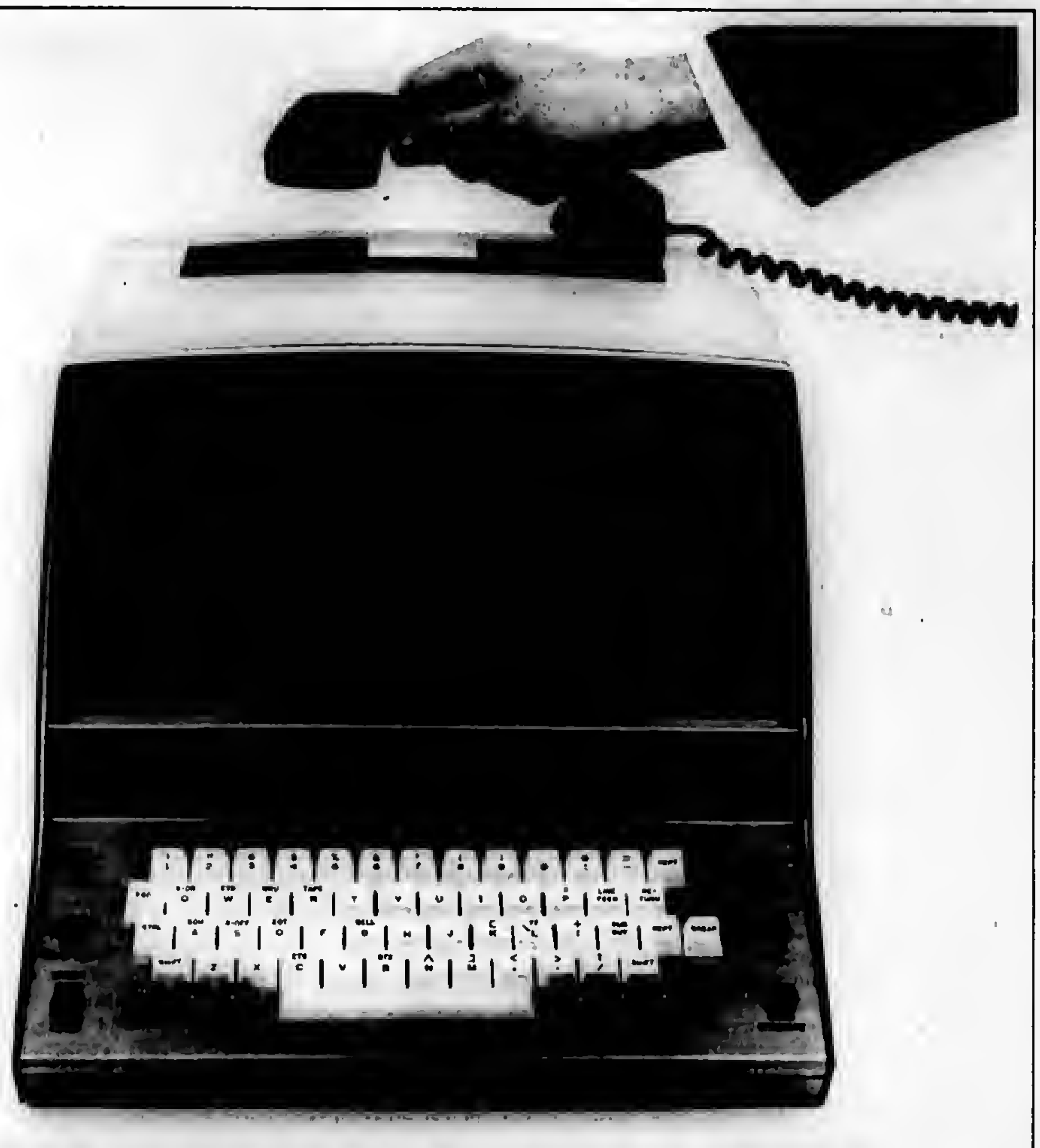
The State of Wisconsin has ordered a data entry system from Scan Data for use in the state Motor Vehicle Division for vehicle registrations, accident reports and license renewals.

John Blair & Co., representative of radio-TV stations, has installed a Burroughs B2500 for its broadcasting and graphic divisions.

United Computing Systems, Inc. has ordered 35 Modcomp communications systems from Modular Computer Systems Inc. The systems will be used in United's service network.

E.A. Adams & Son Inc., manufacturer of jewelry findings, has ordered an OS-1500 order entry, retrieval and inquiry system from Datatrol Inc.

The Midwest City Memorial Hospital, Midwest City, Okla., has installed an NCR Century 50 to handle payroll and patient accounting.



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Bucked the Trend

Minimaker Glad It Decided to Stay OEM

By E. Drake Lundell Jr.

Of the CW Staff

IRVINE, Calif. – When other minicomputer makers were busily scrambling to get into the end user marketplace during the recession, Computer Automation Inc. stuck to its guns and kept all of its resources on the OEM side of the business.

It appears the philosophy has paid off for the firm, which is shipping almost four times as many minis this year as it did last, jumping from an annual level of 500 devices to almost 2,000.

The firm, according to President David Methvin, "has done reasonably well" over the past few years, although the slowdown in capital equipment expenditures that came with the recession did slow the business from the levels it had expected.

He indicated there is a long lead time in the OEM marketplace while the computer systems are being designed into other products.

Cost Effective

But at the same time, he said, marketing to OEMs is extremely cost effective. Once the equipment is designed into the system, the manufacturer is unlikely to change vendors and will require large production volumes of the units over the life of his product.

"Typically in these configurations, the minicomputer only represents 5% to 20% of the total cost of the system. We understand how to build the minicomputers, but we do not understand all of the rest of the business. That we leave to a firm which is already established in the field and knows what the customers want," he added.

Although the minicomputer cannot be viewed in the same way as other components, it can be marketed like a component for these types of systems, he said.

While the OEM customer requires a lot of support, Methvin indicated, that support is for an initial time period. The vendor provides the support in the field to a large user base.

Therefore, he said, salesmen in the OEM market can cover more bases than would be possible in the end user market and servicemen can be similarly spread around.

In addition, the OEM market is strictly one of cash without lease plans which tend to defer a firm's earnings until some future date and which make the business highly capital intensive.

Elastic Market

The size of the OEM market is truly elastic, according to Sol Zasloff, vice-president of marketing for the firm. "When the price of a minicomputer drops by 50%," he said, "the market doesn't just double, it increases 10 times."

This is because, Zasloff said, the lower price opens up a whole new range of applications that previously could not take advantage of computer technology because of price factors.

"If the user finds that he can use a minicomputer as cheaply as hardwired logic and get more capability, then it becomes competitive in an application area where it was not before," he indicated.

The real growth in the market will come in these new application areas, Computer Automation executives agreed, rather than in the traditional lines of the minicomputer business.

When the price gets low enough, you can visualize minicomputers in every bank, in every gas station or even in every car wash for certain functions, they indicated.

And prices are continuing to drop rapidly, Methvin said. For example, he noted, a machine that costs around $3,500 today will probably be priced at half that within a year and the prices will "keep dropping."

One advantage of staying strictly an OEM supplier, Methvin said, is that Computer Automation can guarantee any of its customers that it will not be competing with them in the end user sector of the market, which is important to many customers who fear competition from their vendors.

Picking and Choosing

However, he noted, the firm might go into some well-selected end user markets. It already has to a limited extent with the Capable tester, but he noted this was just an outgrowth of its own in-house system and that it did not compete with any OEM that Computer Automation served.

In addition, he said, the firm would only enter markets where the computer is the major component of the system – not 20% but rather 80% of the cost of making the system.

With that type of equation, he noted, a systems house or other manufacturer could not afford to make the system since the value they would be adding would be very small.

Wabash Computer to Close

WABASH, Ind. – Just four months after writing off its Computer Network Division, Wabash Magnetics Corp. has decided to go the same route with another subsidiary, Wabash Computer Corp.

The writeoff of all remaining capitalized engineering and development costs will result in a special charge of about $835,000 on 1972 earnings.

Foreign Orders & Installations

Conzinc Riotinto Ltd., an Australian mining firm, has ordered a Univac 1106 for use in processing work presently handled by service bureaus.

Sanders Associates, Inc. (UK) Ltd. has installed an automated data entry system with video display terminals at the United Dominions Trust, Ltd., London.

Teledyne Inet has delivered 157 Uninterruptible Power Systems (UPS) to the Postal and Telegraph Service of India for a network of microwave telephone stations.

The New Forest Rural District Council, Hants, England, has ordered an NCR Century 100, which it will share with the Lymington Borough Council and the Ringwood & Fordingbridge Rural District Council.

The Commonwealth Scientific and Industrial Research Organization (CSIRO) of Australia has ordered a Control Data Corp. Cyber 70 Model 76 system to support the research activities of scientists throughout Australia. CSIRO's CDC 3600 will be connected to the system via satellite couplers and will control terminals linked to the network.

Control Data Corp. has delivered a CDC 3170 system to the Student Union of the University of Oslo, Norway, for use in health service, travel agency and student housing activities.

An IBM 370/155 has been delivered to Lloyd's Register of Shipping, London, to replace a 360. The 370 will be used for structural and engineering data analysis, and monitoring of survey records.

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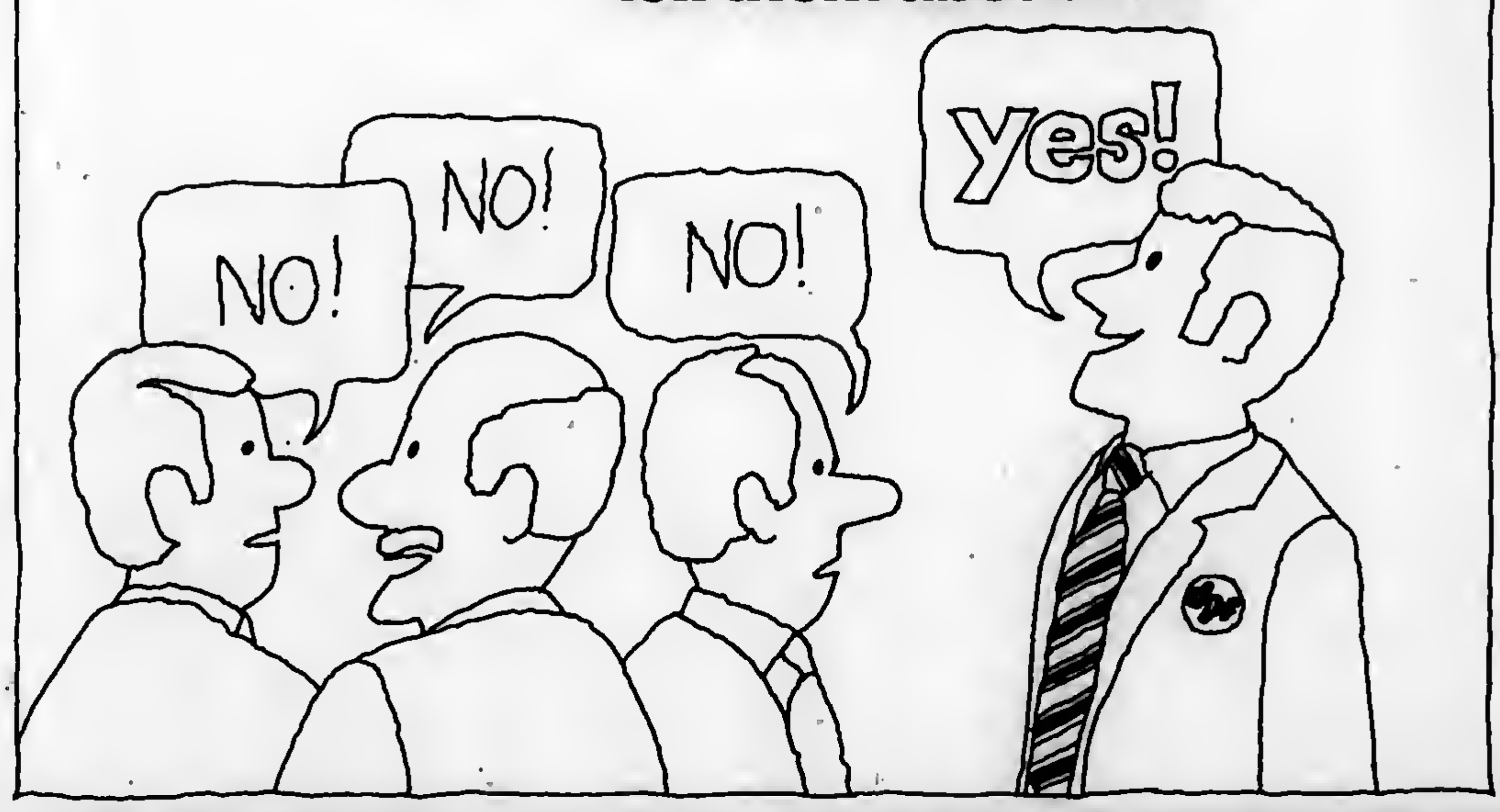

Improved DP Contributions

Honeywell, CDC Report Record Earnings for Year

Two more mainframe makers, Honeywell and Control Data Corp., have confirmed earlier reports that 1972 was indeed a good year for the mainframe segment.

Both reported record earnings, with improved contributions from the firms' computer businesses.

Control Data's computer business, overshadowed by the abundance of revenues produced by Commercial Credit Co., has stepped out of the darkness after two years of producing deficits and divulged a hefty contribution to the firm's record earnings for the year ended Dec. 31.

Computer business revenue totaled $664 million, up 16% from 1971. Rental and services revenue rose 24% to $277 million, "reflecting continuing emphasis on the rapidly growing services segment of the market," according to President William C. Norris.

Earnings from CDC's computer segment reached $10.3 million, contrasted with losses of $9.9 million in 1971 and $36.1 million in 1970.

Total computer order volume rose 13%, with "services and peripheral equipment particularly strong," the company said.

Commercial Credit Co. kept on producing, with earnings of $55.6 million, up from $50.2 million in 1971.

For the company as a whole, earnings for the year jumped 74% to $62.4 million or $4.06 a share from $35.8 million, or $2.37 a share in 1971.

In the fourth quarter, earnings increased 56% to $16.7 million from $9.4 million.

Special Credit

A $1.9 million special credit, equal to 13 cents a share in 1972 resulted from a tax-loss carry-forward of some international subsidiaries plus recovery of the prior year's expenses related to the CDC-IBM lawsuit settled in January.

Honeywell Performance

Honeywell had a record fourth quarter and year ended Dec. 31, with computer operations cited as one of the segments making a greater contribution to earnings.

Computer business accounted for 50% of Honeywell's total business in 1972 compared with 49% in 1971. Worldwide sales and rental revenues reached $1.06 billion, up 12% from $950 million a year ago. Rental and service revenues increased 5%, to $601 million.

The success of the company's Series 6000 and 2000 computers and the strength in the remainder of the product line contributed to a healthy increase in both bookings and backlog and particularly heavy net shipments in the fourth quarter, according to Chairman James H. Binger.

For the year net shipments increased over 20%, which should contribute to growth in recurring revenues during 1973.

Binger credited strong performances by Honeywell's French and Italian computer operations with offsetting the effects of a strike in the company's Scottish computer factories.

Total worldwide sales, rental and service revenues rose 9% to $2.13 billion, compared with $1.95 billion in 1971. Earnings, including extraordinary items, increased 19% to $82.3 million or $4.38 a share from $69.2 million or $3.88 a share.

Fourth-quarter earnings of $40 million, equal to $2.12 a share, compared with $36.5 million or $2.02 a share in the comparable period a year earlier. In the quarter, sales increased to $631 million from $581 million.

Extraordinary items in the fourth quarter amounted to $2.8 million or 14 cents a share, compared with $1.3 million or 7 cents a share in the fourth quarter of 1971, and for the year amounted to $5.7 million or 30 cents a share, compared with $3.6 million equal to 20 cents a share a year ago.

All aspects of the company's business performed well with the exception of its control systems operations in Europe, which failed to produce a profit because of a costly strike and adverse business conditions in Honeywell's markets in Germany and the UK, Binger said.

Strong performances in the homes and larger building markets, and a surge in the business of the Micro Switch Division domestically also contributed to the earnings improvement, he said.

Other factors were a reduced tax rate and reduced net interest expenses, reflecting in part increased interest income from long-term receivables, he added.

Strong Fourth Quarter Helps Itel Show $1.8 Million Earnings for '72

SAN FRANCISCO – Itel Corp. entered the fourth quarter with a nine-month loss of $5.9 million and finished the year in the black, to the tune of about $1.8 million in earnings.

Revenues for the year totaled about $100 million, President Peter Redfield estimated.

About one third of Itel's 1972 revenue was generated by 360 leases, Redfield said. He expects this source will account for about 20% of 1973 revenue.

Special Charge Offset

Itel is setting up a reserve against earnings from its 360 computers, which will result in a special charge of about $900,000 for 1972. A $1.2-million tax credit will offset the charge.

The reserve charge was established "for possible future changes in operating results due to technological developments," he said.

In 1973, Redfield estimates the charge against earnings will be $2 million to $3 million on revenue of $140 million to $150 million.

He predicted 1973 operating earnings will exceed $7.4 million or $1.10 a share, and said Itel probably will take tax credits or other gains in an amount equal to the special charge.

In 1971, the firm showed a loss of $5.9 million after a loss from discontinued operations. Operating profits, before the charge, totaled $9.1 million on revenue of $101.2 million.

Tally Revenues Rise

KENT, Wash. – Revenues rose and operating losses were reduced in the first nine months of 1972 at Tally Corp.

Revenues for the peripherals maker rose 38% to $9.3 million from $6.8 million in the same period last year. Losses were cut 34% to $663,813 from $1 million last year, when there was a special charge of $59,000 related to the discontinued operations of a subsidiary.

Initial deliveries of the new Series 2000 Line Printer were made last September, but the company said it expected printers produced in the third and fourth quarters of the year would be placed primarily with potential customers for evaluation.

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New Registrations

BRANDON APPLIED SYSTEMS, INC., 1700 Broadway, New York, N.Y., data processing consultant and systems designer, filed to register 200,000 shares of common at $1.25 per share.

GENERAL AUTOMATION INC., 1055 S. East St., Anaheim, Calif., developer and producer of industrial and commercial systems, filed to register 420,000 shares of common. Proceeds, at $37 per share maximum, to be used to repay short-term bank borrowings and provide working capital. The underwriter is Reynolds Securities Inc., 120 Broadway, New York, N.Y. 10005.

COMPUSIZE, INC., 245 Livingston St., Northvale, N.J., producer of computer-designed sewing patterns, filed to register 383,333 shares of common. Proceeds, at $7 per share, to be used to reduce bank debts and to provide working capital. The underwriter is Denis McCauley & Co., Inc., 730 Second Ave., S., Minneapolis, Minn. 55402.

CROYLE COMPUTER SERVICES, INC., 2 W. Northern Ave., Phoenix, Ariz., a computer maintenance firm, filed to register 500,000 shares of common. Proceeds, at $10 per share, to be used for working capital. No underwriter is involved.

STANDARD LOGIC, INC., 2215 S. Standard Ave., Santa Ana, Calif., designer and manufacturer of digital components, filed to register 3,750 shares of common at $8 per share maximum, and 150,000 shares of common, with warrants to purchase 75,000 shares of common, to be offered for sale in units, each consisting of two shares and one warrant. Proceeds, at $20 per unit maximum, to be used to reduce bank debts and for working capital. The underwriter is Muller and Co., 80 Pine St., New York, N.Y. 10005.

MCI COMMUNICATIONS CORP., 1150 17th St., N.W., Washington, D.C., specialized common carrier, filed to register 975,000 shares of common, in exchange for outstanding shares of Microwave Communications, Inc., at the rate of 4-1/2 shares for each Microwave share.

APPLIED LOGIC CORP., 900 State Road, Princeton, N.J., filed to register 600,000 shares of common to be issued pursuant to the company's stock option and related plans.

BURROUGHS CORP., Burroughs Place, Detroit, Mich., filed to register 102,852 shares of common issuable upon conversion of the 3-3/4% convertible unsecured loan stock 1977/82 of Burroughs Machines Ltd., a wholly-owned subsidiary.

RICCA DATA SYSTEMS INC., 1732 Reynolds Ave., Santa Ana, Calif., manufacturer of point-of-sale and credit authorization systems, filed to register 250,000 shares of common. Proceeds, at $5 per share, to be used to retire short-term loans and for working capital. The underwriter is Mels & Co. Inc., 23 E. Pikes Ave., Suite 221, Burns Bldg., Colorado Springs, Colo. 80902.

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Telex Runs Off Booming Third Quarter

TULSA, Okla. – Telex added a booming third quarter to its track record, and emerged with a nine-month report that is slightly ahead of last year's.

In the quarter ended Dec. 31, earnings reached $862,000 or 8 cents a share compared with $172,000 or 2 cents a share in the year-ago period.

Revenues soared to $26.5 million from $16.6 million last year.

The sales value of peripheral equipment placed in the field was up, to $27.6 million from $11.5 million in the same year-ago period, but income from peripheral equipment on rent declined slightly, to $2.6 million from $2.7 million last year.

The sales value of the order backlog declined to $21.9 million from $55.4 million in the same period a year ago.

Losses from the European operations were cut to $5,000 from $200,000 in the same quarter last year.

In the nine months, earnings totaled $2.3 million or 22 cents a sharc compared with $2.9 million or 28 ccnts a share in the period ended Dec. 31, 1971.

Revenues rose to $67.5 million from $61 million last year.

The sales value of peripheral equipment placed in the field rose to $63.9 million from $51.6 million, and lease income rose slightly to $7.9 million from $7.1 million.

Nickels & Dimes

Shipments werc up at **Data 100** for the year and last quarter ended Dec. 31. On an "if sold dollar value," 1972 shipments totaled $31.5 million compared with $13.1 million in 1971. The firm expects to show a profit in the fourth quarter of 1972.

$$$

About 78% of **Xiox International's** incomc stemmed from leasing and brokerage of IBM equipment, the firm's first move in a diversification program.

$$$

Reynolds & Reynolds chalked up its 11lh successive year of record sales and earnings, with sales of $57.2 million and earnings of $5.1 million in the year ended Sept. 30.

$$$

A $3.3-million special charge on Raytheon's books, reflecting settlement costs of litigation with National Data Communications Inc. and withdrawal from the hospital information market, dragged down Raytheon's earnings for the year to $37.9 million compared with $38.4 million last year.

$$$

National CSS had a record third quarter, with earnings climbing 155% to $390,586 from $152,985 in the year-ago period. Revenues totaled $4.3 million, up 52% from $2.8 million in the same quarter last year.

REI Revenues Increase in 1972

DALLAS – Recognition Equipment has largely completed efforts to recover from the effects of subsidiary and affiliate commitments made prior to 1970, and has begun to focus primarily on the future, according to President Herman L. Philipson Jr.

Last year's report has been restated to includc the results of 49%-owned Corporation S, based on the equity method of accounting.

Results of Corporation S accounted for a $785,484 charge in 1972, and a $1.7 million charge in 1971 as restated.

'Critically Revlew'

Earnings for the year ended Oct. 31 totaled $342,479 or 7 cents a share compared with the restated $308,794 or 6 cents a share in the year before. As originally reported, REI earned $487,479 in 1971.

Revenues rose to $43 million from $38.6 million last year.

The modest level of 1972 earnings reflects a determination to critically review and conservatively value inventories, Philipson said. During fiscal 1972, REI inventory write-offs totaled $4.7 million, $2.1 million more than in 1971.

REI's liquidity improved during the year, with assets rising $6.4 million from a year earlier to $13.2 million of cash and equivalent, he said.

A record backlog of contracts, valued at $20.5 million, 32% greater than last year, was recorded at the end of the fiscal year. This figure excludes $4.4 million of postal contracts.

Although commercial shipments declined by $600,000, total shipments were slightly higher than thc $20.7 million in 1971 because of delivery of the company's first major postal lettcr-processing system.

Profitable Year Beehive's First

SALT LAKE CITY – Beehive Medical Electronics, Inc. chalked up its first profitable year, aided by a 150% increase in sales.

The first quarter of fiscal 1973 was also bright, with earnings rising to $88,027 or 9 cents a share compared with year-ago figures of $12,138 or 1 cent a share.

Revenues reached $705,770, up from $392,815 in the year-ago period.

In the year ended Sept. 30, sales totaled $2 million compared with $798,839 in 1971. Earnings reached $87,865 or 9 cents a share, compared with the previous year's loss of $323,227 or 17 cents a sharc.

"The reversal in our company's earnings picture, while reflecting the general upturn in the nation's economy, also points to a mounting acceptance of modestly priced computer systems and peripheral equipment by the mcdical community and industry at large that has helped double sales each year since our company's inception," President Warren B. Clifford observed.

Sales backlog at the beginning of fiscal 1973 was over $3 million, Clifford said.

Foreign markets represent about 7% of total sales. "As the markets for our products grow, we fcel certain that a substantial increase will be realized in our worldwidc salcs efforts," Clifford added.

The firm expenses all research and development costs when incurred, which, Clifford said, "leaves our balance sheets clear and uninflated."

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1	1051 3130, 4409, 4410, 4411	51410
1	1052 8	62543

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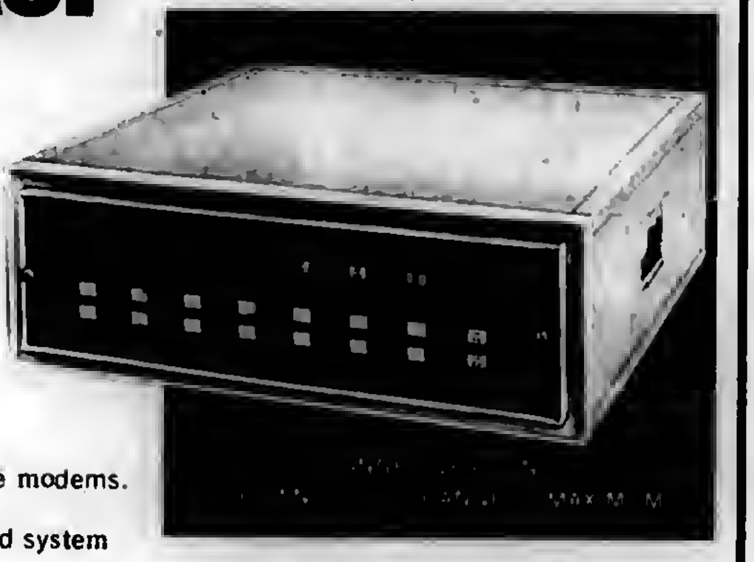

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CLOSING PRICES THURSDAY, FEBRUARY 8, 1973

EXCH		1972 RANGE (1)	CLOSE FEB 08 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 3/4	- 1/4	-12.5
A	APPLIED DATA RES.	3- 7	3 1/8	- 1/8	-3.8
O	APPLIED LOGIC	1- 4	3	+ 1/4	+9.0
N	AUTOMATIC DATA PROC	70- 99	73	+ 1/8	+0.1
O	BRANDON APPLIED SYST	1- 2	5/8	- 1/8	-16.6
O	COMPUTER DIMENSIONS	4- 14	3 1/2	0	0.0
O	COMPUTER DYNAMICS	1- 4	7/8	- 1/8	-12.5
O	COMPUTER NETWORK	3- 7	3	- 1/4	-7.6
N	COMPUTER SCIENCES	4- 10	4 1/4	- 1/8	-2.8
O	COMPUTER TASK GROUP	1- 2	1 3/8	- 1/8	-8.3
O	COMPUTER TECHNOLOGY	2- 8	2 1/8	- 1/4	-10.5
O	COMPUTER USAGE	7- 14	7 3/8	- 3/8	-4.8
N	COMPUTING & SOFTWARE	11- 28	10 7/8	- 1/8	-1.1
O	COMRESS	1- 3	1	0	0.0
O	COMSHARE	5- 10	7 5/8	- 1/2	-6.1
O	DATATAB	4- 9	3 5/8	- 1/8	-3.3
O	EDP RESOURCES	2- 8	1 3/4	0	0.0
A	ELECT COMP PROG	1- 5	1 1/2	- 1/8	-7.6
N	ELECTRONIC DATA SYS.	43- 65	49 1/2	-2	-3.8
O	INFORMATICS	4- 11	4	- 1/2	-11.1
O	I.D.A. DATA CORP	1- 3	1/2	- 1/8	-20.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	9 5/8	- 1/8	-1.2
O	LOGICON	4- 9	3 7/8	+ 3/8	+10.7
A	MANAGEMENT DATA	4- 10	3 1/2	- 1/4	-6.6
O	NATIONAL CSS INC	8- 36	32 3/8	+ 1/8	+0.3
O	NATIONAL INFO SRVCS	1- 5	1 3/4	- 1/4	-12.5
P	ON LINE SYSTEMS INC	8- 28	24 1/4	0	0.0
N	PLANNING RESEARCH	5- 17	4 5/8	- 1/4	-5.1
O	PROGRAMMING METHODS	20- 25	23	+ 1/2	+2.2
O	PROGRAMMING & SYS	1- 2	7/8	- 1/8	-12.5
O	RAPIDATA INC	5- 27	22 1/4	- 1/4	-1.1
O	SCIENTIFIC COMPUTERS	2- 4	1 1/2	- 1/8	-7.6
O	SIMPLICITY COMPUTER	1- 5	3 1/4	- 1/8	-3.7
O	TBS COMPUTER CENTERS	3- 6	3 1/2	0	0.0
O	TCC INC	1- 3	1/2	- 1/4	-33.3
O	TYMSHARE INC	7- 12	9 3/8	- 3/8	-3.8
O	UNITED DATA CENTER	5- 8	5 1/4	- 3/4	-12.5
N	UNIVERSITY COMPUTING	7- 26	7 7/8	+ 1/8	+1.6
A	URS SYSTEMS	6- 10	5 7/8	- 3/8	-6.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	24- 49	24 1/4	-2 3/8	-8.9
O	ADVANCED MEMORY SYS	12- 23	18 1/4	-1 3/8	-7.0
N	AMPEX CORP	5- 15	6 3/8	+ 1/4	+4.0
O	ANDERSON JACOBSON	4- 8	5	+ 1/4	+5.2
O	BEEHIVE MEDICAL ELEC	1- 8	6 3/8	+ 1/8	+2.0
A	BOLT.BERANEK & NEW	5- 21	9 3/4	- 1/4	-2.5
N	BUNKER-RAMO	8- 14	8 3/8	- 1/8	-1.4
A	CALCOMP	9- 25	11 1/8	+ 3/8	+3.4
O	CAMBRIDGE MEMORIES	9- 15	10 3/8	- 7/8	-7.7
O	CENTRONICS DATA COMP	6- 28	24 1/4	+ 1/2	+2.1
O	CODEX CORP	6- 25	16	-1	-5.8
O	COGNITRONICS	2- 5	1 5/8	- 1/2	-23.5
O	COMPUTER COMMUN.	1- 7	2 7/8	- 1/4	-8.0
A	COMPUTER EQUIPMENT	2- 4	2 3/8	- 1/4	-9.5
O	COMPUTER MACHINERY	7- 13	10 5/8	+ 1/8	+1.1
O	COMPUTER TRANSCEIVER	2- 9	3 7/8	+ 1/8	+3.3
A	COMPUTEST	3- 9	3 1/2	- 1/4	-6.6
N	CONRAC CORP	24- 39	25	-1	-3.8
A	DATA PRODUCTS CORP	3- 7	3 3/8	- 1/2	-12.9
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	4 1/8	+ 3/8	+10.0
O	DI/AN CONTROLS	0- 8	3 7/8	0	0.0
N	ELECTRONIC M & M	3- 8	3 3/4	- 3/4	-16.6
O	FABRI-TEK	2- 5	3 1/2	- 3/4	-17.6
O	GENERAL COMPUTER SYS	6- 16	7	- 1/2	-6.6
N	GENERAL ELECTRIC	59- 74	67 1/2	-1	-1.4
N	HAZELTINE CORP	7- 13	8 3/8	- 1/8	-1.4
O	INFOREX INC	16- 36	15 1/2	-1 7/8	-10.7
O	INFORMATION DISPLAYS	0- 0	1 1/8	+ 1/4	+28.5
O	INFORMATION INTL INC	8- 25	12 1/2	+1	+8.6
A	LUNDY ELECTRONICS	7- 14	7	-1 1/8	-13.8
O	MANAGEMENT ASSIST	1- 1	3/8	+ 1/8	+50.0
A	MILGO ELECTRONICS	15- 44	23 3/8	+1 3/8	+6.2
N	MOHAWK DATA SCI	8- 27	8 1/4	-1	-10.8
O	ODEC COMPUTER SYST.	4- 12	4	- 5/8	-13.5
O	OPTICAL SCANNING	4- 16	3 3/4	-1 1/4	-25.0
O	PERTEC CORP	6- 17	6 1/4	- 3/8	-5.6
O	PHOTON	3- 15	3 3/8	0	0.0
A	POTTER INSTRUMENT	7- 21	8	- 1/4	-3.0
O	PRECISION INST.	2- 13	4	+1 1/2	+60.0
O	RECOGNITION EQUIP	5- 15	6 5/8	+ 1/8	+1.9
N	SANDERS ASSOCIATES	13- 21	12 1/2	-1 1/4	-9.0
O	SCAN DATA	3- 13	3 3/8	- 1/8	-3.5
O	STORAGE TECHNOLOGY	17- 39	25 1/4	-2 1/4	-8.1
O	SYCOR INC	7- 11	9 1/4	- 3/4	-7.5
O	TALLY CORP.	8- 15	12 1/8	+1	+8.9
N	TEKTRONIX INC	34- 64	46	-3 3/8	-6.8
N	TELEX	4- 15	4 3/8	- 5/8	-12.5
O	WILTEK INC	10- 26	15 3/4	0	0.0
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	6 1/2	- 3/4	-10.3
A	BARRY WRIGHT	9- 14	9 7/8	- 1/8	-1.2
A	DATA DOCUMENTS	17- 26	20 1/2	- 7/8	-4.0
O	DUPLEX PRODUCTS INC	8- 16	8	- 1/4	-3.0
N	ENNIS BUS. FORMS	6- 10	7 1/8	- 3/8	-5.0
O	GRAHAM MAGNETICS	15- 27	17 1/2	- 1/4	-1.4
O	GRAPHIC CONTROLS	11- 15	11 7/8	+ 3/4	+6.7
N	3M COMPANY	76- 88	83 3/8	+1 1/8	+1.3
O	MOORE CORP LTD	42- 57	56 1/4	- 1/8	-0.2
N	NASHUA CORP	48- 62	55 1/8	- 1/8	-0.2
O	REYNOLDS & REYNOLD	37- 77	46	-1 1/2	-3.1
O	STANDARD REGISTER	14- 20	19	- 1/2	-2.5
O	TAB PRODUCTS CO	14- 23	19	- 1/4	-1.2
N	UARCO	20- 28	21 3/4	+ 1/8	+0.5
A	WABASH MAGNETICS	6- 11	6 1/4	+ 1/8	+2.0
N	WALLACE BUS FORMS	21- 26	23 5/8	-1 3/8	-5.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-230	223 3/4	+4	+1.8
N	COLLINS RADIO	14- 27	20 1/2	-2 1/2	-10.8
N	CONTROL DATA CORP	43- 78	54	-1 1/8	-2.0
O	DATA GENERAL CORP	56-130	118	-2	-1.6
O	DIGITAL COMP CONTROL	4- 25	3 3/4	- 3/4	-16.6
N	DIGITAL EQUIPMENT	72-101	97 1/4	+1	+1.0
N	ELECTRONIC ASSOC.	6- 13	7 1/4	-1	-12.1
A	ELECTRONIC ENGINEER.	6- 14	8 3/8	+ 3/8	+4.6
N	FOXBORO	23- 41	28 5/8	- 7/8	-2.9
O	GENERAL AUTOMATION	13- 54	48 1/2	-3 3/4	-7.1
O	GRI COMPUTER CORP	2- 5	2 3/8	- 1/8	-5.0
N	HEWLETT-PACKARD CO	46- 94	87 1/2	-1 1/4	-1.4
N	HONEYWELL INC	118-170	119 5/8	- 1/8	-0.1
N	IBM	333-444	437 1/2	+8 1/2	+1.9
O	INTERDATA INC	8- 16	10 1/4	- 3/8	-3.5
N	MEMOREX	13- 38	12 1/2	-1 1/8	-8.2
O	MICRODATA CORP	5- 10	8 1/2	0	0.0
N	NCR	27- 38	27 3/4	- 1/2	-1.7
N	RAYTHEON CO	27- 47	30 3/8	- 1/2	-1.6
N	SPERRY RAND	30- 50	45 7/8	+2 3/4	+6.3
A	SYSTEMS ENG. LABS	6- 16	5 7/8	+ 3/8	+6.8
N	VARIAN ASSOCIATES	14- 22	15 5/8	-1 3/8	-8.0
N	WANG LABS.	23- 61	28 3/4	- 1/4	-0.8
N	XEROX CORP	121-172	152 1/4	+1 1/4	+0.8
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	2 5/8	0	0.0
O	BRESNAHAN COMP.	1- 3	1 1/4	- 1/8	-9.0
O	COMDISCO INC	3- 18	14 1/4	+ 5/8	+4.5
O	COMMERCE GROUP CORP	5- 11	4 5/8	- 1/4	-5.1
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	6- 14	6	- 1/8	-2.0
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	7 3/4	+ 1/4	+3.3
M	DATRONIC RENTAL	2- 4	2 1/4	+ 1/8	+5.8
A	DCL INC	2- 10	2 1/4	- 1/8	-5.2
A	DEARBORN-STORM	16- 26	21	- 3/4	-3.4
A	DPA, INC.	5- 8	6 3/4	- 1/8	-1.8
A	GRANITE MGT	5- 11	5 1/4	- 1/8	-2.3
A	GREYHOUND COMPUTER	5- 11	5 1/4	+ 1/4	+5.0
A	ITEL	7- 12	9 3/8	- 5/8	-6.2
N	LEASCO CORP	12- 24	12	-1	-7.6
O	LEASPAC CORP	6- 15	6	- 1/4	-4.0
O	LECTRO MGT INC	1- 4	1 5/8	- 1/8	-7.1
A	ROCKWOOD COMPUTER	2- 7	2 1/8	- 1/4	-10.5
O	SYSTEMS CAPITAL	3- 20	9 7/8	- 1/2	-4.8
N	U.S. LEASING	19- 35	30	-2	-6.2

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L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER .
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O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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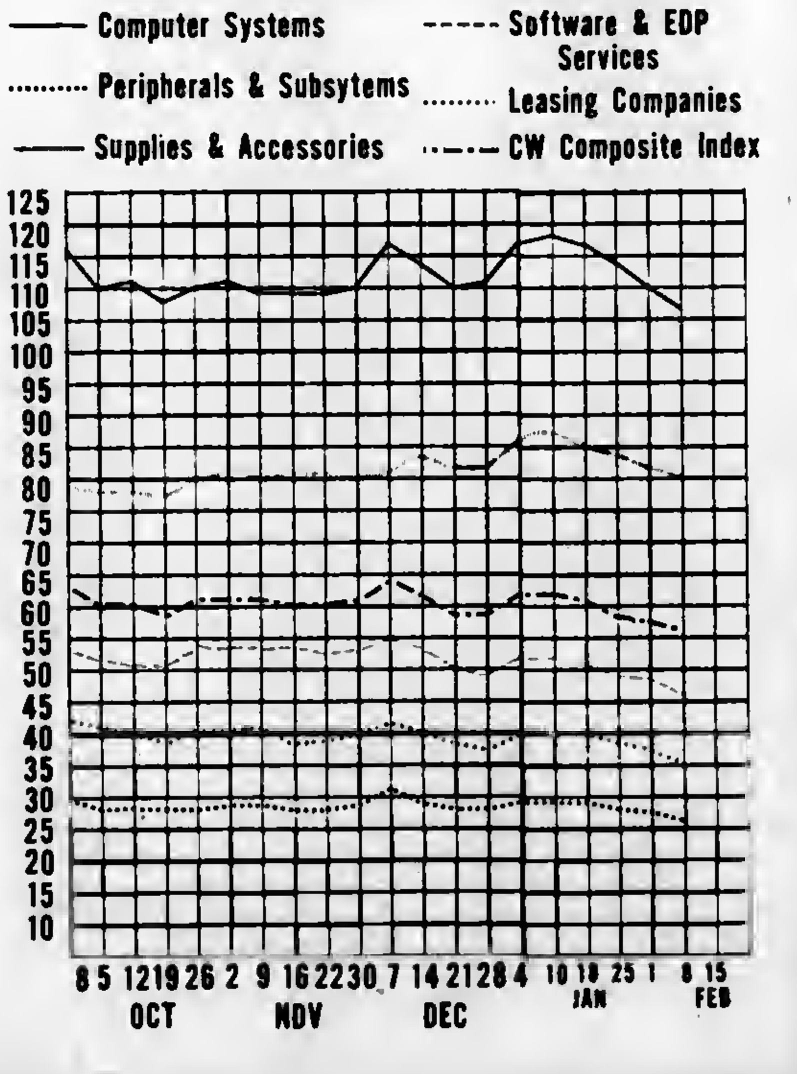
Computer Stocks Trading Index



Earnings Reports

DEARBORN-STORM
Year Ended Oct. 31

	1972	1971
Shr Ernd	$1.85	$1.44
Revenue	44,405,000	38,092,000
Earnings	4,990,000	3,884,000
3 Mo Shr	.53	.40
Revenue	10,770,000	10,071,000
Earnings	1,430,000	1,073,000

BRANDON APPLIED SYSTEMS
Six Months Ended Aug. 31

	1972	1971
Shr Ernd	$.01	$.01
Revenue	245,470	343,852
Earnings	6,654	9,120

IBM
Year Ended Dec. 31

	a1972 (000)	1971 (000)
Shr Ernd	$11.03	$9.38
Revenue	9,532,593	8,273,603
Earnings	1,279,268	1,078,847
3 Mo Shr	2.93	2.66
Revenue	2,521,729	2,379,758
Earnings	340,427	306,019

a-Preliminary.

VARIAN ASSOCIATES
Three Months Ended Dec. 29

	1972	1971
Shr Ernd	$.20	$.07
Revenue	54,798,000	46,412,000
Spec Cred	.....	258,000
Earnings	1,452,000	502,000

BURROUGHS
Year Ended Dec. 31

	1972 (000)	1971 (000)
Shr Ernd	$4.71	$4.03
Revenue	1,052,783	943,276
Earnings	87,541	74,151
3 Mo Shr	2.08	1.82
Revenue	330,053	294,615
Earnings	38,690	33,603

XEROX
Year Ended Dec. 31

	1972 (000)	1971 (000)
Shr Ernd	$3.16	$2.71
Revenue	2,420,000	1,960,000
Earnings	249,500	213,000
3 Mo Shr	.83	.73
Revenue	653,000	519,000
Earnings	66,000	57,000

NUCLEAR DATA
Three Months Ended Nov. 30

	1972	1971
Revenue	$3,802,444	$2,303,887
Loss	1,342,615	a755,758
9 Mo Rev	10,427,514	7,062,737
Loss	2,686,493	a728,937

a-After a writeoff of approximately $1 million in the third quarter resulting from introduction of new products that accelerated obsolescence of certain inventory.

APECO
Year Ended Nov. 30

	1972	a1971
Shr Ernd	$.31	$.64
Revenue	120,538,700	109,730,000
Spec Chg	b404,400	.....
Earnings	3,233,300	6,395,000

a-Restated to reflect acquisition on a pooling-of-interests basis. b-Loss related to flood damage in Pennsylvania mobile home plants.

APPLIED MAGNETICS
Three Months Ended Dec. 31

	1972	a1971
Shr Ernd	$.10	$.07
Revenue	10,389,200	5,632,100
Earnings	425,125	282,550

a-Not including operations of Geospace Corp., acquired in April 1972 on a purchase basis.

CENTRONICS DATA COMPUTER
Three Months Ended Sept. 30

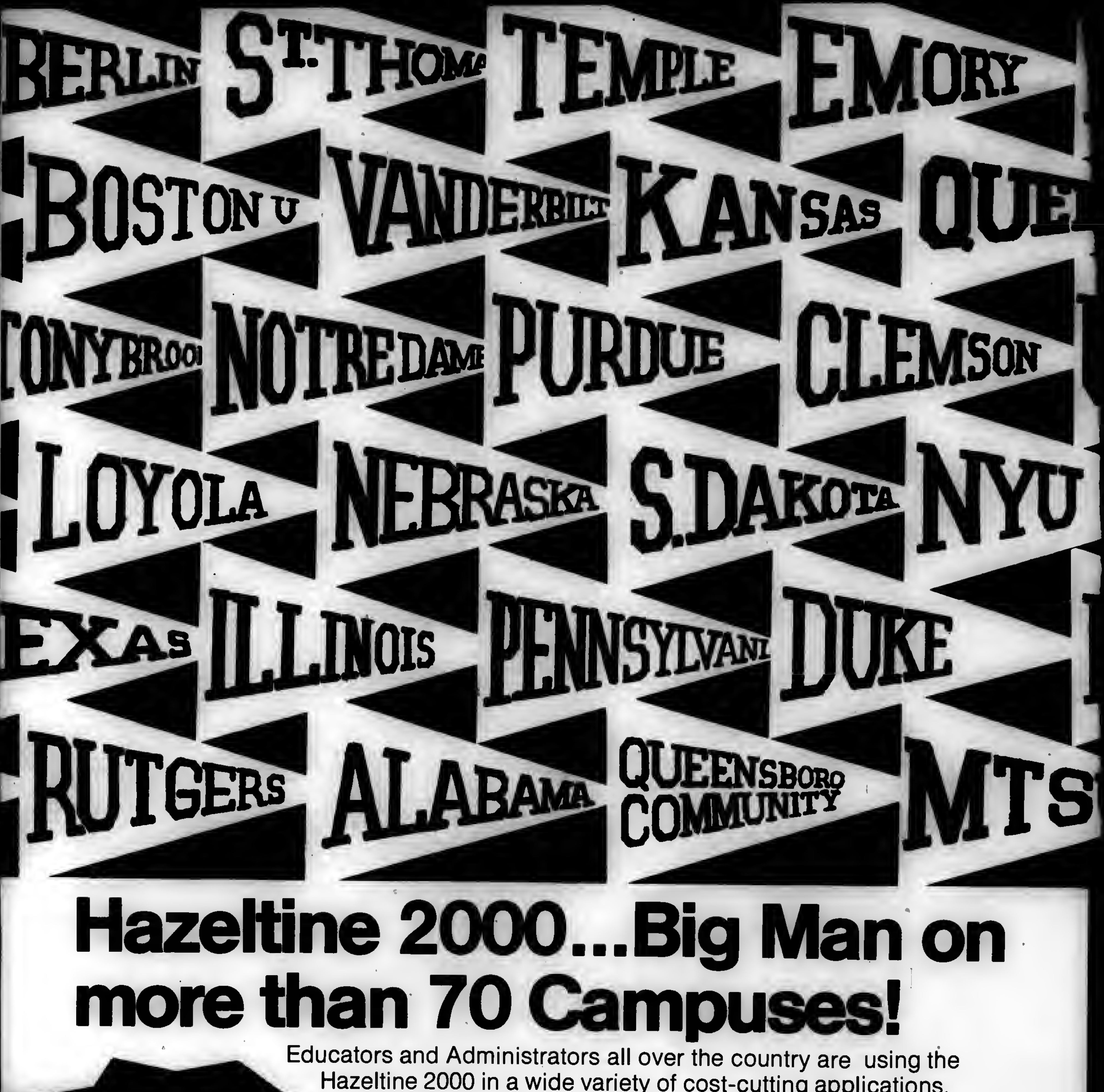
	1972	1971
Shr Ernd	$.26	$.07
Revenue	3,560,000	953,738
Earnings	667,000	167,960

COMPUTER RESPONSE
Nine Months Ended Sept. 30

	1972	1971
Shr Loss	$.07	$.13
Revenue	614,503	666,186
Spec Item	a1,606	b(33,861)
Loss	164,289	335,058

a-Credit; gain from settlement of obligations. b-Debit; includes gain from settlement of obligations and sale of contract, less loss on disposition of assets and termination of leases.

PUNCH CARDS
ISC/PRYOR COMPUTER



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Weekly Newspaper

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February 21, 1973

Vol. VII, No. 8

NEWSPAPER

NEWS IN BRIEF

Index Reconstruction Ruling Expected Soon

NEW YORK – Judge David Edelstein is expected to rule soon on a government motion that would require IBM to help the government reconstruct the data base destroyed as part of the IBM-Control Data settlement.

In a hearing on the matter here last week, the Justice Department argued that the index should not have been destroyed without the consent of the court here since IBM and the government had been ordered to preserve all records relating to their case.

It appears now that Edelstein will overrule the government's motion, but that he might hold more hearings on the motion first to make IBM prove that the only thing destroyed was the work product of the CDC lawyers and not any of the documents in the case.

Report Finds Most DPers Employed in Manufacturing

WASHINGTON, D.C. – A Census Bureau report on the American job and skills market revealed that in 1970 the computer field had 161,337 computer programmers and 79,949 computer systems analysts.

According to the report based on 1970 decennial census data, the largest numbers of computer specialists were employed in computer manufacturing and computer programming services. The report showed other industries employing large numbers of computer specialists include federal public administration, banking and insurance, colleges and universities, and aircraft and parts manufacturing.

Mean annual earnings among men in the computer field in 1969 was $11,004 and among women, $7,811, according to the Census Bureau study.

Copies of the report "Occupation by Industry," PC(2)-7C are available for $7.25 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

On the Inside This Week

Xerox's 'CP-V' Supports Five System Modes –*Page 13*

PCI Sets Rates Below Bell, Datran –*Page 15*

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Education 23
Financial 34
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Software/Services 13
Systems/Peripherals 17

3,000 Attend Caravan/73 Kickoff

the iomates
ALL YOU ADD IS THE MINICOMPUTER

(CW Photo by L. Flanagan)

Computer Caravan/73 visitors have plenty to keep them busy at the Iomec product display (Story on Page 6). The show attendees had a full DP menu ranging from user-oriented panels and workshops to a product exposition.

Communications Feast

Terminal Systems Abound

By Ronald A. Frank
Of the CW Staff

BOSTON – Terminal-oriented systems for both on-line and remote communications applications led the list of user products displayed at the Computer Caravan/73 exposition last week.

Many of the terminal products are compatible with the IBM 2780 and 3780 terminals or were described as replacements for teletypewriters.

Incoterm Corp. introduced its SPD 900 remote batch terminal series which can also operate in interactive applications.

The system is available in three models, all push-button compatible with IBM 2780 and 3780, Univac 1004, CDC User 200, 360/20 Hasp and ICL 7020-based operations.

400 Line/Min Printer

Model 901 has a 150 card/min reader and a 200 line/min printer; Model 902 has a 300 card/min reader and a 200 line/min printer; and the Model 903 has a 300 card/min reader and a 400 line/min printer.

All models come with a programmable display terminal which provides for synchronous communications rates of 200- to 9,600 bit/sec in half-duplex mode.

Purchase prices are $17,900 for the SPD 901, $20,500 for the 902 and $22,400 for the 903. Various leasing plans are available from 6 Strathmore Road, Natick, Mass. 01760.

For the Man With Everything

For the executive who has everything except a miniature CRT on his desk, Delta Data Systems Corp., Cornwells Heights, Pa., showed its 5900 terminal which is "packaged" in a walnut grain cabinet.

The device contains a standard RS-232 interface and can operate at preselected speeds from 110 to 9,600 bit/sec. Data characters can be displayed in two intensities in 16 lines of 32 characters. The full-duplex terminal costs $2,000 and is available in 90 days.

(Continued on Page 6)

FCC Told AT&T's CRT May Violate Antitrust Laws

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T may be planning to sell its new CRT terminal outside the Bell System in violation of existing Federal Communications Commission and antitrust agreements, according to a letter sent to the FCC by Incoterm Corp.

If the Model 40 display terminal, built by Teletype Corp., a Bell subsidiary, is sold to non-Bell suppliers and then attached to AT&T lines, it would "constitute the furnishing of a [DP] service," Incoterm told the FCC.

"Because of the sophisticated nature and usage of the [Model 40] terminal, the [AT&T] service would be a remote access data processing service or hybrid data processing service," Incoterm said. Under existing regulations, AT&T is prohibited from entering non-communications markets.

Apparently concerned about the Incoterm charges, the FCC sent a letter to AT&T on Jan. 22 requesting that Bell "advise us fully with respect to the plans . . . of Teletype Corp. to enter the market of computer terminals . . ." The

(Continued on Page 2)

18 Workshops, 300 Products Drawing Cards

By E. Drake Lundell Jr.
Of the CW Staff

BOSTON – It's off and running again. More than 300 products valued at over $10 million provided the sparkle on the exposition floor while 18 workshops or panels gave users new insights in managing data processing installations as the Computer Caravan/73, sponsored by *Computerworld,* was launched here last week.

Approximately 3,000 users and industry figures attended the three-day show which began its 10-city nationwide tour with 52 companies displaying their wares in 68 booths.

The number of exhibits for the second running of the Caravan was up 50% over last year, and the workshops and panels provided for computer users were twice as long as last year's, according to Caravan officials.

Other Caravan coverage on Pages 2-7.

The exhibit floor was highlighted by the almost 25 new product announcements made on the first day of the show, with Iomec getting the honors for most new products on display with 13.

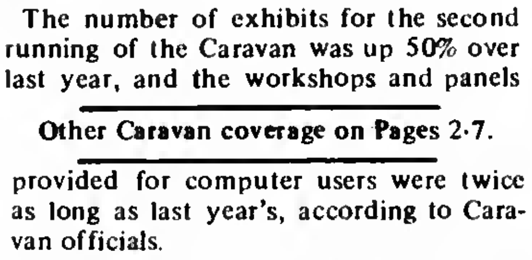
Many of the other introductions did not involve completely new systems, but featured enhancements to existing products that are available and in use in the field.

Almost every segment of the industry was represented on the exhibit floor with communications-oriented or terminal firms leading the way but with a strong second place showing by data entry and particularly key-to-disk firms.

The major sector of the industry not represented on the floor was the large mainframe makers, but in their place users could see the offerings of every other area ranging from minicomputer makers through tape, disk and memory suppliers to software houses.

The watchword on the Forum side of

(Continued on Page 2)



New Sister

Hidetsuna Sasaki, editor of Shukan Computer, Computerworld's new sister weekly in Japan, looks over an initial copy of the newspaper. Story on Page 25.

Full Range of Exhibits, Panels Launch Caravan/73

(Continued from Page 1)

the Caravan was efficiency and overcoming day-to-day problems through user interaction.

Users Warning Users

The panels and workshops consisted entirely of users experienced in a particular area discussing their experiences and warning other users of potential problem areas.

In all, more than 300 users attended the sessions on data entry, data communications and installation management, each given on a separate day.

Even more attended the open afternoon sessions which featured a tutorial on data communications, and panel discussions on software evaluation and small systems usage.

"It's refreshing," one user said, "to attend sessions like this where another user can fill you in on the problems with particular systems – problems that are never mentioned by the manufacturers or the technical experts who speak at some other shows."

The mood of the entire show was definitely upbeat: exhibitors were happy about the prospect of sales, while attending users said the exhibition and forums provided new information and choices in equipment selection.

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the floor opened our eyes to what's available – and what the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

Several sales were reported directly off the floor of the show, with the first coming only one hour after the exhibit hall opened the first day.

"We're seeing so many prospects that I'm completely tied up for the next two weeks – just from prospects I've seen here," one New England sales representative said on the second day of the show.

Several users commented on the business-like atmosphere in the exhibit hall, where most exhibitors stressed the technical aspects of their systems as opposed to flashy or sensational displays.

Next week the Computer Caravan/73 travels to Washington, D.C., to be followed after a one-week break by New York City, Atlanta, Houston, Anaheim, San Francisco, Kansas City, Chicago and Cleveland.

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CW Photo by Leslie Flanagan

Partial View of the 68 Booths at Computer Caravan/73 in Boston.

Bell CRT Terminal Under Attack

(Continued from Page 1)

FCC letter requested an AT&T reply within 30 days.

"It is our feeling that this unit is nothing more than a Teletype terminal which will be 'subject to the same usage' as other Teletype equipment already in the field," an AT&T spokesman said.

The Model 40 display will cost about $3,000, which is well below the cost of comparable non-Bell terminals, Incoterm said. It would be impossible for Teletype Corp. to supply the Model 40 at this price without "some direct or indirect" revenue subsidies from "regulated common carrier services," Incoterm told the commission.

While users would probably welcome the introduction of a low-cost display by the Bell System, Incoterm believes the long-term effects would lead to an unfair competitive environment. Incoterm CRT terminals now cost from $7,500 to $9,700 and "comparable IBM equipment ranges from $11,950 to $15,870" for the 3270, Incoterm said.

The Teletype Corp. CRT reportedly will utilize MOS technology which is being developed in-house to allow the low price. The Model 40 is expected to include a CRT, keyboard printer and an optional half-inch mag tape cartridge capable of storing 150K bytes of data.

The CRT is said to have a 96-character alphanumeric set that can be displayed on a screen of 20 lines by 80 characters. A 72-line buffer is said to be included in the terminal which will be TTY-compatible and will handle Ascii, Baudot and typesetting (6-bit) code.

The unit will transmit with synchronous modems in a start/stop format but the modems are not expected to be part of the terminal and will be priced separately.

The printer is expected to handle 40-, 80- or 132-character lines with 64- and 96-character sets and will operate at 240 line/min.

If AT&T introduces the system, IBM will have to decide whether its teleprocessing systems will support the Model 40. The teletypewriters supplied by Teletype are among the few non-IBM devices supported by IBM with the 2701 and 2703 line controllers, according to one industry source.

The Teletype CRT is reportedly scheduled for introduction during the International Communications Association (ICA) conference to be held this May in Boston, industry observers noted.

Bell 'Conditioning' Found Deficient

By Don Leavitt
Of the CW Staff

BOSTON – "Conditioning" – to assure effective data transmission – is often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning, Kerry Overlan, assistant telecommunications manager for First National Bank of Boston, told a Caravan/73 workshop on leased-line usage.

That lack of follow-through by the major communications carrier, combined with the "bewildering array" of service offerings expected "sometime" from the specialized carriers, and the vast number of equipment vendors, make today an exciting but "dangerous" time to be planning or installing any data transmission operation, he said.

Many "war stories" can be told about user attempts to explain a specific data problem to a Bell repair service operator, the workshop attendees agreed. The best way around that problem, Overlan suggested, is to get friendly with one specific, knowledgeable repairman.

"Get him a jug, or buy him dinner. Then when you need help, call him directly, and don't bother with repair service," he said, only slightly tongue-in-cheek.

More seriously, he noted, there are objective third-party testing services to check conditioning at "very slight" cost. Several users in the workshop agreed, saying they had used these services and felt they were good.

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Slow to Change Logic

'Packaged' Users Run Blind

By Don Leavitt

Of the CW Staff

BOSTON – Sometimes all the in-house staff knows – even after a packaged system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

With much the same thought in mind, Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never contract for custom programming of an application that he knew was going to entail heavy maintenance. Systems such as payroll, with its required updating of tax routines, are much better coded in-house, he said, so that the maintenance programmers know the program logic.

Any user's primary line of business is a key factor in how well he can utilize packaged application systems. Work done in all commercial banks is similar, Ladd stressed, and there are many packages available and useful to them.

Retailing, on the other hand, isn't like that, MacKinnon said. As a result, Star hasn't bought any application packages even though MacKinnon wants to avoid reinventing the wheel if at all possible.

Both users reported they used or were evaluating DP-related packages such as spoolers, automatic job schedulers, machine utilization report systems and a package that loads DOS programs in relocatable form. Ladd noted that 30% of his in-house programming is coded in Adpac, a packaged, proprietary language.

When Star does go to custom programming, MacKinnon said, it does the design work and it provides the DP standards the result must meet. The company insists on contracts with a "not to exceed" fixed price clause. That way it doesn't have to worry about the productivity of the programmer; the custom house proprietor will see to that.

Documentation Hit

Documentation that accompanies most packages was roundly criticized by both Ladd and MacKinnon. Ladd said that most buyers are getting the proverbial "pig-in-a-poke," but that checking the track record of a system – through on-site visits to current users – is one way in which WCNB evaluates a package before buying.

Call for a 30-day trial if the package looks promising, he added. If it is finally acquired, "pay for it in stages, as the vendor satisfies your doubts. And don't be in a hurry to make the final payment until you're really satisfied with the whole thing," he advised.

Dial-Up Moving Up

BOSTON – Dial-up communications are continuing to improve while the quality of private lines has remained relatively static.

This was one of the opinions presented to users at the Computer Caravan/73 workshop on dial-up facilities.

If a user has at least 60 hours of transmission time per month and can tolerate longer response times than private lines, the switched network offers important efficiencies, according to Ralph DeMent of United Brands.

Interconnection standards for data users will probably be an outgrowth of similar advances in the voice area, DeMent predicted, citing the voice-oriented Carterfone decision as an obvious example.

The dial-up user who installs independent data equipment should understand the functional signals of the RS-232 interface, DeMent said. And Bell will provide users with specifications of the interface on request, he added.

If Datran can provide its promised three-second connect time compared with the 18-second connect time of Bell, "we would use it," DeMent said.

Communications User Is Still Reluctant To Mix His Systems

By Ronald A. Frank

Of the CW Staff

BOSTON – Despite the proliferation of non-Bell data equipment many users are still reluctant to configure mixed data communications systems.

But careful selection of independent equipment can often lead to important cost and performance advantages, users agreed at a Computer Caravan/73 panel session on data communications.

Equipment vendors and carriers have not yet come to a basic understanding of how they will work together, according to Ralph DeMent, systems engineer at United Brands. And because of this lack of a common approach the user often is caught in a fingerpointing session when communications problems occur, he said. What is needed is an attitude of mutual trust between vendors and carriers, DeMent stressed.

Take a Consultant to Lunch

One way to insure enough attention from the local common carrier is to develop a friendship with the local data representative, suggested Stan Dunten of the technical staff at the Dartmouth College Kiewit Computation Center. By taking a data consultant to lunch, the user may be cutting possible red tape that might later be encountered when line problems occur.

For users planning to integrate independent equipment into their networks, Kerry Overlan of Boston's First National Bank offered a novel approach. Those users should first configure their systems with all Bell equipment, and then when the network is fully operational switch to independent hardware. If independent equipment is truly compatible with Bell, then there should be no problem in substituting the non-Bell units, Overlan suggested.

On Building a System

BOSTON – Management factors involved in the implementation of a computer/communications network can often overshadow the technical considerations. The communications manager, therefore, must have an appreciation for corporate goals, according to Gilbert H. Hoxie, manager of the Information Systems Division at Booz Allen & Hamilton Inc.

Speaking at a Computer Caravan/73 session on data communications planning, Hoxie urged users to carefully analyze proposed communications systems using management techniques. The analyst should assume the role of those who have to use the projected system, he said.

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One Application May Justify Keypunch Replacement

By Don Leavitt

Of the CW Staff

BOSTON – With planning and patience, even a single application may cost-justify the installation of a data entry system more modern than keypunching. And once installed, it can be used for other applications with even further dollar savings or operational improvement.

That was the message of the data entry panel at the Computer Caravan Users' Forum and it applied as much when Martin McDonough described an intelligent terminal installation at Fanny Farmer, as when Everett Lawton outlined a shared processor key-disk operation at New England Electric.

Zayre Corp. has used optical character recognition (OCR) scanners very effectively for some of its large volume applications, Noel Goulston, Zayre's corporate methods manager, told the panel. And Herb Cronin added to the discussion with details of a direct entry system at First National Bank of Boston.

At Fanny Farmer, a network of Sycor terminals handles order entry, interconnecting the candy maker's plant, distribution centers and corporate headquarters, and the new operation costs less than the keypunch-printing-mail out operation it replaced.

New England Electric has been able to save about $1,500/mo in machine rentals alone, since shifting from keypunch to key-disk processing for much of its customer accounting, Lawton said.

Accounts payable was the benchmark application used by Zayre to cost-justify its installation of IBM 1287 OCR units. Despite the company's original hesitancy, the devices have effectively broken the logjam which had built up in the data entry area because of both physical and personnel constraints, Goulston told the 300 or more users in the audience.

First National Bank went to direct entry to cope with a large volume of input records, each of which had a high value and therefore had to be handled very carefully even though the bank received a very slight service charge per record processed, Cronin explained. The new approach enabled the bank to realize a staff reduction of 25%, he noted.

Even as they had their triumphs, each of the installations had at least some problems. Zayre, for example, found the 1287s somewhat sensitive to the quality of the handprinting or turnaround printed documents, Goulston said, and an operator has been assigned to check printer output for voids or fills that would be unreadable.

Fanny Farmer's operation suffers if a janitor or anyone else in a remote site turns off the Sycor unit, since the system is designed to operate in unattended mode overnight. If the unit is off, the operator at that location has to wait until the next morning for her reports, McDonough noted.

CW Photo by M.Upton

Martin McDonough describes Fanny Farmer's intelligent terminal network.

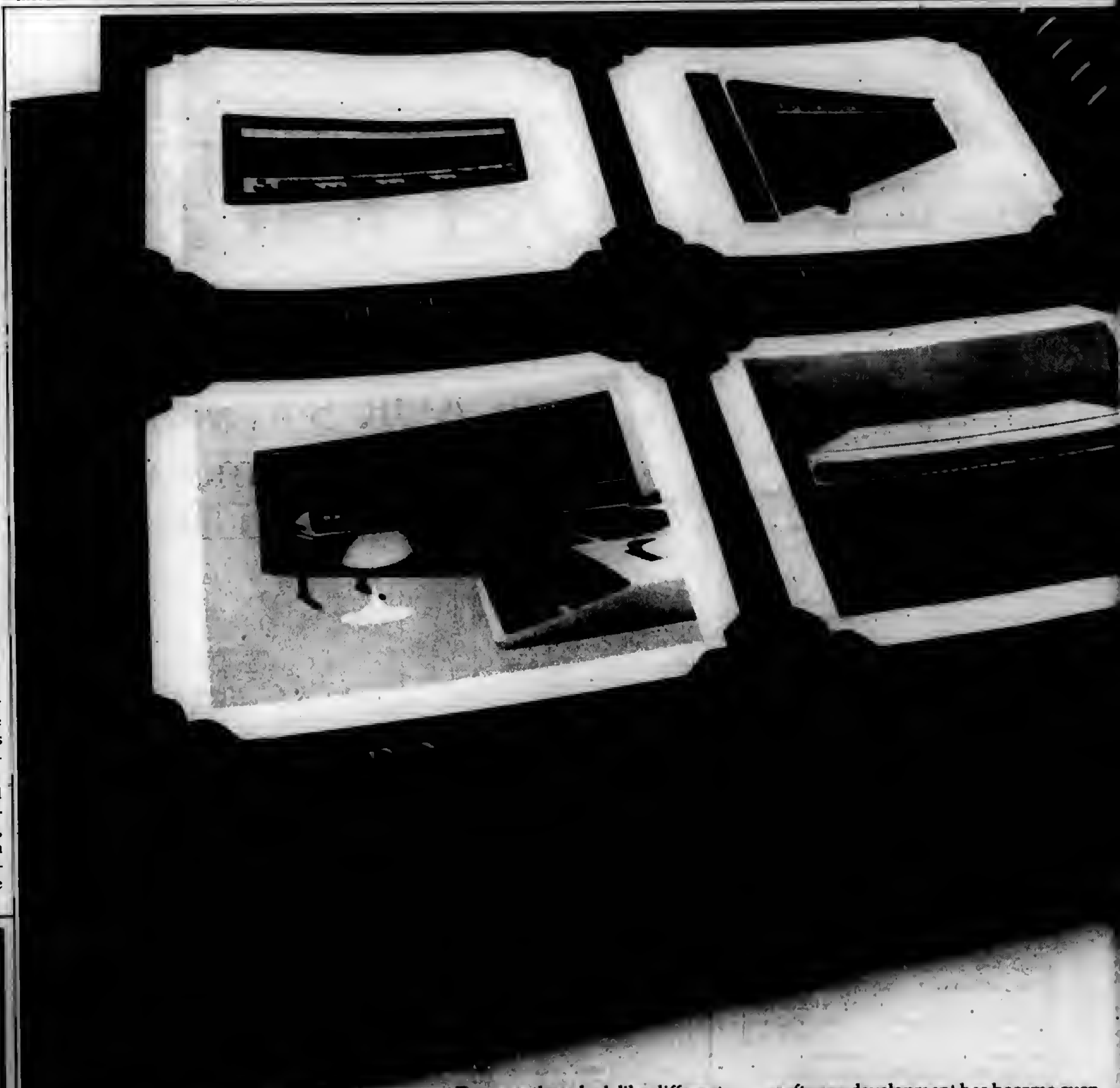
OCR Devices Mean 'Gravy'

BOSTON – Viewing optical character recognition equipment as a keypunch replacement, not as an omnipotent input device, Zayre Corp. has found the installation of an IBM 1287 more than justified on one application alone.

Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

There are, however, several keys to the successful implementation of the scanner system, most of which originate from "good horse sense" of fully utilizing the capabilities of the

(Continued on Page 5)



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Intelligent Terminals 'Tutorial'

Users Told to Evaluate Cassette, Language Features

By Don Leavitt
Of the CW Staff

BOSTON – Only one or two users who attended the Caravan/73 workshop on intelligent terminals had practical experience with the programmable devices and so discussion leader Martin McDonough ran what amounted to a tutorial session based on his experience at Fanny Farmer Candy.

McDonough said any user considering intelligent terminals should evaluate the units' capability to have cassettes and the available capacities; the programming language provided; and the kind of usage he expects to get from the units.

Other factors to consider, he said, are the type of printer, and the type and size of the CRT screen, as well as buffer sizes, and the availability (and desirability) of features such as automatic tabbing from one field to the next.

McDonough had been responsible for the installation of the Sycor terminals that provide Fanny Farmer with a 1,200 char./sec communications system independent of its Honeywell 115 mainframe, but linking the candy maker's distribution centers, its factory and its corporate headquarters.

Largely because orders are received by mail, the communications flow is predominantly outgoing from the DP center, occurring after nightly batch processing on the H115. When the center's Sycor is off-line, it is used as an additional key-entry device, along with a mix of Mohawk Data recorders and Univac buffered keypunches, he said.

The on-line, off-line flexibility is one feature McDonough said he liked best about intelligent terminals. Another is the "tremendous" editing and formatting capability that is possible through programming and the use of cassettes.

Complete conventional editing – zero filling, justification of fields, data type checking – and very rapid check digit calculations, which Fanny Farmer uses on account number, stock number and order number, are all handled in less than 4K bytes of core on the terminals. Comparable routines on the mainframe take about 40K characters, he added.

OCR Devices Mean 'Gravy'

(Continued from Page 4)

scanner and the inclinations of personnel, he said.

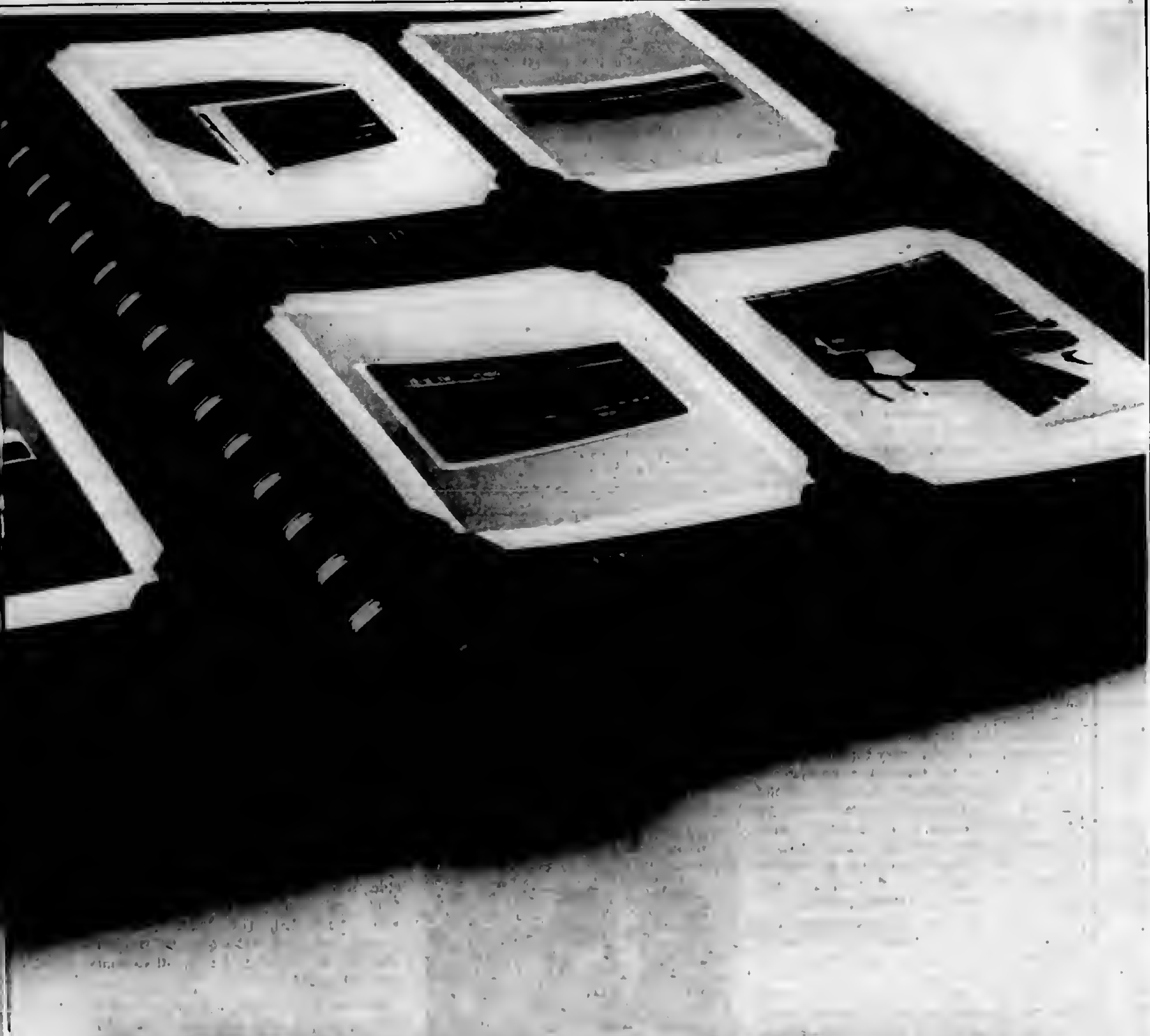
Goulston offered some pointers: design the form so the reference mark is out of the way of a person's hand when writing, to avoid smudging; have the check digit preprinted in gothic font, which is misread very rarely; and make full use of "editing for protection."

Zayre's 1287 requires 18K on its 370/155, which has 1.5M bytes of core. Such checks as check digits, hash totals, field verification, edit fields for minimum, maximum values, and editing for customer number, all serve to cut down the number of substitutions.

Zayre has implemented steps to aid the operator in assuring correct printer alignment, and found that Mylar ribbons, although more expensive, are preferable to 3 mil nylon. "We plan on 100% reading of machine-printed material."

Illegible characters are corrected by the DP department rather than sending them back to the user for clarification, as "we're the department saving the money using the scanning, not the user. We want the user to be happy with OCR," he said.

The savings are impressive at Zayre, which had 14 keypunch workers before the scanner, and now has two. The speed of the unit is between 80 to 120 times as fast as a keypunch/verifier. Goulston estimated this is a savings of about $8,400/mo, less scanner rental which is about $3,800/mo.



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Delta Data Systems mini CRT is for executive use.

Anderson Jacobson's Aeoustie Coupler and Cassette Unit

Roger Paquin from Inter Continental Airfreight tries out Incoterm terminal while John Keyes helps.

CW Photos by Leslie Flanagan

Users get the fine points of the Sycor terminal.

Terminal Systems Abound at Caravan

(Continued from Page 1)

General Computer Systems Inc., Dallas, Texas, added two features – Datatel and Datatext – to its GCS 2100 key-to-disk data entry system.

Datatel allows 2100 users to communicate with other 2100 or 360/370 systems with a line protocol said to be compatible with IBM 2780 and 3780 terminals.

The Datatel capability will support both remote job and remote batch entry applications at speeds up to 50 kbit/sec in full- or half-duplex mode.

For Hasp users, the Datatel feature provides automatic sign-on and sign-off records and allows JCL to be inserted, the company said. Ebcdic, Ascii and IBM transcode are standard as well as Touch-Tone phone and remote CRT input.

Datatel costs $100/mo with first installations scheduled for June.

Datatext is a hardware/software automatic letter writing package that includes variable statement generation, paragraph linking, variable text insertion and related features. It is available in 90 days for $100/mo.

Interface With Memory

I/O Devices showed its 210, 30 char./sec KSR printing terminal. The 2741-compatible system has 132 print positions and costs $4,995 or $115/mo. The terminal includes a "memory" in the communications interface which eliminates the addition of delay and fill codes during long functions such as carriage return and tabbing. I/O Devices Inc. is at 100 Route 46, Mountain Lakes, N.J. 07046.

Anderson Jacobson displayed its 4100 and 4120 cassette recorders designed to operate with the AJ630 Teleprinter and the AJ841 Selectronic. The tape units store up to 70K characters on a Phillips-type cassette and can perform automatic searches of up to 99 files of data, according to the company.

The cassette units cost fron. $2,200 to $2,500 depending on the model or about $110/mo. The company is at 1065 Morse Ave., Sunnyvale, Calif. 94086.

In the add-on core area, Electronic Memories & Magnetics Corp. showed its Micromemory storage system which can operate with the 360 models 30, 40 and 50 depending on which circuit cards are installed in the system. The memory system costs about "40% to 50% of IBM prices," according to a spokesman. EMM is at 12621 Chadron Ave., Hawthorne, Calif. 90250.

Sycor added a high-speed line printer to its 340 intelligent terminal. The 3486 printer operates at 300 line/min with 132-column forms and at 600 line/min with 72-column forms.

The unit, which has a 19.5-in. platen and rents for $470/mo, is designed primarily for remote job entry applications. Sycor is at 100 Phoenix Drive, Ann Arbor, Mich. 48104.

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Peripherals, Data Entry Terminals

Iomec Welcomes 13 Additions to Line

By Michael Weinstein
Of the CW Staff

BOSTON – Iomec led the new products portion of the Computer Caravan/73 Exposition with the announcement of 13 additions to its line of minicomputer peripherals and data entry terminals.

The Porta-verter terminal is an upgrade of the earlier Dataverter and is about the size of a portable typewriter. It utilizes micrologic circuitry to provide capabilities including cartridge magnetic tape, hard copy, status indicators, an electric keyboard, unattended transmission and acoustic or hardwired DAA coupling.

An integrated line printer provides journal hard copy for an audit trail and assists in operator correction procedures, the firm's spokesman said.

Arithmetic features include two registers for control total accumulation, credit balance printout and optional check-digit verification.

Communications transmissions are in Ascii at 1,200 bit/sec. The Porta-verter comes in several models; the Model 40, which incorporates a full range of features, costs $2,350. Lease plans are also available at a monthly charge of $55 to $85.

The OEM Line

New products aimed primarily at the OEM producer include disk drives; paper tape punches, readers, handlers and punch/reader combinations; magnetic tape drive units including dual and triple packaged minicartridge decks; and additions to the Iomec line printer.

The 2560 paper tape reader operates synchronously from 500 to 1,000 char./sec. At 500 and 600 char./sec, it is designed to stop on the sprocket of the stop character and at 1,000 char./sec, it stops before the next character, a spokesman said.

Priced at under $1,000, the unit incorporates a lensless optical system that Iomec states eliminates light source adjustment.

The Series 400 Punch/Handler operates on mylar or paper tape at 70 char./sec.

The Model 170 is a 70 char./sec punch made by GNT Automatic of Copenhagen, Denmark, which will be offered in the U.S. by Iomec. It costs $793.

Don Johnson (left) of Iomee demonstrates Porta-verter for Bruce Weir and R.F. Murphy.

The 7470 perforates mylar or paper tape at 70 char./sec and reads synchronously at 400 char./sec and asynchronously at 300 char./sec.

The reader/punch comes with a 1,000-foot capacity supply bin for the punch, 140 foot capacity take-up for punched tape and 140 foot fan-fold bidirectional bin for the reader.

Price in OEM quantities is around $2,000.

The 2032 Paper Tape Reader operates at 400 char./sec synchronously and 300 char./sec asynchronously.

The 4040 is an integrated tape handler which includes the Model 2540 reader. The unit operates synchronously at up to 300 char./sec right-to-left, with 1,300 char./sec rewind.

The 4040 can handle up to 580 feet of tape on five-inch reels, the spokesman added. Quantity price, complete with electronics and power supply is $1,170.

Disks on Display

The Iodisk 3000 Series utilizes removable top loading disk cartridges – IBM 5440 or equivalent – in combination with a fixed disk. The Model 3042 has a capacity of 48M bits using 100 track/in. The Model 3404 has a 96M bit capacity with 200 track/in.

Average access time is 55 µsec with an option of 35 µsec available. The 3402 costs $4,205 and the 3404 sells for $4,960.

The Model 31 is the newest addition to Iomec's line of flying head floppy-disk systems. It contains one fixed disk with a moving arm access mechanism and two magnetic heads providing add-on mass storage of 3.5M to 10.5M bytes, a spokesman said.

Several new additions to the Series Three magnetic cartridge line were also announced. The triple, dual and single rack-mounted models store up to 300K bytes. The triple unit version Model 313 with controller costs $1,750.

The Series Three Transport, Model 101, is designed for mounting inside a minicomputer to provide an ROM-type capability. It can also be used as a portable diagnostic program entry device.

The Model 9150 Controller connects the computer to both 800 char./in. NRZI and 1,600 char./in. formatters at the

(Continued on Page 7)

Advantage of Real-Time Systems: Clean Up Errors as They Occur

By Ronald A. Frank
Of the CW Staff

BOSTON – A major advantage of on-line data entry is that the process "cleans out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank.

The real-time system at the bank handles accounts receivables, stock transfers, freight payments and mutual funds. The system includes 130 Sanders 720 CRTs which access a DP center with dual 370/155s, Cronin told a Caravan workshop on real-time systems.

The real-time transactions have a 1.5 to 3.5-second response time, which is significant because all terminals are in contention for CPU and disk (3330) time, the user said. Although the on-line transaction processing has helped to reduce operating costs, Cronin said he favors saving large file updating jobs until the nighttime hours.

The real-time system operates eight hours a day and handles about 25,000 transactions a day. This volume may include 40,000 individual messages originated at CRTs, Cronin said.

No Noise

Among the benefits derived from eliminating his keypunch operation and switching to the on-line system are the elimination of keypunch operating noise and a slow 20% to 35% savings in personnel achieved through natural attrition, he said.

The bank wrote its own teleprocessing monitor to handle the on-line system which was begun in 1968. The in-house software development would not be required today with the more advanced software commercially available, he said.

Remote Operation

While most of the CRTs operate in local mode hardwired to the dual 155s, some operate remote. Dial-up lines of 1,200 bit/sec are used by CRTs in Los Angeles and conditioned private lines operating at 2,400 bit/sec are used to transmit data several miles from a site outside Boston, he said.

The Sanders CRTs were chosen because they offered features "in advance of the industry," Cronin said. He emphasized that once equipment is selected for a real-time system, "the die is cast." Despite initial problems with system design the system now operates at about 99% efficiency, he said.

General Computer Systems Shared Processor System.

CW Photos by Leslie Flanagan

Visitor samples I/O Devices teleprinter.

EM&M shows add-on 360 memories.

Iomec offers 13 new products at its booth.

Iomec Adds to Line

(Continued from Page 6)

same time with up to four drives on each formatter, a spokesman said. It is priced at $2,100.

The Model 202 medium-speed printer incorporates a multifont buffer which automatically adjusts speed to the typebelt character set, permitting the unit to operate at speeds up to 526 line/min.

Iomec, Digitronics Division, is at Rt. 9, Southboro, Mass. 01772.

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Editorial

Leasing: the Pitfalls

As equipment lease plans become more sophisticated, the user appears to benefit from lower prices and better package deals.

But there are also some unusual constraints a lessee must live with. The lease plan often becomes a corporate financial situation with DP trade-offs becoming secondary.

The DP manager can certainly bring some important cost considerations to the attention of his management, but the equipment operating characteristics and corporate DP goals must not be incidental.

The controller who signs on the dotted line for a lease offer he couldn't refuse, without accepting the technical counsel of his DP manager, can easily bring grief on his company.

The User's Burden

Letters to the Editor

After the Seven Dwarfs—Make Way for Pied Piper

In the past, the data processing industry was described as Snow White and the Seven Dwarfs, with IBM being "Snow White." Since Dopey and Sneezy have subsequently died, this particular analogy is no longer apropos.

Now, IBM could best be considered the "Pied Piper of Hamelin." If one recalls, the Pied Piper disposed of the rats (the competitors). Subsequently, after not being properly paid for his work, not meeting 20% profit growth per year, the Pied Piper then took the children (the customer) and disposed of them.

It must be recalled that there was much consternation in the town of Hamelin after this particular act occurred. Finally, the Piper obtained his price and all was settled with peace (the consent decree of 1974).

It appears that the rats were paid off by IBM's legal staff and were allowed to live happily ever after, never to be heard from again.

I am not too sure whether the children of Hamelin, who should be the recipients of the computer industry, ever did or will benefit from the conclusion of this fairy tale. Most fairy tales end with "and they lived happily ever after."

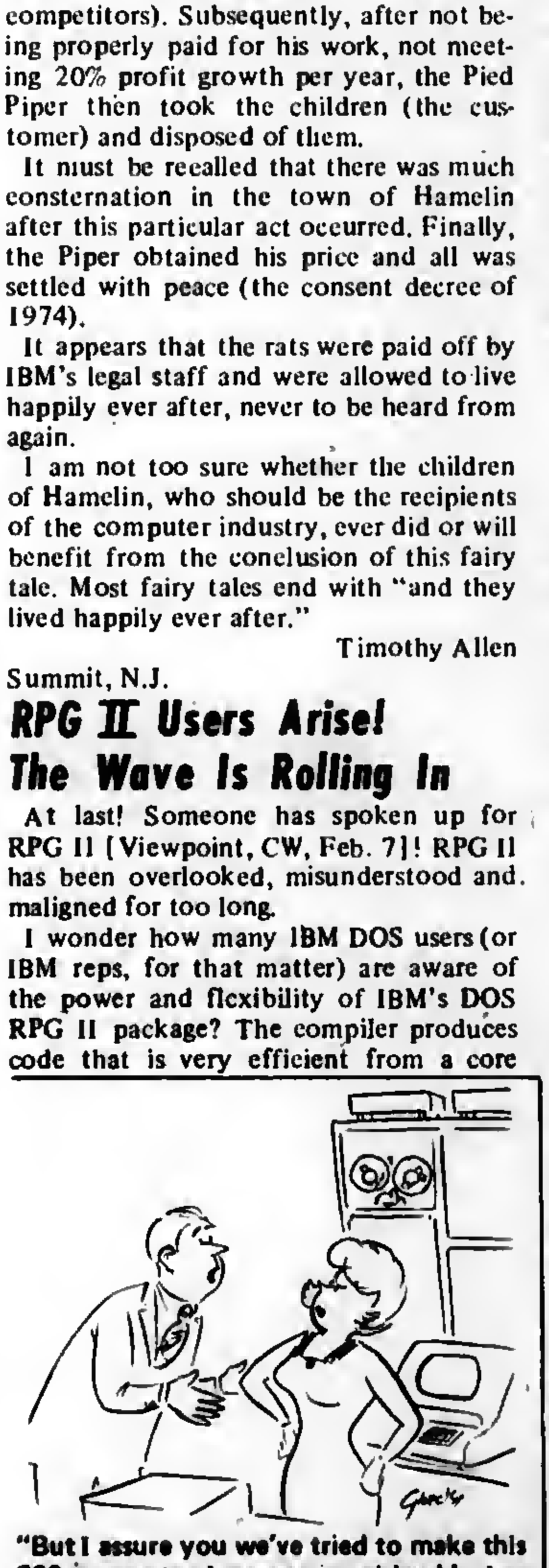
Timothy Allen

Summit, N.J.

RPG II Users Arise! The Wave Is Rolling In

At last! Someone has spoken up for RPG II [Viewpoint, CW, Feb. 7]! RPG II has been overlooked, misunderstood and maligned for too long.

I wonder how many IBM DOS users (or IBM reps, for that matter) are aware of the power and flexibility of IBM's DOS RPG II package? The compiler produces code that is very efficient from a core utilization and throughput standpoint, and is a far cry from the standard "free" DOS RPG compiler. There is even an optional feature that implements a "SORT" verb and a "COPY" verb, and further simplifies coding.



"But I assure you we've tried to make this 360 computer language considerably less icky."

RPG II is not just for the System/3 or 360/20 user, nor is it just a "quick and dirty" report generator. It can easily (and very effectively) be the only language in a commercial DOS shop, and will beat Cobol hands down any day.

Enhancements are indeed desirable, especially the "CLOSE" verb mentioned, along with an "OPEN" verb, particularly for heavy tape users. Also badly needed is an improved table/array search routine, similar to the binary search implemented in 360/20 DPS RPG.

RPG II users arise! A vocal group of users is needed to support RPG II, spread its use and encourage its further development. I would be happy to hear from anyone with similar thoughts. Maybe N.M. Demos has started something; RPG II may indeed become the "wave of the future."

T. W. Dowling, CDP
Manager, Data Processing
States Steamship Co.
San Francisco, Calif.

Welcome to Postal Chess

As readers of *Computerworld* and former members of the EDP community, we at the U.S. Chess Institute invite all CW readers to compete in our industry-wide postal chess tournament.

Let's find out where the EDP grandmasters really are.

More information is available from the U.S. Chess Institute, 6 E. 43rd St., New York, N.Y. 10017.

Dyan Parker
Secretary
U.S. Chess Institute
New York, N.Y.

Story Rallies Reader

After reading the article entitled "Societies Rally to Support Computer Foundation Plan," I am interested in applying for both a Certificate in Data Processing and Registered Business Programmer. How can I apply for these exams?

Albert A. Peterson
Centereach, N.Y.

The Data Processing Management Association, which administers both exams, is at 505 Busse Hwy., Park Ridge, Ill. 60068. Ed.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

In-House Translator Was Fine But It Solved the Wrong Problem

By Miles Benson

Special to Computerworld

Over 1,000 programs.

That was how many Autocoder jobs had to be converted from Company Q's aging old computer to its spanking new one.

The vendor for the new computer didn't offer any conversion aids that Company Q could use. It was pioneering, for one thing . . . no one had ever made this particular conversion before.

And the new vendor marketed hardware at an unbeatable price; software, that which came along in the deal, was minimal.

But Company Q wasn't worried. It had put together its own software team to compensate for that particular problem.

One of the pieces of software to be built by the in-house team was a translator to convert Autocoder jobs to something which would run on the new computer. The translator task was assigned to a carefully chosen group of compiler specialists. The project was named QTRAN.

Viewpoint

The QTRAN group took a cautious and conservative approach to the project. It became as familiar as it could with Autocoder, studying the documents and consulting with users. It surveyed the software available on the new computer, and picked a feasible implementation approach.

Everything seemed workable. With its direction set, the team reviewed and revamped earlier rough cost and schedule estimates, had them bought off by management and set to work.

Company Q, the QTRAN team learned, had been using a unique portion of Autocoder. Management had directed that Autocoder programmers use a high-level version of Autocoder using general-purpose macros. A few exceptions had been made, but for the most part all 1000-plus programs had been coded in this high-level, macro Autocoder.

QTRAN, then, could simply be a compiler, taking Autocoder macro source statements in and spitting out new computer object code ready to be loaded.

The new computer had a crackerjack loader, the QTRAN team had learned, with some special modules for interfacing user-built processors so that object code generation and loading were a breeze.

And the translation task itself wasn't too bad.

The algorithms for conversion of high-level source to object code were worked out in detail. No hitches to the original design turned up as implementation worked down to the nitty-gritties. Oh, there were around 100 macro statements in high-level Autocoder, but that only impacted the bulk, not the feasibility, of the task.

Several satisfying months went by. The QTRAN team built its compiler, built its object library and began checking it out using little test problems of its own design.

As the obvious bugs were found, the team's confidence grew. As the subtler bugs were found, things looked even better. QTRAN was able to take anything thrown at it.

It was ready to be tested in the real world.

The team checked in again with the Autocoder users, and asked for a few production programs to run as guinea pigs to help wring out the system.

The compiler, scanning the Autocoder source programs for syntax errors, churned out an inordinate number of diagnostics. On closer inspection, most of the errors turned out to be unidentifiable statements. The borrowed programs simply weren't coded in the language QTRAN was prepared to process!

"Oh," said an Autocoder user when they returned to him for an explanation, "those unidentifiable statements are one-for-ones."

"One-for-ones," the QTRAN staff said. "What are those?"

"Non-macro statements," the Autocoder user said.

"But we were told you didn't use that kind of statement," the QTRAN team said.

"Management told us not to," the Autocoder user said. "But most of us found that wasn't practical, so we went ahead and used what we had to to get the job done."

The truth was beginning to get through to the QTRAN team. The processor it had built simply didn't match the programming practices of the public it was designed to serve.

And there was no way to salvage the situation. Translating one-for-ones called for an entirely different design approach. QTRAN was, quite simply, worthless.

No one threw the QTRAN listings away. It had been a good implementation job, something to be proud of. And the QTRAN team was proud.

It was a peculiar pride, though, tainted with the knowledge that the problem it had solved so well was the wrong problem.

Could Be Declared 'Non-Standard'

New Cobol Verbs Handle Videos, Keyboards on Mini

The Taylor Report

By

Alan Taylor, CDP

Cupertino, Calif., was recently the site of some very exciting Cobol developments. A minicomputer firm, Four Phase Systems, introduced an Ansi Standard compiler. That is news in itself – but in addition the compiler provides extensions of Cobol which allow keyboard data and video terminals to be used easily and effectively.

Now, under the current proposal before the American National Standards Institute, Four Phase is threatened with having its compiler declared "non-standard" by a committee composed of respresentatives of competitive implementors who have not developed the language to the same extent, or onto the same level of equipment.

The Four Phase developments in the language include a section in the Environment Division where a user can specify the video screen size for his program. This allows him to define the screen size, giving the number of lines per screen, and the number of characters per line.

Under the current Four Phase system a maximum of 24 screens, or terminals, can be supported while the line lengths are either 48 or 81 characters. However, nothing in Cobol requires this restriction.

All the video screens can be programmed independently from each other through the standard use of subscripted or indexed variables in the Procedure Division. These variables control the input and the display of data on the particular terminal. The programmer can also keep his terminals separated for programming purposes by using an Apply clause in the Environment Division.

Windows in Working Storage

This Apply clause provides for some data name to be used by the terminal. In the Four Phase concept, this variable is used to define a record in working storage. Effectively it makes each screen a window to working storage. This window is accessible by the programs and by the operator at the time of object performance.

Accessing is done by a special extension Key-In. This verb operates asynchronously, so that each terminal can work independently from the others and from the main operational program. At run time the program accepts data from the keyboard itself.

In the illustrated demonstration program, for instance, the use of this asynchronous program is included in the declaratives which head the Procedure Division. In this example, the data is simply moved from the terminal to a specified position on the screen, but more can be performed at this point.

Priorities can be established, for instance. Editing can be performed so that the screen image of the input is checked for error, and is presented in its most understandable form.

After the typed input has been accepted and represented on tbe screen, the operational Cobol program continues, while the terminal operator can continue keying in more information or await his turn for major processing.

Will It Fit In?

So much for the technical area. Of much more general interest is the position of this implementation of Cobol within the standard operation.

For there is no doubt about it – this set of extensions of the current Cobol standard *is* valid. The right to add extensions to the standard has always been said to exist specifically for such improvements.

Four Phase has been very careful to prepare its Cobol compiler along the lines of the standard. This job was completed quite recently; the first manuals are dated Aug. 1, 1972. At the moment it can correctly be called Ansi Standard Cobol.

But soon, if the plans of the Ansi X3 Committee are successful, this innovative compiler can be declared non-standard, just because it does not follow a document that on Aug. 1 was still kept secret from the community.

All copies of the then current X3 document were marked "Working Draft – Document for American National Standard Cobol. Note: This is an internal X3J4 working document. It is not for external distribution."

Of course, the document was available to the competitors of Four Phase Systems – the big computer manufacturers. Many of them were already building compilers to match the expected new standard. But it was *not* available to Four Phase.

In short, here is a promising technique which uses the established way for developing Cobol, which is liable to get cut down by a new standard.

I don't think the methods adopted by the Ansi committee for the development of Cobol are effective for the data processing community. No matter how effective they may be for members of the committee.

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Extensions to Ansi standard Cobol include calls and the Video feature. These extensions provide:

- CALL USING allows Cobol or assembly language subroutines to be executed in line in the Cobol program. USING allows parameters to be passed to subroutines.
- Video feature includes non-file-oriented I/O for controlling video display terminals. Highlights: The APPLY verb allows data-names to be associated with the keyboards and the keyboard control characters. A Screen Section in the Data Division allows any number of screen formats to be defined, with each field being defined on a row and column basis and given a PICTURE. The KEY-IN verb allows the cursor to be placed at the beginning of a field and data to be accepted in that field. USE AFTER KEYBOARD DECLARATIVES allow communication between the interrupt-driven keyboards and the main, or background program.
- USAGE IS KEY-IN in the Screen Section allows general alphanumeric-type input to be edited in accordance with its contents instead of its PICTURE.

Summary of Four Phase Cobol Additions

Description taken from System IV/70 Cobol Language Definition Manual which costs $2.50 from Four Phase Systems Inc., 10420 N. Tantau Ave., Cupertino, Calif. 95014. Also available is the System IV/70 Cobol Programmers Guide for $2.

```
ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.    FOUR-70.
OBJECT-COMPUTER.    FOUR-70.
   SCREEN SIZE IS 24,48.
   MEMORY SIZE 8192 WORDS.
INPUT-OUTPUT SECTION.
I-O CONTROL.
   APPLY KEY-DATA TO KEYBOARD.
DATA DIVISION.
WORKING-STORAGE SECTION.

01 KEY-DATA.
   02 KEYBOARD-NO     PICTURE 9 COMPUTATIONAL.
   02 TERM-CODE       PICTURE 9 COMPUTATIONAL.
SCREEN SECTION.
01 FORMAT-1 OCCURS 2 TIMES.
   02 COMMAND       PICTURE X(13) POS 1,1 USAGE KEY-IN.
   02 LINE2         PICTURE X(48) POS 2,1.
   .
   .
   .
   02 OVER-90-S        PICTURE Z(4), 99 POS 12,40.
01 FORMAT-2 OCCURS 2 TIMES.
   02 FILLER           PICTURE X(142) POS 1,1.
   02 MESSAGE          PICTURE X(48) POS 4,1.
   02 FILLER           PICTURE X(384) POS 5,1.
PROCEDURE DIVISION.
DECLARATIVES.
INPUT-COMPLETE SECTION, USE AFTER KEYBOARD INPUT.
INTERRUPT.
   MOVE TERM-CODE TO CHAR (KEYBOARD-NO)
END DECLARATIVES.
.
.
.
CHECK-STATE-END.
   MOVE SPACES TO CHAR (INDEX1).
   KEY-IN COMMAND (INDEX1).
   GO TO TERMINAL-CHECK-2.
```

Cobol Program Using Video Feature

The above extract illustrates some of the video controlling extensions of Cobol developed by Four Phase Systems. In the Environment Division, a description of the terminals is given, and the controlling data word KEY-DATA is identified. The word itself is defined in the Working Storage section, followed by definitions of the screens. Many screen formats can be defined and each format can be used by every screen. In the Procedure Division, the asynchronous terminal handling is provided in the declarative area, while the actual processing is handled by a Key-In command, and then in the normal way by the program.

Can't Blame Everything on the Mails

The Readers Respond

In the Dec. 6 column Mel Tolhurst of New York gave an example of the letter he sent to various credit card agencies when they billed him for finance charges he thought were not due. He claimed the companies had waited a week from the date of preparation to mail the bill to him, while setting the due date from the preparation date.

In a second column [Jan. 17] I calculated that by charging a month's interest on items paid within three or four days after the due date (as in Tolhurst's case) the real interest rate was more like 80% rather than 18%/yr.

This situation is frequently blamed on the slow mails but one reader's experience suggests another reason. This reader was assessed finance charges even though the money had been received by the bank concerned, cashed by the bank, but simply not posted to the account for six days!

Kay DeBrie of Stanford University was lucky. Not only is she an organized analyst, who keeps the envelopes as well as the bills, but the Palo Alto Bank of California, where she banks, returns checks cashed on the 11th of the month before the 23d. Thus, when she received her Master Charge bill on Jan. 23 she was able to document that the money had not been delayed in the mail, which would have made the finance charge proper.

As it was, she could see that the Master Charge people had received the money before the due date, had not posted it until six days after they cashed her check, and had assessed her finance charges. (Incidentally, the charges were rounded by 0.495 up against the customer, just to add insult to injury).

The dates concerned were:

Dec. 18 – Date of statement which fixed Jan. 12 as due date, bill amount $177.67.

Dec. 29 – Bill mailed from San Francisco

Jan. 10 – Check made out for full amount

Jan. 11 – Check cashed

Jan. 17 – Second statement date. No credit entered, and balance of $177.67 subjected to 1-1/2% finance charge of $2.67

Jan. 22 – Bill mailed from San Francisco

Jan. 23 – Bill received, documents collated showing that the money had been paid before the Jan. 12 due date, and a letter sent to the Bank of California, the Redwood City District Attorney, the Redwood City Better Business Bureau and *Consumer's Report.*

So poor mail delivery may not be the only reason for the many complaints about the finance charge situation. It seems that the situation is open to systematic abuse at both ends with the blame placed on the mails.

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The Professional's Viewpoint

CDP Must Protect the Public Interests

(This is an abbreviated version of a paper on "The Future of Certification" presented at the 1972 DPMA Conference.)

By Theodore C. Willoughby
Special to Computerworld

The Certificate in Data Processing does not satisfy the needs of data processing professionalism in the public areas. Strengthening is required in these areas if the CDP is to serve as a professional qualifier.

To see why, one must consider whether DP is a profession.

Professions tend to develop cultures peculiar to their own group. These are often built amid a network of formal and informal groups usually involving their professional associations and schools. They often have relatively unique values, norms and symbols.

Values not questioned by the professional are the intrinsic worth and the social goal of his service. He sees the community welfare enhanced by his work. He is convinced the professional is wiser than the laity and that monopoly serves the public need. The professional believes in rational approaches to the application and enhancement of knowledge in his profession.

Ways of securing clients, challenging theory, grooming a protege and recompensing a sponsor tend to be normalized in a profession. Professions also develop certain titles, insignia, emblems, dress or other totems by which they can be discriminated.

Religious Experience

In a sense, entering a profession is analogous to entering a religious order. Work becomes the major purpose of life for the professional. The sanctity of the profession requires that deviants be identified and culled early in the educational process.

Does DP management know enough about DP to evaluate a DPer's services? Consultants in DP can list many cases in their own experience in which the purpose of the engagement was to evaluate the DP staff.

More than half the assignments of one well-known consultant have resulted in the firing of the data processing manager.

Could it be that the typical management/DP communication gap (I can't understand him – he can't understand me) is in part a continuing fight for professional authority on the part of the DPer? Certainly most practitioners I know would like to avoid the explanation and persuasion currently required.

Current DPers don't perceive that they have professional authority, but many would like to have it. One way in which I see it coming is through public demand.

If the public should decide that attestation is needed in any DP area, then some such professional authority will have to be created. Some possible areas where the public may have an interest in certified products of our work are: annual financial statement attestation, regulation of private and public data banks, voting systems, billing systems, program certification and mail order systems.

Consumerism has enough strength to push through laws in one or more of the above areas. If the laws pass, they are fairly likely to contain some form of required certification, and then the professional authority will be created. As it will have been created by public demand, it will include public safeguards.

Certification programs – like the CDP – will then be acceptable as a center of such "professional authority" if and only if they ensure that public interests are protected. This is not currently so, and it is therefore in this area that the CDP needs strengthening if it is to serve as a professional qualifier.

Willoughby is assistant professor of business administration at Pennsylvania State University. He is a member of the DPMA Certification Council and the Society of Certified Data Processors.

Paranoid Programmers, Do Not Relax Yet--Facts Speak Truth

By Dick H. Brandon
Special to Computerworld

A foul rumor has been making the rounds of late, fueled by a scholarly study by T.C. Willoughby and embodied in a quasi-scurrilous article in *Computerworld* [CW, Jan. 3]. Under the headline "Paranoid Programmers, You're Really OK," the article attempts to assuage the fears and insecurities properly resident in the normal programmers (a clear contradiction in terms!).

In any event, it is now suggested that the average programmer is no more schizoid than the average musician, and that in fact programmers may be less so. In a dazzling series of syllogisms, the article appears to prove that the fact that programmers do not like documentation clearly demonstrates they are not schizophrenic.

Wow!

It is a fact that programmers are independent, and often work independently for months at a stretch. It has also been proven (by Dr. J. Whitkin) that the better programmers are more inward directed or introverted, rather than ambiverted or extroverted. When these characteristics are present to excess, paranoia or other milder neuroses result.

The dominant test in the industry is the IBM Programmer Aptitude Test, cited as selecting the majority of field entrants in the 1967 CPR study. Now anyone who has taken that test knows it takes a certain gleeful twist of mind to properly construct the spatial relations symbology, or to know how many chickens can lay 327 eggs in 46-1/2 hours.

Viewpoint

Any data processing manager of experience can tell hundreds of stories of erratic, funny, neurotic or paranoid behavior on the part of his development staff. The evidence of one's eyes, not to mention the Connecticut mental institution whose inmates scored higher on the PAT than its programmers, certainly suggests that the time for relaxing is still way off. Thus, in your heart you know I am right . . .

Please note this is not an attack on programmers (I are one). It is simply an observation of facts and circumstances which lead me to believe that genus programmus sapiens is more likely to be or go nuts.

There are many fine non-neurotic and non-schizoid programmers, I am sure, but to ignore the facts is ostrich-like and will not help the industry surmount its many problems.

Anyway, I certainly would stop being paranoid, if people would stop picking on me.

Brandon is president of Brandon Applied Systems, Inc. in New York.

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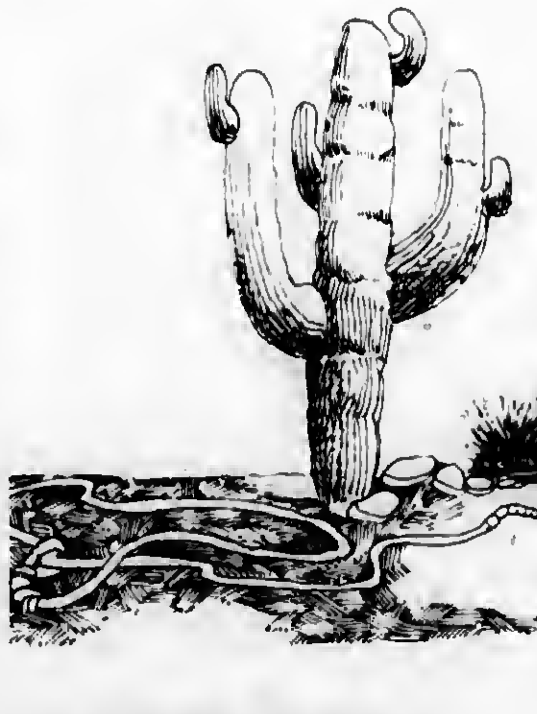

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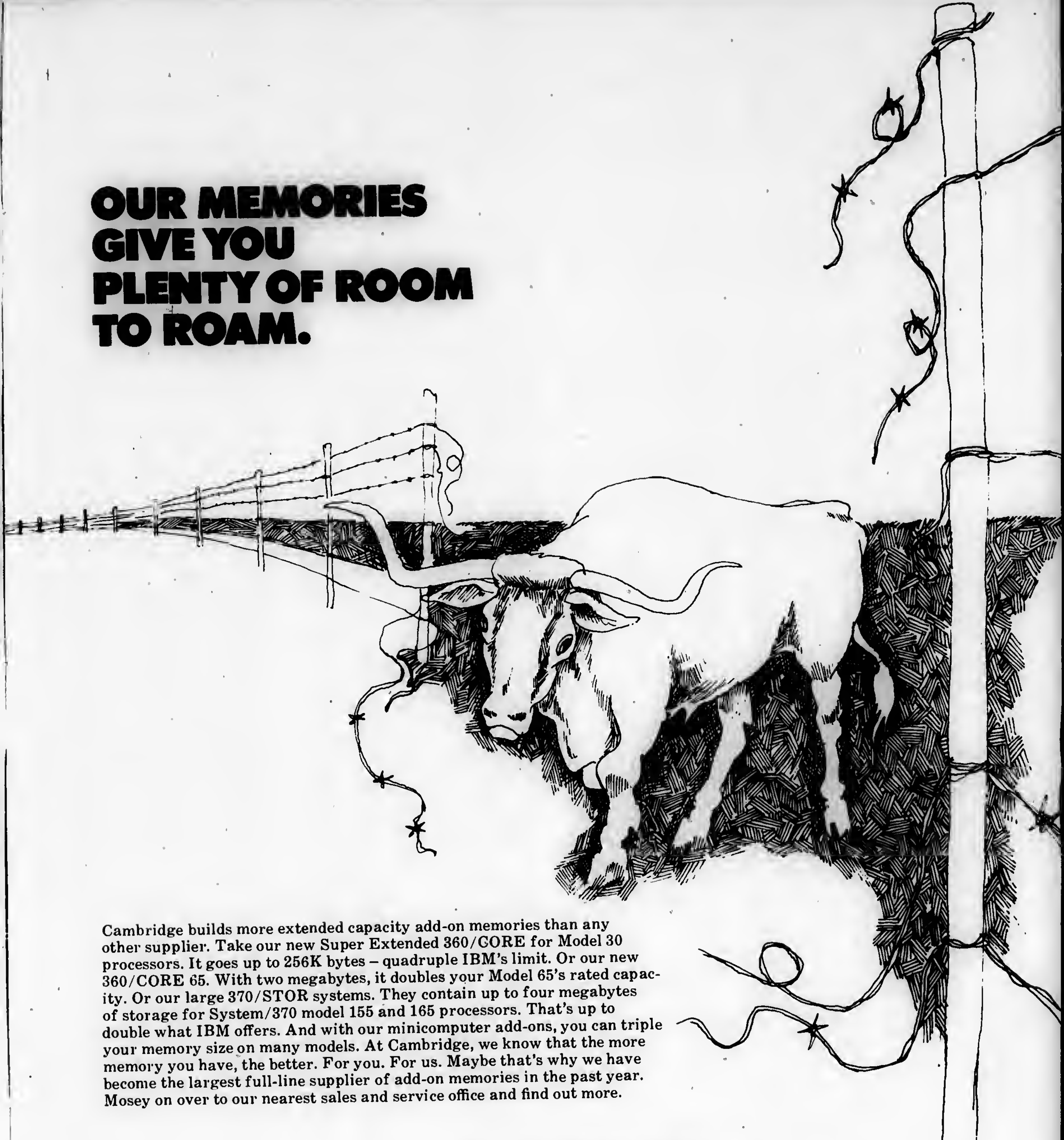

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SOFTWARE & SERVICES

Random Notes

'Less/Time' Uses 8K 1130 For Fast Critical Pathing

HOUSTON – IBM 1130 users with at least 8K memories can run critical path scheduling work on their equipment with the Less/Time program from Process Control Specialists Co. (PCS). The package is said to feature simpler input and faster operating speeds than other commonly available programs.

Less/Time is available for license on an 8K 1130 for $1,000, or on a 16K system for $1,250. Object code is copied on a customer-supplied disk, and an instruction manual is included, PCS said. The firm can be reached through P.O. Box 22902, 77027.

Datacrown Mounts RJE Payroll System for U.S., Canadian Firms

TORONTO, Ont. – U.S. and Canadian firms can take payroll processing off their in-house equipment and run it through a remote job entry terminal linked into a payroll system developed by Comtech Group International Ltd., and installed on Datacrown Ltd.'s 370/165 here.

The system is being adapted to handle both Canadian and U.S. tax structures. The remote processing protects the sensitive nature of payroll data while the RJE support means the source documents never leave the user's location or control, a spokesman noted. Datacrown is at 650 McNicoll Ave., Willowdale, M3A 2R4.

PDP-11 Operating System Low-Cost, Handles Multitasking

MAYNARD, Mass. – A new small, low-cost, multitasking operating system for PDP-11s has been announced by DEC. Called RSX-11A, the real-time executive is priced at $750 and is designed specifically for the PDP-11/10, 11/20 and 11/40 computers.

Core usage ranges from 2K to 5K words, but the system relieves the user of writing detailed I/O instructions or of planning timings, data buffering, scheduling, priority handling and other system-related operations. Minimum hardware is a PDP-11 with 4K words, teletypewriter and high-speed paper tape reader/punch.

Colleges Get Accounting Help

ROCHESTER, N.Y. – College and university financial officers can get both managerial reports and traditional accounting information from the same set of input data by using the Financial Accounting System from Information Associates Inc. (IAI).

A flexible subcode structure allows managers to shape reports to their needs, within institution-wide parameters, the company said. Installation support for the $45,000 package includes consultation and training of user personnel, as well as ANS Cobol source code.

IAI is at 20 Union St. N., 14607.

Xerox Junks UTS, XOS

'CP-V' Lets Users Mix System Modes

By Don Leavitt
Of the CW Staff

EL SEGUNDO, Calif. – Xerox Corp. has announced a multi-use, virtual memory operating system to replace both the Xerox Operating System (XOS) and the Universal Timesharing System (UTS) for Sigma 6, 7 and 9 mainframes. First version of Control Program-Five (CP-V) will be available in the second quarter of this year without cost to users, the company said.

When fully installed, the new operating system will be capable of supporting five modes of operation simultaneously: multiprogrammed batch; remote-batch processing; time-sharing; transaction processing; and real-time operations.

Existing application programs are expected to be compatible with the new operating system, a spokesman said, and CP-V will support sequential, keyed or random access files.

Announcement of CP-V means the ill-starred UTS project (which took far longer in development than Xerox had expected) has reached a stage comparable to the "functional stabilization" of IBM's DOS/360. There will be no further development of UTS, a spokesman said, but installations may continue to use it without prejudice.

Since Xerox is bundled, he added, maintenance of UTS – and XOS as well – should continue to be available as needed and without cost.

To maximize throughput, he said, the multiprogrammed batch mode will accept up to 16 concurrent batch jobs. IBM's DOS, by contrast, operates with a maximum of three partitions, each of which normally handles one job at a time.

Many Terminals Acceptable

Under the remote-batch processing option, CP-V will accept jobs from a variety of terminals, including IBM 360/20s and University Computing Cope 1200 devices. With a future enhancement, scheduled to be available the fourth quarter of this year, CP-V will also accept input from IBM 2780s or compatible terminals, Xerox noted.

Interactive time-sharing, with APL, Basic or Fortran, will support as many as 128 concurrent users, each of whom will effectively have the full power of the CPU available to him.

The transaction processing mode, like remote-batch, is to be implemented in two stages. The basic support will provide the user with the on-line data management system (DMS) that has been a part of the older operating systems for some time.

An interactive data base processing language to provide on-line information retrieval and display from an Extended DMS data base is scheduled for release in the fourth quarter of the year.

Communication facilities for polled, multidrop lines for a variety of terminals will also become part of the transaction processing capability, but only in a future release with an as-yet undisclosed delivery date, the company said.

Support for real-time operations will also be made available toward the end of the year. This mode will provide the capability to handle both resident and non-resident tasks. Real-time responses will be less than 500 µsec 99% of the time, a spokesman claimed.

'Mainstream' Backs Common Data, Service Choices for Remote Use

DOVER, N.J. – Remote-computing network users now have another vendor to consider when planning to set up a data base accessible from multiple nationwide locations.

Boeing Computer Services' (BCS) Mainstream service is based on IBM 370 equipment at the BCS data center in McLean, Va., and can be reached by a call to the user's nearest BCS office.

Multiple locations of a single user will be able to work against a single data base and work with identical programs if they wish.

Within Mainstream, users are provided four services. Remote job entry is available in two forms: medium speed (up to 4,800 bit/sec) supported under Hasp; and low-speed (to 120 char./sec) backed by the Time-Sharing Option (TSO) on OS/370.

Conversational editing service for file creation, retrieval and modification is also available to users of low-speed terminals.

Finally, local batch service for actual entry of data and jobs is supported under Mainstream, but only at the McLean facility, BCS said.

RJE supports production and compilation requirements of users at remote sites. The Hasp-based service enables the user to treat his intelligent terminal or small-scale CPU linked to the service as the I/O device for the BCS mainframe.

The TSO offering supports multiple concurrent users, each of whom feels he has exclusive use of the system resources. The company has modified IBM-supplied TSO coding "somewhat" to improve its effectiveness, but users should be able to move programs from other TSO environments to Mainstream "without any problem," a spokesman said.

Key to the effectiveness of Mainstream, he added, is the BCS-written Job Stream Manager (JSM) which works along with OS/370. JSM processes jobs in accordance with the service time period required by the user, but it also sorts jobs by type and priority to establish an optimum processing rate.

All OS-supported assemblers and compilers, including Fortran, Cobol and PL/I, as well as an array of utility programs and all the OS access methods, are available under Mainstream, the company noted, and the service could be used to replace or supplement a full-scale CPU at a user site.

'Pofus' Focus on Procurement

LA JOLLA, Calif. – Procurement and production managers can ensure that required materials are available as expected, or that they are aware of any delivery snags before they become real problems, with the Procurement Follow-up System (Pofus) now available from Systems, Science and Software.

Improved control over parts orders and subcontracted assemblies is provided under Pofus through two management exception listings: a procurement follow-up report and a procurement late report.

The follow-up list shows, by vendor, all materials due to be delivered in selected time periods in the future. This report can be the starting point for follow-up phone calls to confirm or update the promised delivery schedules.

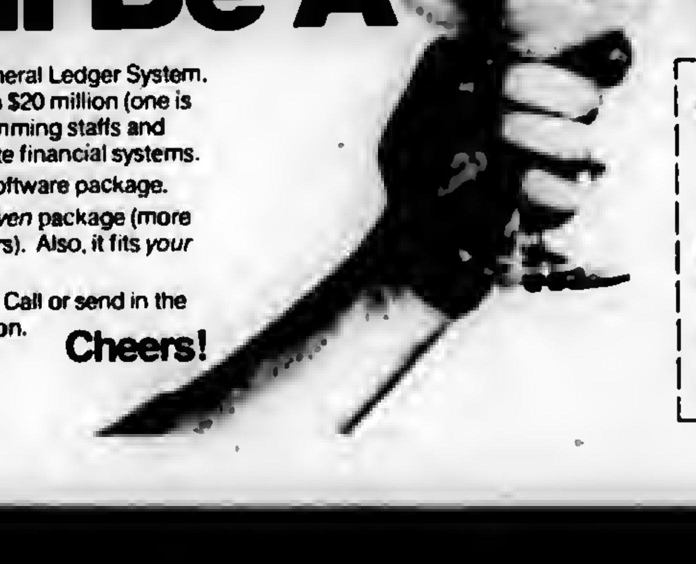
At the same time the report is printed, prepunched cards are generated by Pofus for use as turnaround documents by the receiving department to signal when the shipments have in fact arrived.

The system can be run interactively from terminals at the manager's office or work station, or in a batch environment if time is not a critical factor.

The system is written in ANS Cobol and is available as a time-shared service on the company's Univac 1108, or as a package for installation on a user's own system. The largest operation, a sort, requires about 27K words of storage on an 1108, but most of the Pofus programs fit in 10K to 15K words, a spokesman said.

It can be purchased for $4,500 plus cost of conversion to other hardware, including 360 or 370 equipment.

Systems, Science and Software can be reached through P.O. Box 1620, 92037.



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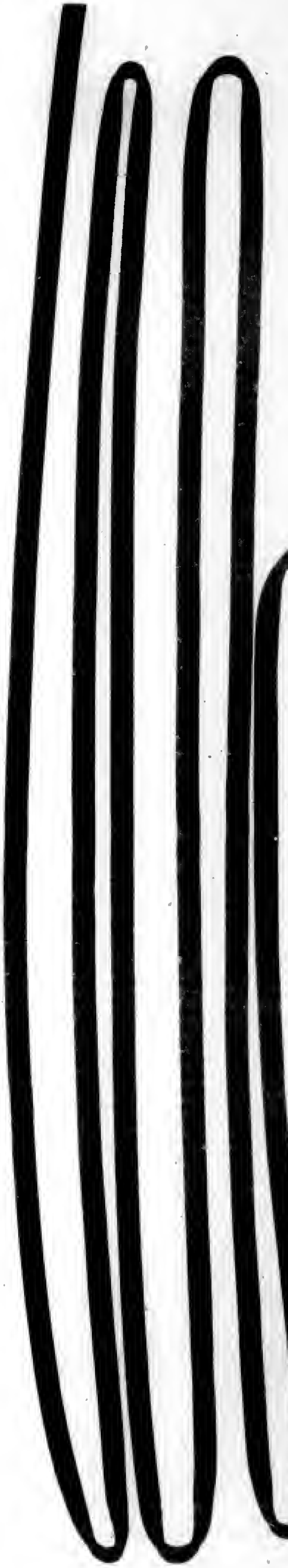

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Data Briefs

Olivetti Terminal Series Includes TPS Language

NEW YORK – Olivetti's DE520 series of remote intelligent terminals is designed to use TPS programming language which has 35 instructions and is said to simplify users' application programming.

DE520 terminals consist of desktop units with read only and random-access memories for data and program storage, a character display screen, alphanumeric and numeric keyboard and a magnetic cassette reader-recorder.

An optional communications interface permits synchronous transmission over the dial network at speeds of 600 to 2,400 baud. Prices of the DE520 systems start at $6,700. Olivetti is at 500 Park Ave., 10022.

Tycom Expands Terminal

POMPTON LAKES, N.J. – Tycom Systems Corp. has expanded the capabilities of its Holmes Tycom 38-keyboard, send-receive terminal.

The expanded Tycom 38 offers 10- or 15 char./sec and a 32-character buffer. It also permits full-duplex output of control functions.

With a customer-supplied typewriter, the Tycom 38 costs $2,350. Delivery is from 45 to 60 days from 750 Hamburg Tpke., 07442.

Techtran Unit Has Dual Cassettes

ROCHESTER, N.Y. – Techtran's Model 4200 Communications Terminal is suited for high-speed data communications and data storage applications.

The 4200 features dual cassettes, full remote control, dual interface (terminal and modem) and switch-selectable speeds to 2,400 baud.

The terminal costs $3,535. Delivery is 45 days from 580 Jefferson Road, 14623.

CSMA Sets Seminar

WILMINGTON, Del. – The Communications Systems Management Association (CSMA) will hold a one-day seminar at the Marriott Motor Hotel in Philadelphia on March 23.

The seminar will be conducted in cooperation with the Delaware Valley Chapter of CSMA, and will be divided into basic and advanced communications sessions.

CSMA is at 1102 West St., Suite 1001, 19801.

POS Terminals Delivered

NEW YORK – Unitote, a division of General Instrument Corp., has available electronic point-of-sale terminals. All data entered into a Series 302 terminal during off-line periods is captured and later automatically reentered into the store network. The firm is at 3722 MacCormic Road, Cockeysville, Md.

Analysis – Part III

PCI Sets Rates Below Bell, Datran

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – The packet-switching network which Packet Communications Inc. (PCI) has proposed to the Federal Communications Commission differs in several important ways from the message-switched systems now operating on AT&T's lines. The net would also provide users with rates below existing or planned services.

While Bell (and the other existing carriers) typically "dedicate" a circuit to the private-line user, PCI's network will systematically mix the transmissions of one or more users into "dynamically routed" packets.

Existing network users "rarely utilize a circuit more than 10% of its capacity," according to PCI. By contrast, the firm predicts its proposed packet-switching net will achieve "resource utilization efficiency to as high as 80%."

The PCI packet-switched technology "will provide essentially error-free delivery of data within the network both to and from its host computers and their terminal interface points," the firm said.

The high data accuracy will be based on the redundant switching methodology of two types of Arpa-like network processors.

Modified minicomputers called Packet Switching Processors (PSPs) will connect the user's host CPU to the projected nationwide PCI network.

The PSPs will accept messages from the user's CPU, "subdivide and reformat these messages into packets and route them to other PSPs serving the destination computer."

Receiving PSPs will verify that the transmitted packets are error-free, and then reassemble them into messages to be passed on to the receiving user's mainframe.

Access from terminals to the various host CPUs in the PCI network will be provided with Terminal Access Processors (TAPs). Each TAP will be connected to the net through a PSP. And remote terminals will be able to access the nearest TAP using conventional dial-up phone lines.

PCI has told the FCC its proposed network will enhance data security compared with "conventional data networks." Users will have complete control over "access to their own systems." And single packets will be interspersed with those of many other messages making it "most difficult for anyone to monitor any single data stream."

While exact rate comparisons between PCI and AT&T are still premature, PCI has provided some possible figures in its application.

$195 Under Bell

PCI estimates that "a 10M-bit file transmitted on a 2 kbit/sec dial-up line for 1,000 miles" would take about nine hours and cost $195 under Bell interstate rates, "assuming 15% line usage efficiency."

A private voice-grade line would require two to three hours transmission time at 4,800 bit/sec assuming 25% efficiency over full-duplex facilities, PCI estimated.

The same block of data on the PCI net would be transmitted in four to 20 minutes and would cost between $20 and $40, depending on monthly data volume transmitted by that computer.

Using a second example, the PCI application described a user transmitting 2,000 blocks of 100 bits each day. Dial-up services would require an estimated 11 hours "just to dial up and hang up," PCI said. And a leased line across 500 miles for this application would cost about $35/day, excluding the cost of equipment.

The same data load using the switched 4,800 bit/sec service proposed by Datran would require about 1.6 hr/day waiting for access and disconnect and would cost "about two cents per transaction," or about $40/day, PCI estimated.

The same set of transactions would cost only about $4 to $8/day on PCI's proposed net, the company said.

If given FCC approval, PCI said "customer installations will begin approximately nine months after initial lines and equipment are ordered." If regulatory approval is obtained in June 1973, customer installations could begin as early as the spring of 1974, PCI said.

Wavetek Audio/Data System Can Save 50% Over IBM's 7770

SAN DIEGO – Wavetek Data Communications has introduced its ADC1000 audio/data communications system which provides audio-response outputs from Touch-Tone phone inquiries. The system can simultaneously handle teleprinters and CRTs, and costs about 50% of a comparable IBM system, the firm said.

The ADC1000 can operate as a direct replacement for the IBM 7770 Model 3 audio-response system, as a remote on-line teleprocessing system using private line or dial-up facilities to a CPU, or as a front-end processor tied to a mainframe emulating IBM 2848 or 270X controllers. The unit can also function as a stand-alone system using tape or disk storage.

Up to 192 Ports

The DEC PDP-11 system processor contains the control program to handle up to 192 audio/data multiplexer ports. Each of the ports consists of a Bell 401 or 403 data set (or independent equivalent) and the control circuitry to detect incoming data.

The port controller provides an answer tone, and either an Ascii or voice-response answer to the inquiry. The system can handle all key-type telephone signals which generate two-out-of-eight tones.

The ADC1000 can be interfaced to 360/370 mainframes through either the selector or multiplexer channels or through serial data connection to other CPUs. The voice answer-back unit can store a vocabulary of up to 248 words or phrases, each of which is contained on a magnetic addressable track.

The ADC1000 control program allows the user to add a remote telecommunications capability at no cost and without programming changes, Wavetek said. The ADC1000 can handle hard copy/CRT response transactions with "any terminal devices using Ascii transmission code and operating at 110-, 1,200- or 2,400 bit/sec.

A typical system including 12 lines with 64-word vocabulary and 12 data sets costs about $55,000 or $1,100/mo. A comparable IBM 7770 system would cost about $2,600/mo, a Wavetek spokesman said. Wavetek is at PO Box 651, 92112.

Court Overrules FCC On Carrier's DP

WASHINGTON, D.C. – The U.S. Court of Appeals has reversed a portion of the Federal Communications Commission's Computer Decision and ruled that data processing affiliates of common carriers may serve both regulated and non-regulated customers.

In a related point, the court said DP affiliates may use the name of the parent common carrier.

The original FCC decision had ruled that data processing operations of the carriers had to operate as wholly separate companies.

One firm that had challenged the FCC decision is Computoservice, Inc., a subsidiary of Mankato Citizens Telephone Co., Mankato, Minn.

"This means that we can now expand and go out and get more customers," was how Peter Ferguson, senior vice-president of Mankato, reacted.

A spokesman for the Association of Data Processing Service Organizations (Adapso) called the court ruling "satisfactory" and said there would be no problems if the DP affiliates serve both regulated and non-regulated customers on an equal basis.

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A Sycor 340 user can access any major time sharing system, input the problem, receive the solution, and continue with the data entry operation. Captured data then can be batched to the central computer facility at 1200-4800 baud speeds using IBM-compatible BSC procedures.

In addition to this unique dual communications capability, Sycor provides users with T.A.L., a programming language developed specially for data entry applications. A wide choice of peripherals also is available–printers ranging in speed from 30 cps to 200 lpm, 7 or 9 track magnetic tape drives, and a 250 cpm card reader.

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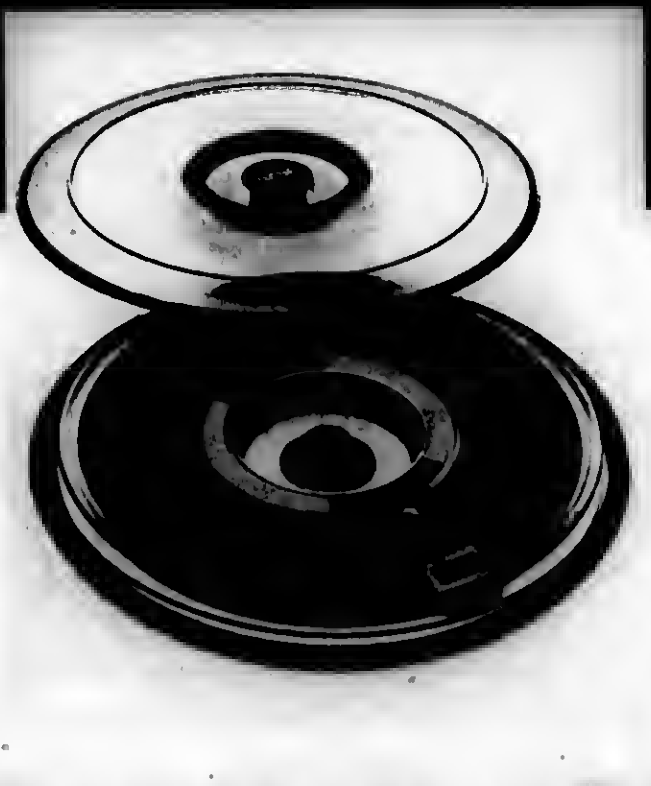

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SYSTEMS & PERIPHERALS

Bits & Pieces

Independents Offer S/3 Users OCR Entry Techniques

NEWTOWN, Pa. – Two independent suppliers have joined forces to offer IBM System/3 users an off-line system incorporating optical character recognition (OCR) techniques to read documents and a punched card unit to reformat data to 96-column punched cards for input to the system.

The Opscan 17 Source Document Reader – from Optical Scanning Corp. – reads hand printed numeric characters, ordinary pencil marks and machine-generated printing forms and documents of varying sizes, a spokesman said.

This OCR unit is interfaced to one of Decision Data Corp.'s 96-column punched card units – the 9601, 9610 or 9660 data recorder, the spokesman said.

Purchase prices for the Opscan-Decision Data combinations range from $12,950 to $19,220 exclusive of maintenance. Systems are also available on a lease basis at monthly charges ranging from $360 to $575 including maintenance.

360s Get 370 Peripheral Capability

SAN FRANCISCO – Itel Corp. has produced a field-installable device capable of converting an IBM 2860 Selector Channel to a 370-like Block Multiplexer Channel (2880).

The resulting conversion permits users of 360/65s and up to attach 370 peripheral devices (such as Itel's 7330 disk subsystem and 7305 Fixed Head Files) without software changes, a spokesman said.

The feature will be available in July on a minimum two-year lease term.

Printers Offered Mini Users

DARIEN, Conn. – Digital Associates has unveiled a 135/300 line/min dot matrix printer and a 16 horizontal scan/sec 1 to 924 dots printing plotter which are compatible with most minicomputers, according to a spokesman for the firm.

Lease prices for the DAC-3000 series printer system start from $128/mo plus maintenance; purchase prices start from $5,740.

Lease price for the DAC-3050 series printer/plotter starts at $200/mo plus maintenance.

Maintenance is through the firm with headquarters at 1031 Post Road, 16820.

For Users Who Abuse Minis . . .

CUPERTINO, Calif. – The 1602 Ruggednova is a redesigned Data General Nova series minicomputer built by Rolm Corp. to meet military specifications for severe environment applications such as ship-to-ship missile fire control, glacial field mapping, navigation systems and airborne applications.

The 16-bit general-purpose machine features a core memory cycle time of 1 μsec and is upward-compatible with Rolm's previous 1601 and the Nova series minicomputers, a spokesman said.

Price of the 1602 – CPU and 8K of core memory – is $18,500. Typical I/O cards range from $1,000 to $1,600.

Documentation and software packages are available from 18922 Forge Drive, 95014.

Fairfield Installs First 7065

MILWAUKEE – Fairfield Memory installed its first MP Model 7065 core add-on at Northwestern Mutual Life Insurance Co.

The 500K-byte installation brings total system memory size to 2M bytes.

The 7065 unit is offered as replacement and add-on memory for IBM 360 models 65, 65 MP, 67 (Simplex) and 75.

The 7065 provides up to 2M bytes of memory in one unit with off-line servicing and built-in memory tester.

Fairfield is at 1792 Kaiser Drive, Irvine, Calif. 92664.

Analysis: IBM's Multiprocessing 370s

• New Life for Big 360s In MP Configurations

By Michael Weinstein
Of the CW Staff

Larger models within the IBM 360 series can be used in the new multiprogramming (MP) configurations announced by IBM [CW, Feb. 7].

IBM's announcement detailed two types of configurations permitted through Release 2 of OS/VS2 – tightly coupled and loosely coupled.

A loosely coupled configuration is defined as "multiple systems interconnected with one computer providing overall control – yet remaining available for applications processing."

In essence, one computer acts like a traffic cop directing jobs to and from other computers in the complex with the ability to assign jobs to itself.

While there is an absolute criterion which can perform the traffic cop function – 158s, 168s and larger 145s with memory sizes large enough to support OS/VS2 Release 2 – the restrictions are not so stringent for computers which can act as application units.

Any 360 system large enough to support IBM's Attached Support Processor (ASP) Version 2 and OS/MVT can operate within the loosely coupled complex.

For a 360 to meet this requirement it must be configured with a minimum of 512K bytes – from the 360/65 on up.

The restrictions on the 360 in this mode are:

- It can never act as the traffic control unit and can only act as an application unit performing tasks assigned from the larger 370 computer.
- It is doubtful the 360 system can share peripherals with the other 370 computers in the net.

• Added Memory for 145s Confuses Disk Attaching

The release of memory expansion modules for the 370/145 has in effect created three architectures: models with memory to and including 256K bytes; memory over 256K bytes to 512K bytes; and memory over 512K bytes.

Any 145 user who wants his machine to have more than 256K bytes of memory from IBM must have a 3345 Storage and Control Frame added to his mainframe to hold the additional memory.

As an option he can include the Integrated Storage Control (ISC) physically into the 3345. The ISC allows the user to connect the 3330 series disk storage subsystem.

Thus models needing the 3345 are those with memory sizes of 384K bytes and 512K bytes.

Any user with a 145 with up to 512K bytes of memory can optionally have the Integrated File Adapter (IFA) incorporated into the central processor if he wishes to use either 2314 or 2319 disk subsystems.

Users who take advantage of the new release allowing expanded IBM-supplied memory for the 145, to a 1M-byte maximum, must undergo a field conversion in which IBM engineers replace the rear frame of the computer with a new frame to hold all memory physically.

Possible confusion results from the fact that the part removed contains the 3345 and the ISC.

In the large models (over 512K) these features are included directly in the memory which is physically in the CPU mainframe.

For the user this means that with the larger 145s he still can operate with 3330 disk subsystems.

With the 145 over 512K bytes he cannot operate with 2314 or 2319 disk subsystems, a spokesman said, as larger units will not incorporate the required IFA.

Honeywell Adds 2030A, Disk Features

WALTHAM, Mass. – In a triple feature announcement, Honeywell added a purchase-only computer to the low end of the Series 2000, increased access and retrieval capabilities for the Type 277 and Type 279 disk subsystems and unveiled additional main memory that doubles the previous capacity of the models 2050A and 2070.

The Model 2030A (purchase-only) is designed to provide a growth path for Series 200 users and will compete with outside systems in the IBM System/3 class, the firm said.

OS Multiprogramming

The 2030A features multiprogramming under the OS/2000 operating system and is available with the Datanet 2000 front-end network processor for communications applications.

Minimum memory size is 41K characters with cycle time set at 2 μsec for each 6-bit character. Memory can be increased in seven varied increments to the maximum of 198K characters.

Users of the 2030A can add a power module for an additional unbuffered sector to permit a total of 1M characters to be transferred in up to eight simultaneous operations over 12 read/write channels.

Cycle time can also be speeded up from the standard 2 μsec to 1.6 μsec.

Options include a buffered adapter for 277 disk pack drives, interval timer, 8-bit transfer capacity, expansion of disk control capacity from four to eight disk pack drives and a unit for floating-point arithmetic.

Field Upgrade

The difference between the 2030A (puchase-only) and the previously released 2030 (lease or purchase) is that the "A" model can be field-upgraded to increase memory beyond the limit of the leased machine.

Maximum memory on the leased or purchased 2030 is 98K characters while the 2030A can be expanded to 196K characters.

A new access/retrieval technique allows two information transfers to take place simultaneously on a single 277 or 279 disk storage subsystem, a spokesman said.

The Dual Access Storage Handling (Dash/2000) capability can be added to existing 277 or 279 disk-oriented machines operating under OS/2000 without modification to existing programs, he added.

Dash/2000 provides buffered transfer rates of between 167 and 500 kchar./sec, as well as error detection and correction capabilities.

Doubling the Memory

Maximum memory for the models 2050A and 2070 – previously 524K characters each – has been doubled to 1M characters with a single standard increment.

Purchase prices for the Model 2030A range from $101,300 for a basic CPU with 40K characters of main memory and a cycle time of 2 μsec to $230,480 for the 196K machine.

A typical system with 40K-character memory, console, 18.4M-character disk subsystem, card reader/punch and 650 line/min printer costs $209,110.

Dash/2000 leases start at $1,016/mo – on a five-year contract – for the Type 277 units, and $1,321/mo for the Type 279 above the rental for the disk drives.

A basic 2050A with 1M character of main memory sells for $637,932. The 2070 with 1M character memory leases for $25,175/mo on a five-year contract or sells for $1.06 million.

Deliveries will begin in April 1973.

Mixed-Vendor Shop Lets School Boost Capacity, Save Time, Money

MIAMI – Going to outside sources to augment its IBM 370/155-based system has led Miami-Dade Junior College to forecast savings of $271,000 over a five-year period while doubling the capacity of its system, according to Floyd Howell Jr., director of computer services at the school.

"We wound up with 33% more memory, a 60% increase in tape drives and twice as many disk drives as before," Howell commented.

"We are a mixed-vendor shop," Howell stressed, "with an IBM 370/155, IBM controllers, card readers and keypunches. We also have Bunker-Ramo video display terminals, ICC modems, Datel terminals, Mohawk data recorders, and now the first installation of a Telex Monolithic Memory of 1M byte.

"Additionally, we have installed Telex disk drives, tape drives and printers," Howell explained.

The rationale for mixing, according to Howell, was to provide the added services needed in the most economical way presented.

A Stitch in Time

Increased capacity has also saved time, the computer director related. "Transcript files used to take eight hours to run, now we run them in two hours. We used to have a bottleneck in student compiles. This year we didn't have any."

Services maintained by the computer center include the college's financial system (accounting), admissions and records (registration, report cards, transcripts), library testing, property control, personnel and payroll, student compiles and APL, a programming language developed by IBM.

The trouble with statistically tested parachutes should be obvious.

We think the same thing holds true when it comes to computer tape.

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Buying Already-Written Packages Has Its Advantages

By David E. Ferguson
Special to Computerworld

The System/3 user, operating within an unbundled marketplace, has to pay for every bit of software in some fashion. The application packages he buys or builds or has built for him can pose significant problems of cost justification, system adaptation and maintenance.

Strangely, the large system user tends not to buy as much software on the outside as his small system counterpart. This is because the programmer in a large company has more steps between himself and the person with ultimate fiscal responsibility.

Furthermore, there is a strong not-invented-here factor in almost all large programming departments. They think of themselves as "sophisticated" pioneers. They firmly believe no one quite understands their problems and the solutions must be unique. The objectives of technical recognition and the company's profit and loss are not usually mutual.

On the other hand, in small companies the data processing manager is closer to his fiscal management. He is much more cost-conscious and more aware that his employment is dependent upon his company's profitability.

Therefore, it is important that the small system DP manager not only carefully identify the application packages he needs, but he must cost-justify them as well.

Part of that cost justification is going to depend greatly on how you plan to acquire the package.

You can build it in-house, but this poses inherent problems in some instances. It is expensive and it takes a highly trained staff. It poses severe problems in workload distribution because requirements are extremely high at installation time and then taper off or even disappear. Big corporations meet these peaks and valleys by hiring and firing, but that answer is not generally acceptable to smaller firms.

This, of course, does not mean you should definitely not build a package in-house. It may be the only route open to you provided it can be cost-justified.

Another method is to have the package built on the outside on either a time and material or fixed-price basis.

This also poses problems. It's not much cheaper and you lose a certain amount of dedication and motivation in the process. If you're purchasing the package on an hourly basis, your vendor is not being pushed to complete the job in an expeditious manner. And, in some areas, the talent just isn't available at any price.

Fixed-price contracts can protect you against runaway costs, but can, on the other side of the coin, get you into legal problems.

Purchasing already-written applications packages is, by far, the most simple answer to the problem, although you must realize you are going to have to make compromises. In other words, you will have to make changes in your system to meet the package rather than the other way around.

Evaluate what changes you are going to have to make in your system to meet the requirements of the package.

There are a number of advantages, however, to purchasing a package as long as it solves or nearly solves the problem.

- Low Cost – development expenses are amortized over a number of sales.
- Fast delivery – the package already exists (but be certain to buy packages, not promises).
- Reliability – packages, like fine wine, improve with age. Since there is no deterioration, a repair improves the product, unlike a mechanical device where a repair merely attempts to restore it to its original condition.
- Chance to see before you buy – often a demonstration can be arranged before you commit. Failing this, you, at least, have the chance to talk to other users. Finally, there is the chance that some independent party has evaluated the package. So you are not buying cold.

If you think there may be a package to solve your problem, a number of sources can help find these packages.

First of all, IBM has several program products, field-developed programs and installed user programs. Your IBM salesman will be more than cooperative in describing them to you.

The Small Systems User

The National Association of System/3 Users (Nasu) offers its members several user-supplied applications which are distributed in source listing form with complete documentation for a small charge.

Group/3 offers a few utility programs in loadable program form with complete documentation, some of which are available to non-subscribers of Group/3 services.

International Computer Programs (ICP) Quarterly has a large list of software packages for all kinds of computers including the S/3. This list is available on a subscription basis.

Suppose you have found a package and have determined it would satisfy your requirements. How do you evaluate it?

Ideally you would arrange for a demonstration. Unfortunately, unless you are close to the vendor, or at least in a major metropolitan area, this usually cannot be done. The next best thing is to get references.

If the vendor is hesitant about providing references, be leery. Either he hasn't sold any of the packages and you're the guinea pig or he's sold a few and he doesn't want you to know about them.

In other words, don't be a pioneer. Let the vendor develop and debug his package either on his own or somebody else's time. As far is I'm concerned, a pioneer is a man with arrows in his back.

Inspect and understand all the documentation.

Be certain you have a strong maintenance agreement. If anything goes wrong, you want the assurance that the vendor will be around to help and that he will solve the problem in a reasonable turnaround time.

The type of contract you negotiate is important. Generally, the one-time payment type of contract can not only strain a company's cash flow but could mean the vendor wants all his money in front. And that could mean he's in a cash bind and may not be around for too long.

Be certain, in monthly payment contracts, that the length of the time period is clearly spelled out and that you understand how the vendor is protecting his proprietary rights.

If possible, find an objective third party to evaluate the package within an environment similar to your own.

Datapro offers evaluations of software products on a subscription basis. The firm can be reached at P.O. Box 346, Moorestown, N.J. 08057. Also, the Group/3 *Journal* periodically publishes evaluations of software products.

Ferguson is president of Group/3.

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Another bonus: your most-frequently-used tapes naturally wind up at the front of each slot, further increasing your efficiency. And, perhaps the biggest bonus—you don't have to change canisters when switching to Tiltshelf.

So—our angle can cut your tape-storage and retrieval costs, boost efficiency, increase your tape library capacity without increasing your rent, and other things. For the complete story, contact your local TAB representative. Or, write Tab Products Company, 2690 Hanover Street, Palo Alto, California 94304.

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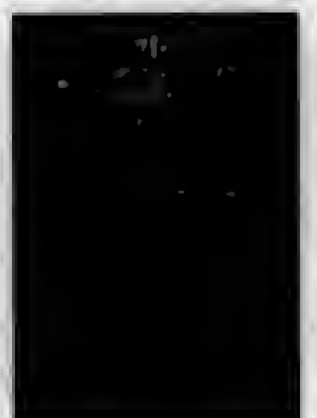

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SUMMARY: The TELEX 6330 Disk Storage Subsystem is functionally compatible with IBM System 370 or System 360 Model 65 and above. Capacity of 100 million bytes per drive, and up to 32 drives per controller provides users with a maximum of 3.2 billion bytes of storage per subsystem. Average access time is 10% faster, and track-to-track accessing is 30% faster than the 3330 system. Using standard 3336 disk packs (or equivalents), the TELEX system also features convenient waist-high loading plus low power consumption and low heat generation. All of these features are available at substantial savings.

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1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing—Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:______________

YOUR FUNCTION
01 Corporate Officer
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06 Engineering—Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:______________

2. Please check the appropriate city:

____ Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
____ New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1—Data Entry—9 am-2:30 pm
☐ Day 2—Data Communications—9 am-2:30 pm
☐ Day 3—Installation Management—9 am-2:30 pm
NOTE: Afternoon Sessions are open to all—free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day—$25.00 ☐ Two Days—$50.00
☐ Three Days—$75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

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797 Washington Street
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For additional registrations, copy this form—or write for extra copies.

SPACE SAVER

FOR THE 1973 COMPUTER USERS' FORUM & EXPOSITION—The National Computer Conference that's coming to you.

If you're interested in more efficient EDP operations, then you should be reserving your space right now for The Computer Caravan/73 Users' Forums. This unique program will soon be in a city near you—with shirtsleeve workshops, panel discussions, user-oriented experts, and an exchange of information that will benefit you and your company.

Each day of the three-day show will feature a different topic. You'll be able to air your problems, and learn how others have solved theirs. You'll ask questions, give opinions—and get answers. And you'll come out of the Forum with some new ideas on making your EDP operation more efficient.

FORUM TOPICS

Day 1 - Data Entry
Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 - Communications
Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 - Installation Management
Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Forum Attendance is limited
In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 - Data Communications Planning
Day 2 - Software Evaluation Panel
Day 3 - Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

Programmers Are People?

NEW YORK – DP managers may gain some insight into programming as an activity being done by real people (and not just "programmers"), and learn how to use this insight to advantage, through a new two-day professional seminar offered by the Association for Computing Machinery (ACM).

Unlike many seminars, this one will be concerned with how programmers approach their work regardless of the particular project they are handling.

The seminars will be led by Prof. Gerald Weinberg and Daniel Freedman of the State University of New York and will begin at the New York Sheraton on March 1 and 2. They will then be presented in six cities, including Washington, Chicago, Albuquerque, Los Angeles and San Francisco, later in March and in April.

Weinberg's book, *The Psychology of Computer Programming,* will be the mainstay of the "course" and will be distributed to all attendees along with supplementary materials. The seminars are open to ACM members, and to members of DPMA, IEEE Computer Society and the Canadian Information Processing Society for $190; nonmembers may attend for $235.

ACM is at 1133 Avenue of the Americas, 10036.

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If you've already been successful in business, if you have better-than-average management ability, and want to enlarge your world as well as your income, you should think about coming to Florida right now (the weather's fine, by the way) to discuss an opportunity that just may not be available to you a few weeks from now.

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Limited Funds Threaten Swapped Program Quality

J. Daniel Couger
On
Education

The Data and Program Library Service for the Social Sciences (DPLS) of the University of Wisconsin in 1971 undertook a formal project entitled a National Program Library and Central Program Inventory Service (NPL/CPIS) for the social sciences. The object was to accelerate the exchange of programs that DPLS had been encouraging informally for some time.

With National Science Foundation support, project administrator Prof. James P. Taylor set goals including (1) drawing up a comprehensive inventory of program resources and the distribution of this inventory in the form of indexes and abstracts; (2) maintenance of quality control of programs, particularly standards of debugging and documentation; (3) direct distribution of programs and their documentation; and (4) adaptation of programs to varieties of hardware configurations beyond the original one.

Quality Control Lags

During its first two years of operation, NPL/CPIS has made considerable progress regarding goals (1) and (3), substantial progress on goal (4) but only minimal (if any) progress on goal (2).

Indexes and abstracts are available and programs have been distributed by developers listed in the writeups. The adaptation effort, to make offered programs more usable, has generally involved stripping features peculiar to a given compiler and recoding to get the same effect with features that are common to most implementations of a language.

The quality control effort has been hampered largely because the limited resources of the project have just not been allocated to this objective. The project leadership has had to assume, in effect, that the programs do what the developers say they do.

The current NPL/CPIS index contains entries in the following format:

1. Coding system explanation for abstracts in key word and author index.
2. Table of contents of key word and author index.
3. Key word and author index.
4. File number index.
5. Address addendum for the complete addresses of program sources.

For Example

One abstract may give the reader an idea of the breadth of programs covered in the index:

STATJOB, An integrated system of statistical programs. CROSTAB1, Cross-tabulation and contingency-table analysis. DSTAT2, Missing-data correlation-analysis. REGAN2, Multiple linear-regression-analysis. STEPREG1, Stepwide multiple linear-regression-analysis. ONEWAY1, Oneway analysis-of-variance, fixed or random-effect model. TWOWAY1, Twoway analysis-of-variance, fixed or random-effect or nested model. NWAY1, Nway analysis-of-variance. FACTOR1, Factor-analysis.

Language – Fortran IV, Univac, Univac 1108 Assembler, Univac 1108 Exec. 8.
UWCC – University of Wisconsin, Pub. 4000.
File Number – 000001, Category – 123400.

Copies of the index and abstracts can be requested from the project administrator, Room 4430, Social Science Building, University of Wisconsin, Madison, 53706.

Couger is professor of computer and management science at the University of Colorado.

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LE FORUM

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La Caravane Informatique

Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, *Zero-Un Informatique*. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures		$1.48 billion
Projected increase for 1972	8.1%	(1.6 billion)
Projected increase for 1973	14.5%	(1.83 billion)

Submarket projections:

Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

Data Communications Terminals and Control Equipment expenditures are expected to go up 40% in 1973 to a total over $27 million.

Independent Peripheral Equipment expenditures are expected to increase markedly in 1973, partially as a result of newly expanded marketing operations.

If you're marketing in Europe — or if you want to be — "La Caravane" is a sales tool you shouldn't pass up. If you'd like the details, just send in the coupon or call Neal Wilder at (617) 332-5606.

French Market Caravan Schedule

Dates	City	Site
May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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Please send me more details — including market facts and brochure — on The European Computer Caravans which I have checked.

☐ French Market Caravan (May 2-June 7)
☐ English Market Caravan (Sept. 4-Oct. 18, 7 cities)
☐ German Market Caravan (Oct. 30-Nov. 30, 5 cities)

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COMPUTER INDUSTRY

CI Notes

CLA Looks Into 360 VS

NEW YORK – The Computer Lessors Association (CLA) has selected Compata, Inc. to report on the efforts to provide virtual storage capability for users of IBM 360s.

"There appears to be enough interest by potential suppliers of this capability so users of the 360 will definitely have a choice of virtual storage options in the near future," according to James F. Benton, executive director of CLA.

"Compata has been commissioned to determine the state of the art, catalog the techniques being considered and identify possible suppliers," he added. "The report should help users determine if this kind of enhancement is cost-effective for them."

Million Dollar Software Grows

INDIANAPOLIS, Ind. – The number of proprietary computer software products to hit the million dollar mark in sales has doubled in the past year, according to a study by International Computer Programs, Inc.

Of the 60 such "best sellers" 27 are data-based applications, five are algorithmic-based systems and the rest are "systems software, information retrieval systems, programmer and data management aids," according to the report.

"Each and every one of these systems is aggressively marketed, oversupported, firmly and continually enhanced," noted Larry Welke, president of International Computer Programs, Inc.

Supershorts

Control Data Corp. has ordered over 1,100 2,400 bit/sec modems from Tele-Dynamics division of Ambac Industries, in what is one of the largest single orders for this type of modem. The units, 90% of which will be delivered during the first year, will be used on the Advanced Logistics Systems contract, valued at $83.4 million, from the Air Force.

— — —

General Automation will integrate the Tally Corp. 2000 series of line printers in its product lines, according to a recent agreement between the two. Both 125 and 200 line/min printers are covered by the agreement between the mini maker and printer firm.

— — —

Atlantic Software Inc., Philadelphia, has expanded the marketing of its Project Control/70 system to Canada with the first order for General Motors in Oshawa.

— — —

Digital Equipment Corp. has formed a telephone industry marketing section within its Deccomm data communications product line.

— — —

Westinghouse Management Systems SA will market Innovation Data Processing's Fast Dump Restore software package in the European Common Market.

— — —

NCR has assigned its data centers the responsibility of marketing NCR microform systems and services.

— — —

University Computing Utility Co. has licensed Software Products Co., Ltd. of Hong Kong to market UCUC's Duo 360/370 software package in Japan.

— — —

Computer Devices Inc. has been awarded use of the word Teleterm in connection with its products. Delta Data has discontinued all use of the similar word Telterm.

Over Next Five Years

Terminal Shipments May Hit $8 Billion

By E. Drake Lundell Jr.
Of the CW Staff

NEWTONVILLE, Mass. – A burgeoning data communications market will see the value of computer terminals shipped over the next five years equal to $8 billion to $10 billion – or the equivalent of the total domestic 1972 computer shipments of all types, according to a report issued here by International Data Corp. (IDC).

"The portion of general-purpose computers that uses general-purpose terminals is increasing rapidly, especially in the smallest and largest CPU-size classes," observed C. Oakley Mertz, director of IDC's corporate planning service.

"Over the next five years, this portion will grow from its present 25% level to 30% of total general-purpose CPUs, and the total number of general-purpose terminals attached to them will increase 26% per year (compound growth rate) to 944,000, with the bulk of this growth among processing (intelligent) terminal models," he added.

Special Trend

But even more important, according to the study, is the increasing trend toward special-purpose terminals, unique to specific applications such as point-of-sale, stock quotation, bank teller and credit-verifying.

This base will experience a snowballing growth rate, according to the report, as application-unique terminals become popular. The exact growth rate, however, is purely dependent on the number of good ideas that catch on, the report noted.

The interconnection equipment market presents quite a different picture. The study predicted significant erosion of the modem market, but estimated substantial growth for communications controllers and processors.

By 1977, IDC forecast that IBM Model 3705 controllers alone will account for about 7,000 units in use on System 360/370 computers, compared to its current base of less than 300.

Currently, operator-oriented terminals account for 71.4% of terminals installed in the U.S., while machine-oriented (no keyboard) total 5.7% of the installed base. The units falling in the special-purpose, or applications-unique, category comprise 22.9% of the base, according to IDC.

The compound growth rate of terminals until 1977 is estimated at 27% for the operator-oriented terminals, and 19% for machine-oriented, according to the study.

Breaking down the category of operator-oriented terminals into conversational, which are basically TTY replacements, editing and processing, the latter group shows a jump from 16,000 or 5.7% of the number of operator-oriented terminals installed in 1972 to 17.6% or 160,000 in 1977, for a compound growth rate of 59%.

In the processing terminal category, CRTs show a growth rate of 65%, from 5,000 units to 60,000 units, for an estimated 6.6% of the installed operator-oriented base. The printers are expected to increase from 11,000 units to 100,000 units, a compound growth rate of 56%, for 11% of the 1977 base.

The editing units show a compound rate of 25%, with a growth from 77,500 units in 1972 to 239,000 units in 1977.

Conversational units are expected to account for 56% of the total base, with 507,000 units, while growing at a compound rate of 22%.

Rand's Direction Slowly Changes Toward Social Application Areas

By a CW Staff Writer

SANTA MONICA, Calif. – Rand Corp. is turning its computers from swords and making them into plowshares.

The organization, founded and nurtured for years by Air Force contracts, is directing many of its talents, especially in the DP field, toward more civilian-oriented research.

The move is part of a broader realignment of national priorities and the priorities within Rand, according to John Farquhar, associate director of the Information Sciences and Mathematics Department.

The "think tank" will apply its computer expertise in the area of social demonstrations or experiments conducted by the department and other sectors of Rand, he indicated.

For example, he noted, the department is undertaking a study in the health-related research area in which it is trying to define the clinical information needs of alternative systems of health care on a large scale.

Similarly, a program under which parents are given education vouchers to purchase education for their children will need computer power to succeed.

The computer support for these large-scale experiments includes research on the manipulation of large-scale data bases. In undertaking one of these social experiments a large amount of data is generated and the job of the Information Sciences Department is to devise ways to measure the effectiveness of the program from this huge amount of data.

There is also a great deal of work under way on the privacy and security questions that follow with such information.

"If you cannot guarantee security and privacy of the information in the large data bases of very personal data about people, they will not respond fully and freely to the questionnaires used for the research," Farquhar indicated.

Presently, he said, research at Rand is split into three parts with one part devoted to the Air Force, one part to other defense-related research and the final third to civilian and social studies financed by such agencies as the National Institutes of Health and the Department of Transportation.

2 Telex Motions Denied by Court

ST. PAUL, Minn. – The Federal Court here dealt Telex a series of denials in the latest chapter of the saga of antitrust suits involving IBM.

The court denied Telex's motions to set aside part of the recent out-of-court settlement between Control Data and IBM and also the move that IBM and Control Data be held in contempt of court for destroying the index to the documents prepared by CDC.

In effect, Judge Philip Neville also denied Telex's request that either or both of the companies be required to reconstruct the destroyed data base.

The staff of Shukan Computer joins Computerworld Publisher Patrick J. McGovern and (to his right) Shukan President Hideo Hirayama after signing the agreement launching the joint venture publication.

CW, Dempa Launch New Weekly

TOKYO – *Shukan Computer*, a weekly newspaper for Japanese computer users, has been started here by Dempa Computerworld Co., a joint venture of Dempa Publications, Japan, and International Data Corp., *Computerworld's* parent corporation.

Shukan Computer (Computer Weekly) will have an initial circulation of 35,000, of which approximately 80% will be users and 20% industry figures, according to Hideo Hirayama, president of the new publishing company.

The weekly will draw on the worldwide editorial resources of both Dempa, a major Japanese publisher of electronics publications, and CW. The paper also will serve as CW's Japanese news bureau.

Shukan Computer will cover the latest developments in computer-related hardware, software, services and supplies as well as application techniques and industry trends. Its newsgathering organization includes the 25 editorial offices of Dempa throughout Japan and the U.S., a European-based editorial staff and correspondents of CW.

In addition to *Shukan Computer*, the joint venture company will conduct surveys on the computer market in Japan, and hold seminars and expositions on new computer equipment and techniques.

Early in 1974 Dempa Computerworld plans to run a Computer Caravan conference and exposition in five of Japan's largest cities.

Patrick J. McGovern, president of IDC, said he was most pleased by the enthusiastic reception the initial issue of *Shukan Computer* received from major computer companies in both the U.S. and Japan.

"This response," he said, "indicates the industry agrees with us that the recent development of a broad base of knowledgeable computer managers and users in Japan has created the need for a publication to provide timely, realistic facts and appraisals about the latest developments in computer products and services and application techniques.

"There are now over 15,000 computers installed in Japan," McGovern stated, "and the number is growing at over 25% per year.

"Japan has now reached the distinction of being the world's largest computer market outside the U.S., and the recent liberalization of Japanese import policy on computer equipment makes it an especially attractive market for computer equipment makers headquartered in the U.S. and Europe."

To assist companies "new-to-market" in Japan, *Shukan Computer* will offer advertisement translation services and aid in the establishment of suitable marketing channels.

The head office of *Shukan Computer* and Dempa Computerworld will be at 11-15, Higashi Gotanda 1-chome, Shinagawa-ku, Tokyo 141, Japan.

'Natural Growth'

Potter to Enter Stand-Alone Phase

By Molly Upton
Of the CW Staff

MELVILLE, N.Y. – Potter Instrument Co.'s plan to emphasize stand-alone systems is a "natural growth considering the kinds of things the company has been doing for quite a few years," Charles Scott, director of marketing, noted in a recent interview.

Until three or four years ago, Potter was entirely an OEM company, producing tapes, printers, disks, etc., when it started taking these same types of products and designing them on a plug-compatible basis for the end user, he added.

"Our product line is broad enough in individual products that we can take these same products and put together, with minimal amount of purchased items from the outside, stand-alone systems," he explained.

Potter is introducing an off-line print station, which is comprised of a standard tape transport, standard printer and a small minicomputer, he said.

"The main objective is still to market and move the products our factory produces," Scott added.

Potter has also announced plans to produce key-to-flexible disk data entry systems.

"We build the printer that goes on it, we build the flexible disks, and we have been in keyboard data entry systems for a number of years, so it is a very logical sort of thing for us to put together," he said.

"Instead of just selling individual boxes, which we will continue to do, we will put more emphasis on gluing some of those boxes together into meaningful systems of their own, as opposed to simply tying them onto OEM accounts or user accounts," Scott continued.

Memorex Restructures Units

SANTA CLARA, Calif. – Memorex, Inc., hit by some executive resignations [CW, Feb. 7], has named three decentralized business units in a recent restructuring move.

"Integration of related operating functions is the objective" of the change, according to the firm.

The three units are: Computer Equipment Products Business, headed by John J. Kramer; Equipment Products Operations, managed by E. Douglas Larson; and Media Products Business, with J. Garrett Fitzgibbons as general manager. The men will report to President Laurence L. Spitters.

The Computer Equipment group will handle domestic and international marketing operations for equipment products, including sales and service.

The Equipment Products Operations unit will have charge of product development and manufacturing operations.

Contracts

British Railways Orders Datapoint Units for Yards

SAN ANTONIO, Texas – The British Railway Board has awarded Unidata Ltd. a contract for up to 500 Datapoint 2200 Dispersed Data Processing Systems, with a purchase value of more than $3 million in the U.S.

British Rail has an option to purchase an additional $2 million of equipment.

The Datapoint units will be located in freight yards throughout the UK and linked to dual IBM 370s in London.

As part of the railroad's Total Operations Processing System, the units will permit control and monitoring of freight shipments throughout the country.

Other Contracts

Comten Inc. has been awarded a contract by Data Transmission Co. for the development of the Datran network prototype computer-switching system and the production of the first two dual on-line offices.

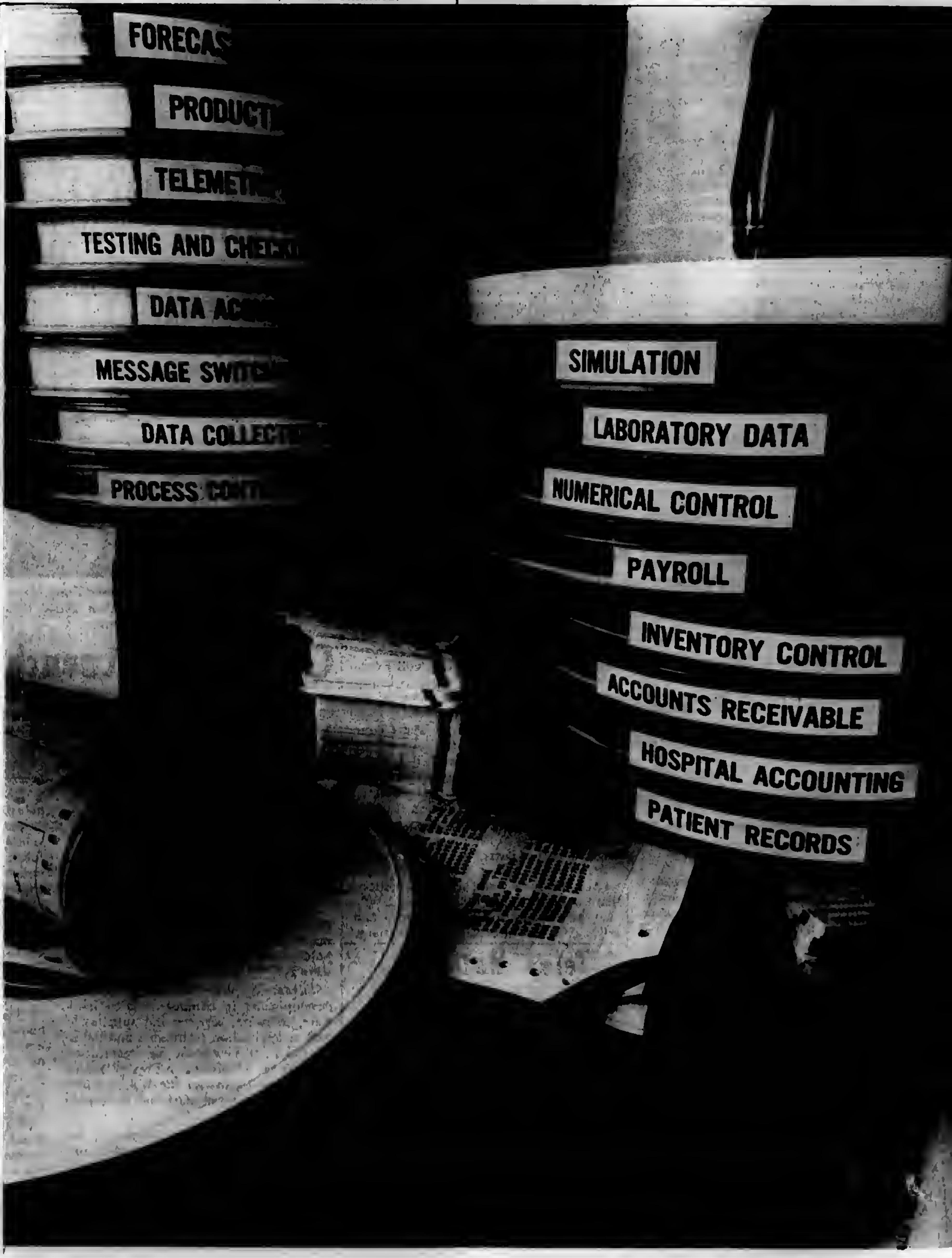
PRC Information Sciences Co., a Planning Research Corp. subsidiary, has been awarded a $3 million contract to provide software support for the Strategic Air Command's Pacer system. Pacer aids Air Force photo interpreters and provides a data base of intelligence information.

The Telecommunications Division of Data Products Corp. will provide Futuronics Corp. with 72 low-speed modems for use in Air Force mobile data terminals being assembled by Futuronics.

John Hancock Mutual Life Insurance Co. has contracted with Analysis and Programming Corp. for conversion of John Hancock's policyholders index file to computer-readable magnetic tape.

Datamation Services Inc. will lease a $120,000 IBM 360/40 and supporting equipment from Simplicity Computer Corp. under a two-year contract.

Computer Sciences Corp. has received a contract from the U.S. Army Electronics Command to study the feasibility of applying speech compression techniques to digital voice communications systems.



User Deserves Support, Not 'Hit-and-Run' Treatment

By Jerrold Asher

Special to Computerworld

Not long ago, a major minicomputer manufacturer ran a provocative advertisement showing a packing crate on a deserted railroad platform with the caption: "Most minicomputers aren't delivered – they're abandoned."

The message was obvious: most minicomputers are simply delivered, period. Systems support, software and other forms of customer handholding are left out.

Variations of this same philosophy can be seen in the newly arrived minicomputer business machine market. Many of these systems are dropped on their unsuspecting users with one or maybe two simple applications installed.

The remainder of the applications – the tough ones – come later, sometimes very much later. Meanwhile, rent or lease payments have commenced.

Another approach is the offering of applications software developed and in use at a "similar" business. For a fixed price the new user can have those listings for installations on his new system.

But somebody forgets to tell the new user that some tailoring or customizing of that existing software may be required to make those programs operate on his data (field sizes different, report sorts in different order, extra deductions required on the payroll check. . .).

Viewpoint

Once again the rent and lease billings commence with the completion of hardware installation.

Finally, there is the "do-it-yourself" approach which is obtaining some popularity. With this plan, the user attends a vendor-sponsored school for a few days to a week learning how to program in a user-oriented compiler.

Hardware is installed, payments begin, and the user starts to "do his thing." Only the typical user is not a sophisticated programmer. Users have been known to wipe out disk files or write printout programs which must pause three seconds at the end of each print line to complete a data manipulation which should have taken place during input.

All of this is rather appalling. The first-time user deserves better treatment in his initial brush with modern electronic computers. He should be given guidance, instruction and support at least until his applications are installed and running perfectly. Then the vendor should collect his payment.

Software is fully as much a part of the total computer system as tape recordings are to a stereo system. Just because a manufacturer can plug in some CPU and a few components and get them all operating is hardly proof that a computer system is onstream.

Operating hardware cannot render useful work for a businessman until its programs are debugged and operating satisfactorily.

Give User a Break

Isn't it time our industry started giving the first-time user a better break instead of a bitter blackeye? Shouldn't the hardware vendor also be made responsible for installation and support of the software, until it can be demonstrated as operating properly: i.e., doing the applications and reports for which the businessman bought it.

The hit-and-run tactics of some firms are only profitable in the short run. In the long run they are pernicious to the entire computer industry. It's time the vendors of minicomputer business machines grew up to their responsibilities.

Asher is marketing manager of Sierra Data Systems, Inc., Pasadena, Calif.

Aussie Firm Ships CRTs to NCR

Special to Computerworld

SYDNEY, Australia – The manufacture of CRT units for NCR has resulted in the development of the first commercial computer to be manufactured in this country.

As part of the NCR 799, the computer has a general-purpose instruction set, eight accessible registers and operates into a flexible data highway. The CRTs are manufactured by Amalgamated Wireless Australia Ltd.

NCR has been marketing its imported NCR 795 CRT units for some time, but decided to commission the manufacture of CRTs here in anticipation that the Federal Government would grant protection to the local electronics industry.

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Cogar Aims to Cancel Some of Its Debt

SCHUYLER, N.Y. – Cogar Corp., which has been feeling financially beset for some time, has come up with a reorganization plan that would clean up more than $15.3 million of its indebtedness and leave the firm with $1.3 million in mortgages.

The plan hinges on issuing paper, quite a bit of it, to Singer Co. Under the plan, which is subject to several conditions and the approval of Cogar stockholders, Singer would cancel its $6.5 million of convertible Cogar notes, together with $280,540 of other indebtedness and $610,000 interest, for about 4.8 million shares of a new class of common stock that will be convertible into common shares on a share-for-share basis.

Although the convertible stock would represent about 72% of the then outstanding shares of common and convertible stock, it would be entitled to 80% of the voting privileges of Cogar's capital shares.

Another Cancellation

The plan also calls for Chemical Bank of New York to cancel the nearly $2 million loan Cogar owes, in addition to about $232,000 interest, in exchange for about 150,000 shares of a new class of preferred stock, some 15,000 common shares and warrants to purchase about 135,000 common shares.

The Oneida National Bank and Trust Co. would exchange the more than $2 million in loan, mortgage and interest owed it for preferred and common shares and warrants.

In addition, Cogar will offer a 20% payment of the about $2 million it owes to trade creditors. President George R. Cogar said the firm has commitment for outside financing to accomplish this.

Cogar himself will throw in his $1 million of convertible notes plus $94,000 interest and about 603,000 common shares. He will also trade the company's debt to him for a variety of shares and warrants.

If completed, the plan would cut Cogar's interest in the company to about 10% of the outstanding common and convertible shares from 52.4%.

Cogar lost $8.3 million on revenue of $1.2 million in fiscal 1972.

Calcomp Hits Black in 2d Quarter

ANAHEIM, Calif. – Increased sales in the second quarter helped California Computer Products Inc. return to profitability sooner than the firm anticipated.

In the quarter ended Dec. 31, earnings rose to $705,000 or 24 cents a share compared with a loss of $277,000 in the same period a year ago.

Revenues climbed to $20.5 million from $12 million in the comparable 1971 period.

The second quarter showing also helped reduce the first half loss to $1.6 million on revenues of $33.5 million compared with a loss of $5.2 million on revenues of $25.5 million a year earlier.

In the year ended June 30, Calcomp changed its accounting policies, posting a $12.9 million loss. For the first half of 1972, there was a charge of $4.7 million relating to changes in accounting for engineering and development costs and lease acquisition and installation costs.

For a variety of reasons, IBM has dominated the EDP systems industry in a way that is almost unheard of in American business, except for publicly granted monopolies. But there are alternatives to the big boy. And that's what our March 28th Supplement is all about: *The Non-IBM World.*

Edited by *Computerworld's* Mike Weinstein, this study will include a look at the state of the industry, and a report on seven of IBM's competitors. Each of these companies—from Honeywell to Xerox Data Systems, has its own personality and its own place in the market. We'll be looking at their history, what they offer and where they stand. We'll also get opinions from their users, and try to create a picture of each one's strengths and weaknesses—to give you a clear idea of where it's at.

If you're a user who wants to look past IBM's looming frame, then our March 28th Supplement is the place to start. And if you're a marketer who wants to talk to the people who run this industry, your ad should be there when *The Non-IBM World* goes out. The supplement closes on March 9th. For details, just contact the nearest Computerworld Representative: *Boston,* Bob Ziegel, (617) 332-5606. *New York,* Don Fagan (212) 594-5644. *Los Angeles,* Bob Byrne (213) 477-4208. *San Francisco,* Bill Healey (415) 362-8547. Or write to: Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160

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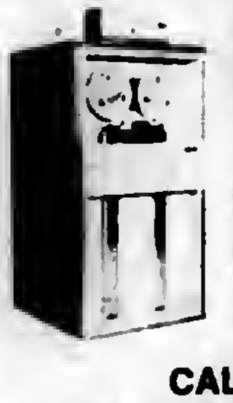

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Three Memory Makers Show Turnaround

Three memory makers – Cambridge Memories, Advanced Memory Systems, Inc. (AMS) and Fabritek Inc. – have turned from loss to profit in periods ending in November and December.

AMS earnings for the first quarter ended Dec. 31, including a $295,000 special credit, totaled $639,258 or 36 cents a share compared with a loss of $325,793 or 38 cents a share in the same period last year.

Revenues soared to $6.1 million from $1.5 million a year ago.

Fabritek completed its third quarter with earnings of $390,022 or 11 cents a share compared with a loss of $447,785 or 14 cents a share in last year's similar period.

There was also a $246,200 special credit in the recent period, compared with a $117,676 credit in 1971.

In the nine months, Fabritek's revenues rose to $15.7 million from $9.8 million in the year ago period.

Earnings declined, however, compared to last year's figures which were boosted by a $1.9 million gain on the sale of Nicolet Instrument Corp.

Earnings totaled $506,029 or 15 cents a share compared with $643,826 or 20 cents a share in the 1971 period.

"Incoming orders continue at a high level, being somewhat greater than double that of last year," observed President M.F. Mickelson.

"Our end-user products [extension memories] continued to provide a significant part of our increased business," he added.

A recent agreement with Control Data for the sale of $6 million of Fabritek extension memories for IBM 360s "will provide a substantial base to offset the profit deferral that results from the direct leasing of our end user products," he continued.

"Incoming orders for our domestic OEM Memory Products Division have increased each quarter," Mickelson added.

Cambridge Leasing Grows

Cambridge Memories saw an increase of 45% in the number of memory systems on lease in the first quarter of 1973 compared with the same year-ago period, and "revenues from leased equipment represent an increasingly significant portion of our income," according to President Joseph F. Kruy.

In the three months ended Nov. 30, earnings, including a $57,000 special credit, rose to $118,099 or 9 cents a share compared with a loss of $31,782 or 3 cents a share in the comparable year-ago period. Revenues rose to $1.9 million from $659,705 in the 1972 quarter.

During the first quarter a year ago the firm was investing "in an enlarged marketing organization to sell directly to computer users," Kruy noted.

Cambridge has usually had revenue and earnings increases each quarter over the past two years, he added.

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The Positions

Openings currently exist in Montreal for professionally mature persons with a thorough mastery of an assembly level language, at least 5 years experience in the design of large complex high-performance software systems, and preferably with a good understanding of real-time concepts. Assisgnments will tend to depend upon the specific qualifications of each individual, but openings exist with the overall design group, the software support group, in other capacities related to system performance analysis, the development of software enhancements, and advanced operating software.

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Acquisitions

Advanced Memory Systems, Inc. (AMS) and Computer Microtechnology, Inc. (CMI) have agreed in principle to the acquisition of CMI by AMS involving the issuance of AMS common stock. AMS manufactures memory systems, subsystems and components, and CMI makes integrated circuit memory components.

Kensington Management Consultants, Inc. affiliated with Kensington Equities Corp. of Stamford, Conn., together with a group of Science Accessories Corp. employees, has acquired Science Accessories Corp. from North American Philips Co. Science Accessories manufactures graphic-to-digital converters and direct data entry devices.

GRI Computer Corp. has taken an option to acquire Focus Systems, Inc., San Antonio, for an undisclosed amount of GRI common stock. Focus Systems markets the Focus IV System, a real-time, multipurpose, business data processing system based on the GRI-99 minicomputer.

Mellon National Corp.'s banking subsidiary, Mellon Bank, and Bradford Computer & Systems Inc., New York, have agreed in principle to form a jointly-owned company to provide stock transfer, registrar and similar services for Mellon's current customers for such services.

A tender offer by Vanier Graphics Corp. to stockholders of Management Systems, Inc. (MSI) has been consummated resulting in Vanier Graphics holding approximately 94% of the stock of the Tulsa-based firm. MSI will operate as a subsidiary of Vanier Graphics Corp.

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Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, FEBRUARY 15, 1973

SOFTWARE & EDP SERVICES

EXCH		1972 RANGE (1)	CLOSE FEB 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 3	1 5/8	- 1/8	-7.1
A	APPLIED DATA RES.	3- 7	3 1/8	0	0.0
O	APPLIED LOGIC	1- 4	2 7/8	- 1/8	-4.1
N	AUTOMATIC DATA PROC	70- 99	76 3/4	+3 3/4	+5.1
O	BRANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	4- 14	3 1/2	0	0.0
O	COMPUTER DYNAMICS	1- 4	7/8	0	0.0
O	COMPUTER NETWORK	3- 7	2 1/2	- 1/2	-16.6
N	COMPUTER SCIENCES	4- 10	4 1/4	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	+ 1/8	+9.0
O	COMPUTER TECHNOLOGY	2- 8	2 3/8	+ 1/4	+11.7
O	COMPUTER USAGE	7- 14	7 1/2	+ 1/8	+1.6
N	COMPUTING & SOFTWARE	11- 28	10 5/8	- 1/4	-2.2
O	COMRESS	1- 3	7/8	- 1/8	-12.5
O	COMSHARE	5- 10	7 5/8	0	0.0
O	DATATAB	4- 9	3 5/8	0	0.0
O	EDP RESOURCES	2- 8	1 3/4	0	0.0
A	ELECT COMP PROG	1- 5	1 1/2	0	0.0
N	ELECTRONIC DATA SYS.	43- 65	48 1/2	-1	-2.0
O	INFORMATICS	4- 11	3 7/8	- 1/8	-3.1
O	I.O.A. DATA CORP	1- 3	1/2	0	0.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	9 5/8	0	0.0
O	LOGICON	4- 9	5 1/4	+1 3/8	+35.4
A	MANAGEMENT DATA	3- 10	3 1/4	- 1/4	-7.1
O	NATIONAL CSS INC	8- 37	35 3/4	+3 3/8	+10.4
O	NATIONAL INFO SRVCS	1- 5	1 3/4	0	0.0
P	ON LINE SYSTEMS INC	8- 28	23	-1 1/4	-5.1
N	PLANNING RESEARCH	5- 17	4 3/4	+ 1/8	+2.7
O	PROGRAMMING METHODS	20- 25	22 1/2	- 1/2	-2.1
O	PROGRAMMING & SYS	1- 2	1	+ 1/8	+14.2
O	RAPIDATA INC	5- 27	21 1/4	-1	-4.4
O	SCIENTIFIC COMPUTERS	2- 4	1 1/2	0	0.0
O	SIMPLICITY COMPUTER	1- 5	2 7/8	- 3/8	-11.5
O	TBS COMPUTER CENTERS	3- 6	3 1/4	- 1/4	-7.1
O	TCC INC	1- 3	1/2	0	0.0
O	TYMSHARE INC	7- 12	9 1/8	- 1/4	-2.6
O	UNITED DATA CENTER	5- 8	5 1/4	0	0.0
N	UNIVERSITY COMPUTING	7- 26	8 1/2	+ 5/8	+7.9
A	URS SYSTEMS	6- 10	6	+ 1/8	+2.1

PERIPHERALS & SUBSYSTEMS

EXCH		1972 RANGE (1)	CLOSE FEB 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	24- 49	24 1/2	+ 1/4	+1.0
O	ADVANCED MEMORY SYS	12- 23	17 3/8	- 7/8	-4.7
N	AMPEX CORP	5- 15	6	- 3/8	-5.8
O	ANDERSON JACOBSON	4- 8	5 1/2	+ 1/2	+10.0
O	BEEHIVE MEDICAL ELEC	1- 8	6	- 3/8	-5.8
A	BOLT,BERANEK & NEW	5- 21	9	- 3/4	-7.6
N	BUNKER-RAMO	8- 14	8 1/4	- 1/8	-1.4
A	CALCOMP	9- 25	12 1/4	+1 1/8	+10.1
O	CAMBRIDGE MEMORIES	9- 15	11 1/8	+ 3/4	+7.2
O	CENTRONICS DATA COMP	6- 28	23 3/4	- 1/2	-2.0
O	CODEX CORP	6- 25	16	0	0.0
O	COGNITRONICS	2- 5	1 5/8	0	0.0
O	COMPUTER COMMUN.	1- 7	2 3/4	- 1/8	-4.3
A	COMPUTER EQUIPMENT	2- 4	2 1/4	- 1/8	-5.3
O	COMPUTER MACHINERY	7- 13	11 1/8	+ 1/2	+4.7
O	COMPUTER TRANSCEIVER	2- 9	3 1/2	- 3/8	-9.6
A	COMPUTEST	3- 9	3 1/2	0	0.0
N	CONRAC CORP	24- 39	24 1/2	- 1/2	-2.0
A	DATA PRODUCTS CORP	3- 7	3 7/8	+ 1/2	+14.8
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	4 1/8	0	0.0
O	DI/AN CONTROLS	0- 8	3 7/8	0	0.0
N	ELECTRONIC M & M	3- 8	4 3/8	+ 5/8	+16.6
O	FABRI-TEK	2- 5	3 5/8	+ 1/8	+3.5
O	GENERAL COMPUTER SYS	6- 16	8 1/4	+1 1/4	+17.8
N	GENERAL ELECTRIC	59- 74	69 7/8	+2 3/8	+3.5
N	HAZELTINE CORP	7- 13	7 3/8	-1	-11.9
O	INFOREX INC	16- 36	13 7/8	-1 5/8	-10.4
O	INFORMATION DISPLAYS	1- 5	7/8	- 1/4	-22.2
O	INFORMATION INTL INC	8- 25	13 1/2	+1	+8.0
A	LUNDY ELECTRONICS	7- 14	6 1/2	- 1/2	-7.1
O	MANAGEMENT ASSIST	1- 1	1/2	+ 1/8	+33.3
A	MILGO ELECTRONICS	15- 44	23	- 3/8	-1.6
N	MOHAWK DATA SCI	8- 27	9	+ 3/4	+9.0
O	ODEC COMPUTER SYST.	4- 12	3 1/2	- 1/2	-12.5
O	OPTICAL SCANNING	3- 16	3 1/2	- 1/4	-6.6
O	PERTEC CORP	6- 17	6 3/4	+ 1/2	+8.0
O	PHOTON	3- 15	4 7/8	+1 1/2	+44.4
A	POTTER INSTRUMENT	7- 21	7 1/2	- 1/2	-6.2
O	PRECISION INST.	2- 13	5	+1	+25.0
O	RECOGNITION EQUIP	5- 15	7	+ 3/8	+5.6
N	SANDERS ASSOCIATES	13- 21	12 3/4	+ 1/4	+2.0
O	SCAN DATA	3- 13	3 3/8	0	0.0
O	STORAGE TECHNOLOGY	17- 39	23 1/2	-1 3/4	-6.9
O	SYCOR INC	7- 11	9 1/2	+ 1/4	+2.7
O	TALLY CORP.	8- 15	11 5/8	- 1/2	-4.1
N	TEKTRONIX INC	34- 64	48	+2	+4.3
N	TELEX	4- 15	4 1/8	- 1/4	-5.7
O	WILTEK INC	10- 26	15 3/4	0	0.0

SUPPLIES & ACCESSORIES

EXCH		1972 RANGE (1)	CLOSE FEB 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	6 1/2	0	0.0
A	BARRY WRIGHT	9- 14	9 3/4	- 1/8	-1.2
A	DATA DOCUMENTS	17- 26	20	- 1/2	-2.4
O	DUPLEX PRODUCTS INC	0- 16	8 1/2	+ 1/2	+6.2
N	ENNIS BUS. FORMS	6- 10	6 3/4	- 3/8	-5.2
O	GRAHAM MAGNETICS	15- 27	17 3/4	+ 1/4	+1.4
O	GRAPHIC CONTROLS	11- 15	11 3/4	- 1/8	-1.0
N	3M COMPANY	76- 88	83	- 3/8	-0.4
O	MOORE CORP LTD	42- 57	55 5/8	- 5/8	-1.1
N	NASHUA CORP	40- 62	54 3/4	- 3/8	-0.6
O	REYNOLDS & REYNOLD	37- 77	46 3/8	+ 3/8	+0.8
O	STANDARD REGISTER	14- 20	18 1/2	- 1/2	-2.6
O	TAB PRODUCTS CO	14- 23	20	+1	+5.2
N	UARCO	20- 28	21 5/8	- 1/8	-0.5
A	WABASH MAGNETICS	6- 11	6 1/8	- 1/8	-2.0
N	WALLACE BUS FORMS	21- 26	23	- 5/8	-2.6

COMPUTER SYSTEMS

EXCH		1972 RANGE (1)	CLOSE FEB 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	147-240	233	+9 1/4	+4.1
N	COLLINS RADIO	14- 27	21 5/8	+1 1/8	+5.4
N	CONTROL DATA CORP	43- 78	48 1/2	-5 1/2	-10.1
O	DATA GENERAL CORP	56-131	126 1/2	+8 1/2	+7.2
O	DIGITAL COMP CONTROL	4- 25	3 1/2	- 1/4	-6.6
N	DIGITAL EQUIPMENT	72-105	97 1/4	0	0.0
N	ELECTRONIC ASSOC.	6- 13	7 5/8	+ 3/8	+5.1
A	ELECTRONIC ENGINEER.	6- 14	9	+ 5/8	+7.4
N	FOXBORO	23- 41	29 1/8	+ 1/2	+1.7
O	GENERAL AUTOMATION	13- 55	53	+4 1/2	+9.2
O	GRI COMPUTER CORP	2- 5	2 1/4	- 1/8	-5.2
N	HEWLETT-PACKARD CO	46- 94	89 5/8	+2 1/8	+2.4
N	HONEYWELL INC	115-170	114 1/2	-5 1/8	-4.2
N	IBM	333-451	441 1/2	+4	+0.9
O	INTERDATA INC	8- 16	11 1/8	+ 7/8	+8.5
N	MEMOREX	13- 38	12 3/4	+ 1/4	+2.0
O	MICRODATA CORP	5- 10	8 5/8	+ 1/8	+1.4
N	NCR	27- 38	29	+1 1/4	+4.5
N	RAYTHEON CO	27- 47	32	+1 5/8	+5.3
N	SPERRY RAND	30- 50	46 3/4	+ 7/8	+1.9
A	SYSTEMS ENG. LABS	6- 16	5 7/8	0	0.0
N	VARIAN ASSOCIATES	14- 22	16 3/8	+ 3/4	+4.7
N	WANG LABS.	23- 61	26 1/2	-2 1/4	-7.8
N	XEROX CORP	121-172	161 1/8	+8 7/8	+5.8

LEASING COMPANIES

EXCH		1972 RANGE (1)	CLOSE FEB 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	3- 18	3 7/8	+1 1/4	+47.6
O	BRESNAHAN COMP.	1- 3	1 1/4	0	0.0
O	COMDISCO INC	3- 18	14 5/8	+ 3/8	+2.6
O	COMMERCE GROUP CORP	5- 11	4 3/4	+ 1/8	+2.7
O	COMPUTER EXCHANGE	1- 3	3/4	+ 1/8	+20.0
A	COMPUTER INVSTRS GRP	6- 14	5 3/4	- 1/4	-4.1
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	7 3/8	- 3/8	-4.8
M	DATRONIC RENTAL	2- 4	2 1/4	0	0.0
A	DCL INC	2- 10	2 1/8	- 1/8	-5.5
A	DEARBORN-STORM	16- 26	21 3/8	+ 3/8	+1.7
A	DPA, INC.	5- 8	6 5/8	- 1/8	-1.8
A	GRANITE MGT	5- 11	5	- 1/4	-4.7
A	GREYHOUND COMPUTER	5- 11	5 1/8	- 1/8	-2.3
A	ITEL	7- 12	9 1/8	- 1/4	-2.6
N	LEASCO CORP	12- 24	12 1/2	+ 1/2	+4.1
O	LEASPAC CORP	6- 15	6	0	0.0
O	LECTRO MGT INC	1- 4	1 5/8	0	0.0
A	ROCKWOOD COMPUTER	2- 7	2 1/8	0	0.0
O	SYSTEMS CAPITAL	3- 20	8 3/4	-1 1/8	-11.3
N	U.S. LEASING	19- 35	29 7/8	- 1/8	-0.4

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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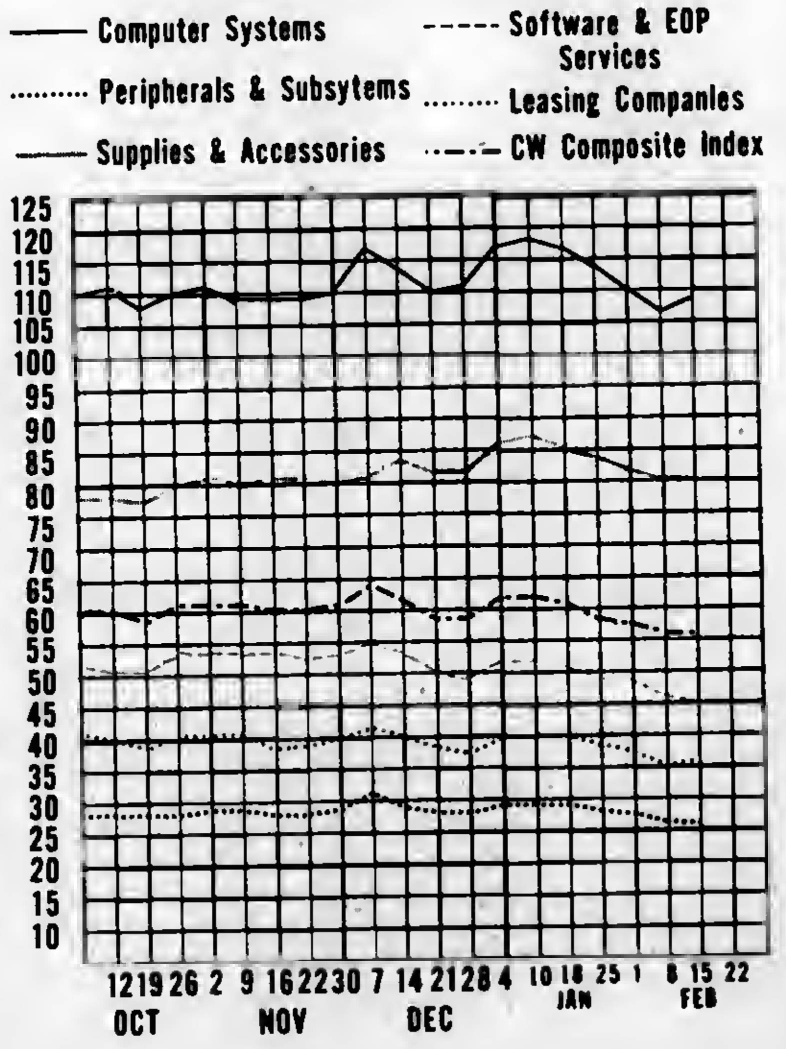
Computer Stocks Trading Index



Earnings Reports

RECOGNITION EQUIPMENT
Year Ended Oct. 31

	1972	a1971
Shr Ernd	$.07	$.06
Revenue	42,864,000	38,927,000
Spec Item	b(661,000)	c2,567,000
Earnings	337,000	309,000

a-Restated to include results of 49%-owned Corporation S on an equity accounting basis. b-Debit; includes losses from writeoff of intangibles, effect of Corporation S and currency fluctuation, less gain from sale of stock in Docutel Corp. c-Credit; consists of gains from operating loss carryforward, reversal of previous writeoff of investment in Datacraft Corp. and translation of foreign currency, less loss on sale of investment.

Inclusion of Corporation S on equity basis caused $475,000 loss in 1972 and $1.7 million loss in 1971.

HEWLETT-PACKARD
Year Ended Oct. 31

	e1972	1971
Shr Ernd	$1.45	$.92
Revenue	479,077,000	375,088,000
bSpec Cred	1,211,000	1,101,000
Earnings	38,461,000	23,881,000

e-Final report. b-In 1972 from method of valuing inventories; in 1971 from reevaluation of various currencies.

DI-AN CONTROLS
Nine Months Ended Sept. 30

	1972	1971
Shr Ernd	$.26	$.06
Revenue	1,521,209	935,749
Tax Cred	100,200	18,800
Earnings	220,596	51,049

COMPUTING & SOFTWARE
Year Ended Oct. 31

	1972	a1971
Shr Ernd	$1.25	$.96
bRevenue	110,885,000	94,988,000
Disc Op	(287,000)	(103,000)
Spec Chg	....	d(80,000)
Earnings	7,529,000	5,968,000

a-Restated to reflect acquisitions on a pooling-of-interests basis and to eliminate discontinued operations. b-From continuing operations. d-Losses from abandonments of facilities in an acquired company and from discontinued businesses, less gain on sale of securities in an acquired company.

MOHAWK DATA SCIENCES
Six Months Ended Oct. 31

	a1972	a1971
Shr Ernd	$.05	$.21
Revenue	68,503,000	54,665,000
Tax Cred	.....	b165,000
Earnings	301,000	1,190,000

a-Includes the results of Colorado Instruments Inc. and Marshall Data Systems Inc. from Sept. 30, 1971 and Jan. 11, 1972, their respective dates of acquisition. b-Tax loss carryforward.

NATIONAL SEMICONDUCTOR
Three Months Ended Dec. 10

	1972	1971
Shr Ernd	$.19	e$.13
Revenue	20,929,000	13,934,000
Earnings	733,000	454,000
6 Mo Shr	.38	a.26
Revenue	43,886,000	28,035,000
Earnings	1,440,000	896,000

e-Adjusted for two-for-one stock split in April 1972.

MICRODATA
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.18	$.09
Revenue	1,981,459	1,189,828
Tax Cred	109,000	52,762
Earnings	238,580	114,820

BEEHIVE MEDICAL ELECTRONICS
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.09	$.01
Revenue	705,770	392,815
Earnings	88,027	12,138

NATIONAL CSS
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.36	$.15
Revenue	4,258,516	2,798,069
Tax Cred	168,024	70,969
Earnings	390,586	152,985
9 Mo Shr	.94	.35
Revenue	12,060,214	7,933,422
Tax Cred	474,015	177,141
Earnings	1,021,907	369,435

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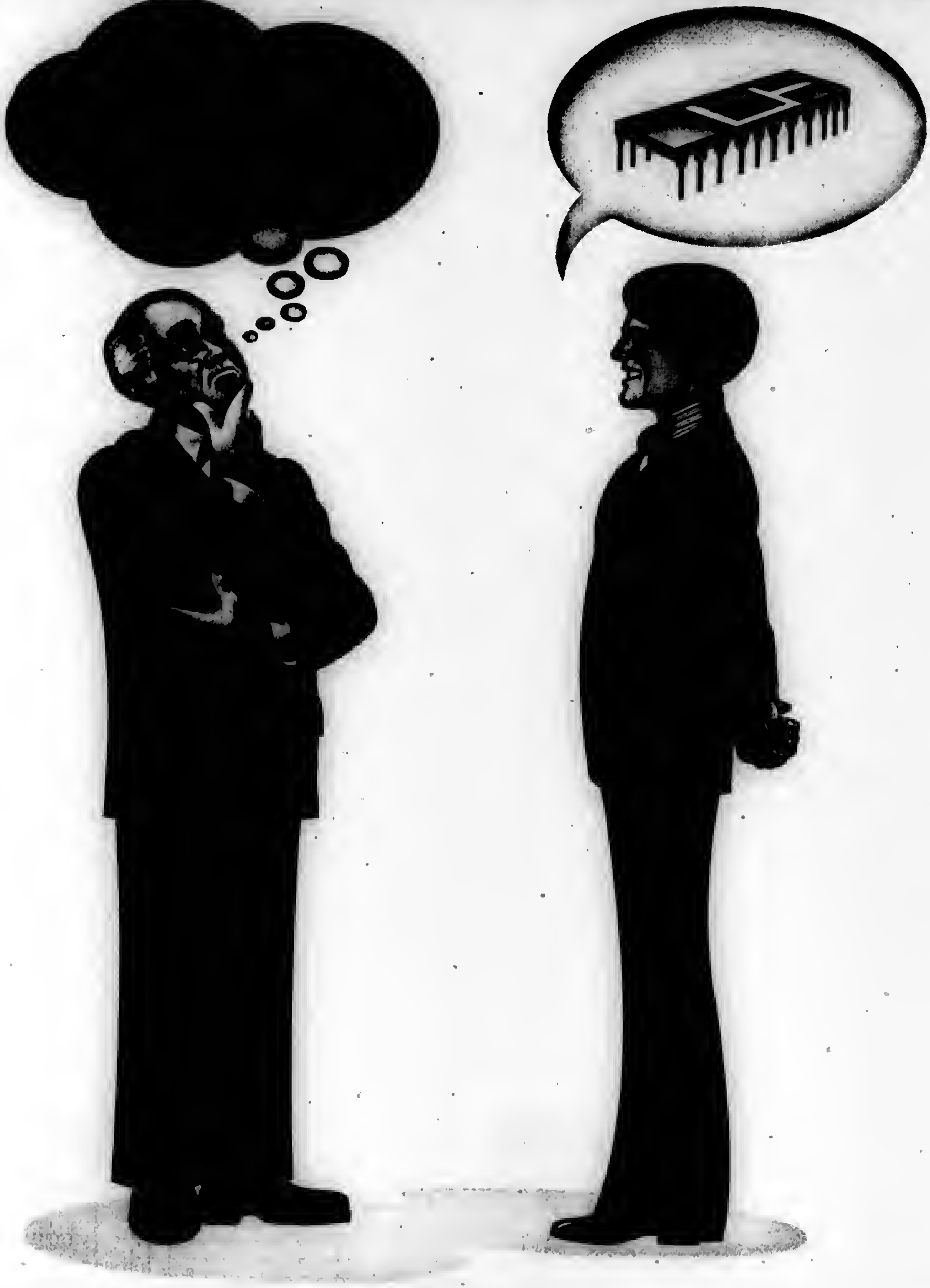

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COMPUTERWORLD

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February 28, 1973

Vol. VII, No. 9

NEWS IN BRIEF

SBC Employee Files Suit Against IBM

SAN FRANCISCO – A Service Bureau Corp. employee has filed a $100 million class action suit in District Court here against IBM charging that the transfer of SBC to Control Data Corp. deprives SBC employees of important IBM benefits.

The suit was filed by Albert R. Weiss on behalf of "the approximately 1,700 employees of SBC." Weiss also filed a $10,000 suit on his own behalf.

Some of the benefits named in the suit are the right to purchase stock below price, military benefits and the career progression through "IBM Corp., the acknowledged leader in the computer field."

The suit also noted that "even if an employee of SBC resigned, he could not be rehired by IBM for six years . . ."

IBM responded to the suit:

"We believe the complaint to be entirely without merit. No employees were discharged by IBM as stated in the complaint. And no contractual rights were violated by the IBM/CDC settlement."

The court will have to decide whether Weiss's charges can be classified as a class action. A decision is expected next month.

California Users Ride Out Quake With Little Damage

Special to Computerworld

LOS ANGELES – Computer users rode out a "moderately strong" earthquake here last week with minimal problems.

The epicenter of the quake occurred near the Point Mugu Pacific Missile Range DP center where 50 to 100 tape containers were damaged. The tape vault was also knocked out for a few minutes by a power surge, according to Lloyd Hynds, head of the computer division, who added that no data was lost.

At the Port Hueneme Naval Base DP center, a 360/65 with 24 Potter tape drives and 32 Potter disk drives was shut down for 45 minutes before the tremor, for regular preventive maintenance. "If the systems had been up, they probably would have blown," according to DP chief Victor A. Valla.

On the Inside This Week

Suit Seeks to Prevent Arrest Record Dispersion –*Page 3*

User Spending May Reach $23 Billion in 1973 –*Page 41*

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★*Special Report: Putting Software to Work*★

A 'Packaged' Tale of Success-Failure

Outside software can be a cost-effective and practical solution to a variety of DP problems. See what other users have discovered in a Computerworld special report which begins on Page 27.

By Don Leavitt
Of the CW Staff

MINNEAPOLIS – Some users tell horror stories about attempted installations of packaged applications; others tell what amount to love stories on the same subject. Investors Diversified Services (IDS), a locally based conglomerate, can do both.

IDS has saved $40,000 by acquiring a fixed-assets accounting package, rather than redeveloping its own system in-house. But the company has also spent untold amounts trying to bring up a payroll system the way it wants.

The success of the one implementation and the failure of the other are due as much to IDS's attitude and planning as to the vendors' software and support, according to Gordon Amoth, one of four programming managers at IDS.

Since the payroll installation problems are due in part to IDS, Amoth felt it would be unfair to release the name of the package vendor. He also said that, from now on, "if we're ever going to consider another system, but we're not satisfied with the way it is, we're not going to buy it."

IDS is a large DP user, including a 370/155, a 360/65 and a 360/30, as well as a 370/145 scheduled for delivery in April. It started with IBM 7074 and 1401 equipment and several of the applications are still run in emulation mode.

Amoth has a staff of 60 programmers and 15 "pure" systems people, writing much of the current programs in BAL.

A fixed-asset accounting system was developed in-house nine years ago

(Continued on Page 2)

CW Photo by Ronald A. Frank

Bill Vinson of Diversified Computer Applications adjusts 360/30 with first accelerator at Greyhound Computer Corp. The modified CPU includes the accelerator panel (arrow) with special indicators.

DP Foundation May Be Caught In Power Fight

By Alan Taylor
Special to Computerworld

CHICAGO – Control of the Computer Foundation project by the Association for Computing Machinery and the Data Processing Management Association – a situation which most concerned parties

Should the CDP exam be halted? Story on Page 11.

wanted previously to prevent – is now becoming more and more apparent.

During the first meeting of the foundation's organizing committee, DPMA's John Swearingen, acting cochairman, overruled an attorney present, saying there was nothing in Robert's Rules which called for the election of a chairman. (Robert's Rules were selected by the cochairmen as the operating rules for the committee.) Swearingen emphasized that a chairman had the right to ignore the rulings of parliamentarians.

His own cochairmanship, Swearingen said, was one of the conditions upon which DPMA had agreed to set up the committee. He also warned committee members that DPMA was in no way obliged to go through with the antici-

Continued on Page 2)

Modified '360/37.5' Nears Model 40 in First Tests

By E. Drake Lundell Jr.
Of the CW Staff

SAN FRANCISCO – The first user with an accelerator installed on an IBM 360/30 reported that the device makes the unit perform almost like a 360/40 – and with the low 30 prices available the accelerator definitely makes the unit superior to a 40 on a price/performance basis.

Greyhound Computer has been using the accelerator manufactured by Computer Hardware Consultants and Services (CHCS) for over two weeks without a major problem, according to Paul LeClaire, production manager at the service bureau.

In benchmarks with the system, Greyhound found the accelerator improved the performance of jobs run by between 15% and 35% over the previous run times for the same jobs.

Greyhound selected the programs to be run randomly from the variety of programs available and used programs that were run regularly in the shop.

Memory Boosts Performance

In addition to the accelerator, Greyhound was also the first user to install a 256K memory box, also manufactured by CHCS, which had improved the performance of the system by between 10% and 15% previously, the user reported.

Together, the two enhancements for the 30 improved its performance by between 25% and 50% on sample programs, Greyhound claimed.

With this improvement in throughput, LeClaire said, the 360/30 is now performing just 10% slower than the Model 40 that sits beside it in the Greyhound shop here.

Before the accelerator was added, he noted, the 40 had performed 40% faster on the same benchmark tests when compared with the 30 with 256K but without the accelerator feature.

Another indication of how the accelerator has improved the 30's performance, LeClaire said, is that the 30 has been going idle almost every morning since the accelerator was installed.

"This means we are processing our overnight work faster with it than we were before. We're actually picking up two to three hours of processing time every night," he said.

Presently the system has 16K of IBM core and 242K supplied by CHCS, but LeClaire said the entire system could be speeded up if the firm went to all CHCS core, since it presently has to be slowed down to meet the slower IBM speeds.

In addition, he said, the accelerator is completely transparent to the users of the system, so much so that "a lot don't even know we have installed it yet."

The only difference is that their run times, and therefore their bills, are lower now, he said.

It only took eight hours to install the

(Continued on Page 2)

IBM Drops Sale of CPU Time

WHITE PLAINS, N.Y. – IBM has informed its customers that it will no longer provide hourly machine time at its data centers for production work.

CPU time at local IBM data centers will be restricted to "program testing and other activities, including conversion, directly related to program testing." These services will continue to be available to "users and prospective users of IBM products," the company said.

The withdrawal of machine time for production jobs at data centers "is in keeping with . . . the SBC/CDC settlement in which IBM agreed not to engage in the data services business for six years," the spokesman said.

For existing data center customers the limited machine usage will become effective on May 6, 1973 while "for all others" it is effective immediately, an IBM spokesman said.

In emergency situations IBM data centers will provide CPU time as in the past. "If no other alternatives are available," in cases of natural disasters or other emergencies, the data centers will be available to users on a temporary basis, the spokesman said.

Who's in Charge?

Foundation in Power Fight?

(Continued from Page 1)

pated turnover of the Certificate in Data Processing program to the foundation on July 1, even if incorporation of the foundation is completed by then.

"If DPMA does not like the way things are going," he told the committee members, "they can just pick up their ball and refuse to play."

Swearingen's position was supported by the ACM-selected cochairman, John Harris. ACM also would not participate, Harris said, unless his appointment as cochairman by ACM President Anthony Ralston was accepted by the committee.

He emphasized that the ACM Executive Council had approved the foundation project on the basis of specific documents, and that if the foundation was formed without being in accordance with these documents, ACM could withdraw from the project. "And," he continued, "it is ACM that DPMA has decided must be included in the foundation."

When the meeting got under way, after the Society of Certified Data Processors moved to accept the current leadership, the power struggle resurfaced at least twice, once jokingly, once substantially. Swearingen jovially announced the result of the only divided vote as having been "Lost, 2-9." In fact, the motion had passed with only ACM and DPMA voting against it.

More substantially, at the end of the meeting he announced that he would personally appoint the chairmen of all the subcommittees, although earlier he had said either the full organizing committee, or the subcommittees themselves, could be used to elect these chairmen.

The organizing committee itself at this first meeting was comprised of 11 members, with the IEEE Computer Society and the Canadian Information Processing Society (Cips) joining, and the Association of Systems Management (ASM) withdrawing.

During the session four subcommittees suggested by SCDP's Marc Greenberg (program, organization, bylaws and finance) were adopted to handle the different operations of the organizing committee. Later, a public information subcommittee was added.

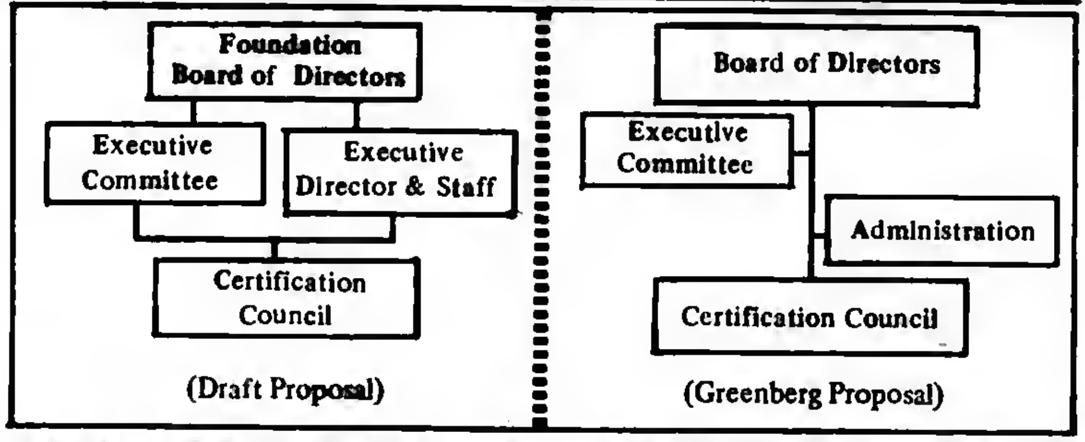
Financial matters regarding the proposed foundation were considered in two frameworks – one regarding the budget of the organizing committee itself, and one regarding the budgeting of the proposed foundation. Data Processors' treasurer Dale Holmberg had called attention to the short budget period used, suggesting that budgets for a five-year period should be prepared. This motion was passed after being supported by the Association of Computer Programmers and Analysts' representative George Eyke.

The full committee also agreed to release restrictions in the draft bylaws which prevented the member societies on the board of directors from being in full control of their operations, as a result of a constitutionally enforced delegation of their powers to an executive committee.

Cochairman Harris explained the drafts had been prepared quickly, and there had been no intention to restrict the power of the board of directors.

Holmberg reiterated his society's doubts about the validity of the current CDP examination, and suggested the best plan might be to stop offering the examination until it could be shown as valuable in the data processing context.

"I think that DPMA moved too early toward certification," he said. "As a result, the foundation is now appearing to be more like a trade association operation than actual professional certification."



These are suggested versions of how the certification councils should perform the actual certification of DP practitioners. The draft proposal is included in the motion suggested by the ACM/DPMA committee. The other was proposed by Marc Greenberg, SCDP representative on the organizing committee. Greenberg argues that this version is necessary if the member societies are to always control the quality of certification council operations.

Getting News Out

The public information committee will be a two-way operation, presenting news of the Computer Foundation committee to the public, and also presenting information from the public to the organizing committee.

ACM's Harris asked that the public information committee prepare presentations which could be given to certain individuals who could be expected to provide funds for foundation activities.

Robert Sennet of Quality Data Processing, which is one of the smaller committee members of the project, told the committee his society was offering public meetings immediately after the holding of the organizing committee meetings to publish news of the activities. The meetings would be on the first and second Fridays after each committee meeting, and would be held at Control Data Institute and Elkin Community College, both in the Chicago area.

Sennet was later nominated by the members of the organizing committee for the chairmen's consideration to head the public information committee. Other recommendations – none of which was opposed – were for Cole Furr to chair the program committee, Dale Holmberg the finance committee and Fred Harris the organizing committee.

The committees are expected to complete their prescribed work and report back by Saturday March 31, the date of the next full meeting. Meetings are open to the public, and the next meeting is planned in the Deltec offices, Chicago Aerospace Center Building.

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User Tells 'Packaged' Tale of Success, Failure

(Continued from Page 1)

when the corporation was smaller and less complex than it is today. The current multi-company structure and the mix of insurance companies, mutual funds, real estate and other operations could no longer be handled by the old system.

Amoth had all the documentation used including time spent when the original system was created. Based on that and what he wanted to add to the system, he felt he could estimate quite closely how much a home-grown resystematization would cost.

He considered several packages and selected one from Infonational, Inc., San Diego.

As part of the installation, Infonational wrote an interface to IDS's general ledger application, and modified the fixed-asset reports to meet IDS's needs. Essentially, however, IDS was able to use the system "off the shelf," and that saved the company $40,000, Amoth said.

The payroll package vendor seemed equally willing to provide good support, but several of the updates on state tax calculations, according to Amoth, were "not completely checked out" before they were released. That has caused part of the problems IDS has had with the system.

The biggest part of the problem, however, has been IDS's unwillingness to use vendor X's input forms, which Amoth considers error-prone. Instead, IDS decided to write interface programs that would convert its own reporting forms into vendor X's prescribed format.

Meshing of the preexisting IDS forms and the new payroll package has not been completed, though IDS has been working on the project 14 months. Some IDS home-office people are being paid by a computerized system, but it is one carried over, in emulation mode on the 360/65, from the 7074 days.

While Amoth has had mixed experience with packaged applications, he is more positive about two other forms of software support he has had from outside sources. He is enthusiastic about a custom-made application for IDS, and pleased with the way several packages have helped his DP staff in its own work.

Since 1952, IDS had been developing and using a graphic data base, particularly for stocks-and-bonds chartings, but the original flat-hed plotter was dying and the vendor was out of business. So the company looked around and finally hired AGT of Champaign, Ill., (and now part of Gould Inc.) to develop a hardware/software replacement system.

The file maintenance and plot generation programming exceeded Amoth's expectations: "I had no one in-house who could have touched that." And the specialized electrostatic plotter, working off-line, moves fast enough to keep a 1,600 bit/in. tape going "flat out."

IDS has considered and used several utility packages to help its own DP staff work. The Panvalet librarian system, from Pansophic Systems Inc., went in easily although several data sets were lost in the early days of its use, when the operators did not fully understand the documentation provided by Pansophic.

Despite those slips, it has solved two basic problems. IDS has a library of some two million source statements and that meant, in Amoth's words, "there were a hell of a lot of tab cards" around the computer room up to a year-and-a-half ago.

Modified '360/37.5' Nears 40

(Continued from Page 1)

system at Greyhound, he added, but noted that was an atypical case. At Greyhound, a 360/30 that had been operating at CHCS in Pennsylvania was shipped to the site intact and the 30 was taken out.

In a more normal situation, he said, the installation of an accelerator on a 30 already installed would take a weekend, or its equivalent, according to CHCS.

LeClaire said that in the first week of operation the firm experienced three bugs with the new accelerator, all of which were minor and involved changes that had been made in the microprogram of the system by CHCS. They were all corrected quickly, and the firm did not experience any downtime because of them.

In the week since then, the system has been running 24 hours a day, he said, processing a wide range of user programs without a problem.

The 360/30 configuration with which the system has been running includes eight 2314 spindles, eight 2401 Model 2 and 3 tape drives, five 2311 spindles and a printer and card punch.

The accelerator completely obviates the need for the firm to upgrade to a 370/135, LeClaire indicated, and this also means the firm does not need to get another 360/40 to meet the same delivery schedules.

He also stressed that as a user he would like to see accelerators developed for both the 360/40 and 360/50, stating that such a device would make these systems extremely performance-competitive with the 370/145 and 370/155.

LeClaire suggested that the addition of the memory to the 256K size alone had made the system more effective on sorts and DOS software, but that it really did not perform at its best until the accelerator had been added.

Presently the firm is running under Grasp with two partitions on the 30, where it had only run one before.

The 30, which is jokingly being called the 37.5 at Greyhound, is maintained by CHCS and this practice will probably continue although the rest of the shop is maintained by Comma Corp.

LeClair noted the IBM diagnostics for the 360/30 definitely would not run on a machine with the accelerator, but added that CHCS had developed its own diagnostics for the system.

Plaintiff Claims Rights Violated

Suit Would Halt Arrest Record Storage, Dispersion

By Alan Taylor

Special to Computerworld

BOSTON – The problem of whether or not arrest records should be stored or disseminated by computer systems moved closer to a solution this month when a disappointed applicant for a post office job filed a class action suit in Federal Court here against the FBI and Massachusetts authorities claiming such arrest record storage and dissemination was a breach of his constitutional rights.

The plaintiff's attorneys charged that the FBI, which stores arrest records in computerized systems, disseminated a record of his previous arrest to the Boston Post Office, and that he consequently has suffered permanent injury – i.e., being deprived of employment at the Post Office.

The case concerns the refusal by the Boston Post Office to employ John J. Leonard as a mail handler after he had been told he had been accepted, and was given a time and place to report.

The information in question concerned the fact that Leonard had been arrested in 1970 and charged with being in the company of persons using marijuana. The case was later dismissed.

Leonard's legal representative, the Boston Legal Assistance Project, claimed that during discussions with Post Office officials it discovered he was being rejected because the offense "was drug-related." Since Leonard had not been convicted of any offense, the attorneys argued that the refusal to hire deprives him of his constitutional rights including the right to due process.

The restriction sought on storage and dissemination of data is based on the claim that Leonard's arrest record was forwarded to the Post Office either by the FBI or by Massachusetts authorities.

Leonard himself was not asked about previous arrests when he applied for the position, only about "convictions for offenses other than parking violations," his attorneys said.

The brief claimed that the Post Office had no right to obtain the arrest information even from the applicant.

The main thrust of the case involves Post Office department procedures, which include a provision that a job applicant who is turned down three times can no longer be considered for appointment.

The argument is that while Leonard has only been turned down once, and could presumably be compensated for this by payment of retroactive wages (from the day he was refused), he has been deprived of his rights on a permanent basis, because he is in danger of being deprived permanently of consideration for Post Office employment.

Case-by-Case Inquiry

The impact of the case, if successful for the plaintiff, could involve many more data processing operations than those of the FBI. There is no question being raised as to the accuracy of the data alleged to have been supplied – Leonard's arrest record – but the argument is that after Leonard's case had been dismissed this information should not have been supplied to the Post Office as relevent to the hiring process.

The case, if successful, could make it necessary for data base operators to inquire on a case-by-case basis into the use of the requested information before supplying data to organizations such as the Post Office or commercial firms.

Also, if the arguments in the suit are accepted fully, the fact that if such information is disseminated wrongly and thus could violate one's constitutional rights would suffice to prevent even the information storage.

The suit is filed in the U.S. Federal Court in Boston, and spokesmen for the Post Office declined comment at this time.

Getting a Job With a Conviction

A convicted felon can, under certain circumstances, get preference over a veteran once accused of a crime but not convicted – despite the Post Office policy of giving preference to veterans – when it comes to employment practices, according to the John Leonard brief.

This situation, the brief said, can result from the official Post Office policy of giving a second chance for employment to convicted felons, while also rejecting a veteran such as Leonard because of a prior arrest record, but with no convictions.

Boston Post Office personnel official John Hannigan is quoted in the brief as having agreed that hypothetically this is the case.

In the actual case, however, the Post Office argued that veterans' privileges were not involved, since the position was given to another veteran after Leonard had been rejected.

Medical Researchers Turn to Heart Study To Focus on Blindness

FRAMINGHAM, Mass. – Twenty years ago 5,000 residents here participated in a comprehensive computerized study of heart disease. Now medical researchers have returned for a research project into the causes of blindness.

The study, which will seek to identify factors which increase risk of eye disease and blindness, will utilize the hundreds of medical records compiled during the heart study. About 3,500 of the original 5,000 will participate in the eye study.

Dr. R. Thomas Dawber, director of the heart study and coordinator of the current project, said all subjects will undergo extensive eye examinations to determine the prevalence of eye disease in the population sample.

"This information will be fed into a computer and compared with other data we have," he said, "to see if we can determine under what circumstances eye diseases do or do not occur."

Researchers hope to uncover major factors leading to blindness in the same way the heart study identified high blood pressure, cigarette smoking and high cholesterol level as major risk factors in coronary disease.

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Computer Caravan/73 Makes a Stop in D.C.

Reluctance to Change Inhibits Use of Distributed Data Entry

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Even though users are expressing a great deal of interest in a distributed data entry type of operation, at present there is a good deal of reluctance on the part of users to change their data entry operations, Geoffrey Thomas told a panel at the Computer Caravan/73 last week.

In addition, noted Thomas, of the Cost of Living Council, there are presently no real standards for the data entry area except for the punched card and standards will have to be developed before new data entry methods or ideas can fully take hold.

"Most of the equipment available today in the realm of new devices represents breakthroughs in technology," he admitted, "but there hasn't been much thinking about new data entry applications areas."

"We are," Thomas continued, "applying the latest in technology to first generation ways of thinking. As long as users keep the keypunch mentality, it will be impossible to go to more on-line data entry.

> *"As long as users keep the keypunch mentality, it will be impossible to go to more on-line data entry." – Geoffrey Thomas*

"The challenge today is to design the distributed type of data entry system based around the current key-to-disk technology," he said, since this type of arrangement would be the most desirable for most users.

The panel agreed that users of data entry systems are looking for ways to move toward more distributed data entry operations without the expense of on-line data entry or intelligent terminals.

Even those discussing keypunch replacement or key-to-disk systems stressed the need for ways to distribute data entry operations over a wider geographic area than presently possible.

"What we need," one user said, "is a way to add communications capability to our key-to-disk systems.

"Possibly, we need a hierarchy of intelligence in data entry systems: a relatively unintelligent key-to-disk station at a remote site communicating with a more intelligent central key-to-disk site, and finally the higher level of intelligence available with the central computer."

6,000 Attend Caravan/73

WASHINGTON, D.C. – Nearly 6,000 attended the first two stops of Caravan/73, according to show officials. An estimated 2,800 attendees made the show here in addition to the 3,112 in Boston.

The Caravan will take a week off before swinging into New York City on March 5-7 (Monday to Wednesday).

"Frankly, I was surprised at the user interest in distributed data entry," Thomas related.

"The users with key-to-disk systems are very interested and the users who are only considering moving to key-to-disk also expressed a great deal of interest in being able to spread their data entry loads around," he said.

CW Photos by E. Drake Lundell Jr.

William Ziegler (middle), DP manager of Anne Arundel County, Md., addresses data entry panel while Geoffrey Thomas and Don DuVal look on.

Some sort of distributed data entry, the users agreed, would offer some of the advantages of on-line entry, but would not require the expense of a large central processor and would not tie up the central processor.

However, the major disadvantage, according to the users, would be that the keystations in the field either would not have a great deal of editing capability or that they would be very expensive with this capability.

At present, most of the users said, the key-to-disk systems available can fulfill present needs and allow users to perform their key entry jobs more efficiently than is possible with the keypunch systems they replace.

But, they stressed, it is time to start looking for new ways to apply the equipment that will meet the real user needs of the future. To do this, they said, the user community will have to "get it all together" and outline their real needs to the vendors of such equipment.

Accuracy Is Intelligent Terminals' Chief Asset

WASHINGTON,D.C. – Accuracy is the most important benefit users can get through the use of intelligent terminals and this increased accuracy may outweigh every other factor in the selection of data entry equipment, users were told last week at a Computer Caravan/73 workshop here.

The use of intelligent terminals, according to Ed Neff and Craig Jester of American Trading and Production, allows a firm to place the data entry function in the hands of the people responsible for the source documents and at the same time allows closer control over the data input to the system.

Neff

These terminals also allow a firm to use a small central processor in its network even if the data to be entered is large and the network extensive.

"A small computer like our System/3 Model 10 couldn't handle an on-line terminal system" without a major upgrade of the system, Jester said. Intelligent terminals allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

"We wanted to solve the error problem and the only way to do it was at the source," according to Neff. Under the old manual system used by the firm, he said, orders and shipment data were prepared on EAM equipment at three sites.

If an error was discovered when the documents got to the S/3 center, they would have to be returned to the center from which they originated. This process, from the date of the original document preparation to the correction process to the time the document was returned to the computer center and processed often took up to two months, he noted.

Intelligent terminals have reduced the time for order entry and invoicing to three days and keep the inventory up to date within two days.

The editing capabilities also permit the firm to have non-data processing-type people do the data entry function, Jester said.

Primarily, he said, the firm is using order entry clerks at the various sites for all of the data preparation and data entry functions, a move which allowed the firm to reduce the number of people at the outlying sites.

In all, this reduction in personnel has amounted to almost $500,000 yearly, Jester indicated.

The capabilities of the terminal – a Sycor 340B – allow these order entry clerks to type information into the terminal in a familiar form since the program can call up familiar formats for their use and still format the data correctly for use by the computer, he indicated.

The editing and check capabilities of the terminal system have cut the firm's error rate by over 90%, he indicated.

The most important things the user needs to consider when selecting an intelligent terminal system, according to Jester and Neff, are service, expandability and the capability for unattended sending and receiving of data.

Jester

11 Commandments Of Vendor Selection

WASHINGTON, D.C. – Vendor evaluation is always hard, but becomes even more complex when the evaluation involves vendors of on-line data entry systems, Don DuVal of International Reservations Corp. claimed at Caravan/73 here last week.

To aid users considering on-line systems, DuVal offered 11 commandments of vendor selection:

- Allow enough time.
- Define your requirements before you talk to vendors.
- Establish standard definitions of desired features.
- Provide prospective vendors with written definitions of your requirement and problem areas.
- Don't exclude suggestions from vendors. Sometimes they know a better way.
- Determine vendor's track record – how many installed, were they on time, how about reliability; were reliability problems due to infant mortality or are they longstanding?
- In the case where you must buy a new and untried product, consider an independent engineering study.
- What kind of documentation can the vendor provide before you order?
- Consider the financial stability of the firm.
- What kind of delivery schedule can it provide?
- Get competent legal help with contract and conduct of relations after contract is signed. Don't wait until you are in trouble.

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Intensive User Survey 'Essential' to Terminal Selection

By Michael Weinstein
Of the CW Staff

BOSTON – Selection of terminals and modems should be based on a careful study of the user's operation long before any technical analysis of equipment is done, according to Emile Thibault, DP director of the Massachusetts Department of Public Safety.

To help users in the study Thibault suggested a proposal approach: first determine what the needs are and second find out what equipment satisfies those needs. "In preparing the proposal, survey all users who will enter data into the communications network. Determine what type of data is to be entered, how much data, whether the user needs an interactive system or whether the data is to be stored for later batch processing," Thibault advised at a Caravan/73 workshop.

From this intensive user survey, the DP manager can then outline the specifications that the proposed communications terminals or modems must meet.

Using these specifications he should put out a proposal to all companies that have equipment designed to fill his needs.

The proposal now forces all vendors to respond in the same manner, Thibault said.

When all the proposals are in, the user is advised to make a matrix with the specifications on top and the vendors along the side. Users should evaluate each vendor by each specification and assign a number value – from one to 10 – to indicate how closely the vendor comes to meeting the pre-specified needs.

On features not so important the user may want to rate responses from one to five, Thibault added.

By adding up the numbers assigned to each vendor the user can then objectively evaluate each proposal.

To Mix or Not

Thibault advised users who choose multivendor systems to bring each vendor in one at a time and explain what is expected from him in the mix.

"Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain the ground rules of responsibility.

Once the user has determined what equipment will perform best for his application he should take one further step before signing the contract, Thibault said. Get a user list from each vendor under consideration and call a random selection asking about reliability, service and other potential problems.

He also suggested that users call large installations and time-sharing companies to ask their advice on technical questions, as these firms have internal experts.

Other marginal considerations he suggested were to show preference to a local company since the service and access to experts would be better.

For the small and inexperienced user, Thibault advised staying away from new products that had not been field-tested.

The dangers of equipment failure for the small user outweigh the potential cost savings in most cases, he noted.

N.J. Colleges Get DP Agency

TRENTON, N.J. – The New Jersey state Board of Higher Education recently moved to centralize computer usage by institutes of higher education through the establishment of a public corporation.

The new agency, Educational Information Systems, Inc., is expected to facilitate computer access by the state's small colleges, public and private, which cannot afford their own DP equipment.

5 Firms Share Cost Of Personnel Training

By Toni Wiseman
Special to Computerworld

BOSTON – Pooling of resources in personnel training can be a practical and cost-effective solution to the problems faced by the DP departments of small companies.

Worcester County National Bank's training program is a user group approach in which five companies, including an insurance company and major manufacturers, participate under a formal contract.

The course materials are chosen collectively, according to Paul F. Ladd, programming manager at WCNB, but each company reviews each course and decides whether or not it wants to participate. Each can participate in as many or as few as it wishes, explained Ladd at a Caravan/73 workshop on personnel selection and training.

The cost of each video-assisted course, bought as a package from a vendor, is then prorated. The total cash outlay over the past couple of years, according to Ladd, has been an average of $6,000/company, or only about $30/person/course.

The objectives of the program, he said, are threefold: to keep good personnel by means of career path training; to help personnel by increasing their knowledge, and thus their potential contribution to the company; and to motivate them.

"This sort of thing works. We've been doing it for three years, and the more we use it, the more we want to use it," he concluded.

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Cybernetics Helps Chileans Keep Watch on Industry

By Joseph Hanlon
Special to Computerworld

SANTIAGO, Chile – An extensive computer system which gives factory managers and government officials a daily, up-to-date picture of the nation's industry recently began operations here.

The system is probably the most advanced use of cybernetics and operations research in management, according to the system's designer, Stafford Beer, a British cyberneticist and management consultant.

Data from factories all over the country is sent daily by special Telex and microwave links to the computer center here, where it is analyzed for significant deviations from normal and reports made to factory managers and government officials.

How It Started

The project first began in late 1971. Teams of scientists built "crude but effective" cybernetic computer models of each factory, each sector of the economy (such as textiles), and each of the four branches in Chile's economy (light, heavy, materials, and consumer), Beer explained.

Branch models draw their data from sector models, and sector models from individual factory models. The models themselves are simple. Factory models typically depend on 10 critical numbers – usually supplies, output, absenteeism, and measures of certain critical processes likely to lead to bottlenecks. Each of the critical numbers is sent to the central computer every day.

So far, only 40% of nationalized industry has been tied into the system, which in turn is 60% of the economy as a whole. But even when the system is completed in three years, there are likely to be fewer than 500 factories tied in, which means that the total daily input will be less than 5,000 number/day.

The system uses two medium-size computers, an IBM 360/50 and a Burroughs 3500. Data is not entered automatically, but by keypunching based on the daily Telex reports.

Sophisticated statistical routines analyze each input number each day and give the probability that a change is significant and not merely random fluctuation. The program, called Cyberstride, "is incredibly sensitive to these changes, recognizing them long before the human brain would dare to make a judgment," Beer said.

Only What Is Important

Filtering systems select only the important information so that people are not overloaded with data, Beer said, in contrast to traditional management information systems. A factory manager would be unlikely to get more than one exception report a week.

Accordingly, branch and sector managers receive only selected reports. For example, an increase in absenteeism at a less important factory would generate an exception report only for the manager of that factory, while increased absenteeism at a particularly critical factory or increases at several factories would generate an exception report for the sector chairman. But the computer also gives the factory managers a time limit; if he does not solve the problem within the specified time, the computer automatically informs the sector chairman.

Real-Time Nervous System

According to Beer, delay in receiving economic information is a primary cause of bad policies. Many firms, for example, do not even know they are going bankrupt.

Governments generally act on data six months to a year out of date, and thus often do exactly the wrong thing to the economy. What is required, Beer declared, is a "real-time nervous system of the economy."

The power of the Chilean system is best illustrated by a recent "bosses' strike," when owners of transport companies nearly brought the country to a halt. Using data from the special communications system and computer simulations, Chilean leaders had an instantaneous picture of the strike and were able to select the best strategy to break the strike.

In Chile, all of the critical information is completely up to date and available in a central "operations room" in Santiago.

Also available in the operations room is a suite of simulation programs, which permit planners to test out alternative strategies for investment, distribution of critical materials, etc. These programs are similar to those used regularly in industry, but Beer argues they are more effective here because they make use of up-to-date information and of the cybernetic models of the economy that are already in use in other parts of the system.

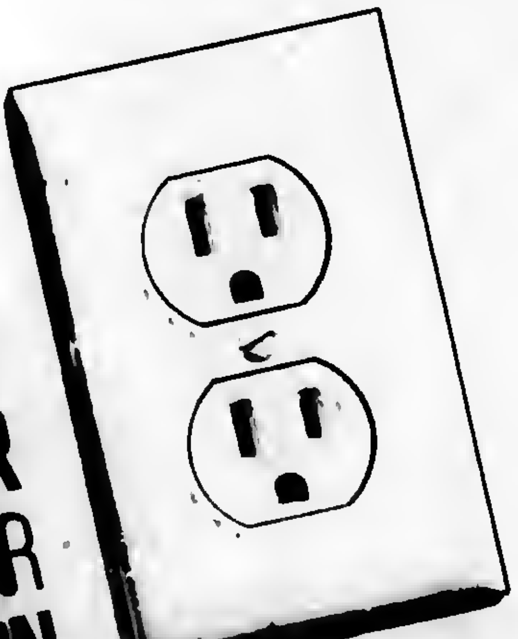
The operations room and the simulations were used, for example, to plan an expansion of what Chile calls "white line," that is, refrigerators and washers.

Bigger and Better

Three tasks remain for Beer and his team. First, the system must be expanded to the entire economy and the simulation software must be considerably extended.

Second, because the system was only recently introduced to the public it is not widely used or understood by managers. Thus, the team must now convince managers to use the exception reports. The system is designed to take considerably more data, and managers will be encouraged to select additional indicators that they consider important.

Finally, Beer is working on a feedback system for the peasants and workers of Chile. He declined to give details of the feedback, but suggested that it will be linked to TV sets so viewers can respond immediately to a program, with the central computer summing up the collective opinion.



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News Wrapup

FAA Ends Phase One Of Air Control Plan

WASHINGTON, D.C. – The Federal Aviation Administration has completed the first phase of its air route control center automation program with the changeover at the Memphis center to computer processing of flight plan data, Secretary of Transportation Claude S. Brinegar announced.

Memphis was the last of the 20 centers to achieve this capability using IBM 9020 computers.

All 20 centers now are tied together in a nationwide computer network which permits automatic transfer of flight data from one facility to another. This enroute system will also transfer flight data automatically with the 61 Automated Radar Terminal Systems (Arts III).

This first phase of the enroute program primarily automates the major bookkeeping functions within the center, such as calculating and distributing aircraft position data to the controllers. It also turns over to the computer the tasks of receiving and processing flight plans from the users of the control system and transfers appropriate data to other centers or airport terminals as the flight progresses.

"Phase Two will provide automatic display of such flight information as radar position, aircraft identity and altitude date," he added. "Phase Two hardware has already been delivered to four centers with the first installation at the Los Angeles center scheduled for initial operation this summer. Target date for completion of Phase Two at all 20 centers is 1975."

Citizens Access Canada's Population Statistics

OTTAWA, Ontario – Statistics Canada's new geocoding system will provide the ordinary citizen with census data at the push of a button. The user may access information for any part of Canada down to an area as small as a few blocks along one side of a street.

Geocoding – the Geographical Referenced Data Storage and Retrieval System – can provide detailed breakdowns of age, sex, marital status, mother tongue, land classification and whether property is owned or rented. The system is expected to be helpful for planning educational systems, social services and other government responsibilities, as well as commercial enterprises.

Antoine Terjanian, head of the geocoding group, stated: "We won't give a one-block reading because we have to assure people that census data, on an individual basis, is kept strictly confidential data. And the information from one block on one street side gets too close."

Users' fees begin at a basic $14, with additions for populations covered and an extra $4 for every variable required.

Applications are handled by the Census Users' Inquiry Service in Ottawa; initial inquiries are accepted by regional Statistics Canada offices.

Doctor Proposes Data Base Of Defects Found at Birth

EDMONTON, Alta. – A doctor from the University of Washington has suggested that genetic defects be tested and recorded in a data base at birth.

Speaking at a meeting of the Royal College of Physicians and Surgeons here, Dr. Arno Motulsky said a gene profile could be drawn from blood tests and any defective genes recorded on punch cards. Then when a couple decides to get married they will know what defective genes they carry and what the risk is of producing defective children.

So far doctors understand 100 diseases which are caused by defective genes, Motulsky said. Some are known to occur only if both parents carry the same gene defect.

Sealskin Transactions Sealed By Minicomputer

GREENVILLE, S.C. – Sealskin auctioning has taken on a new twist.

Buyers from around the world who gather here twice a year to bid for various lots of seal skins found the most recent auction distinguished by the presence of a computer which was used to track the transactions.

The Fouke Co., which auctions off the sealskins, hauled a small computer eight miles by truck and installed it at the Greenville Auditorium, just a few steps from the auction floor. The computer, as it captured each sale, also analyzed sale trends, giving Fouke an accurate projection of the auction's outcome.

A ledger card was prepared on each buyer and was updated as sales progressed. At the close of the auction, the unit automatically produced detailed statements which were sent to buyers the next day.

The computer also generated shipping instructions for airlines and other shippers and ran a complex final analysis of the complete auction.

In the past, it took days and sometimes weeks to process all the transactions made at the auction.

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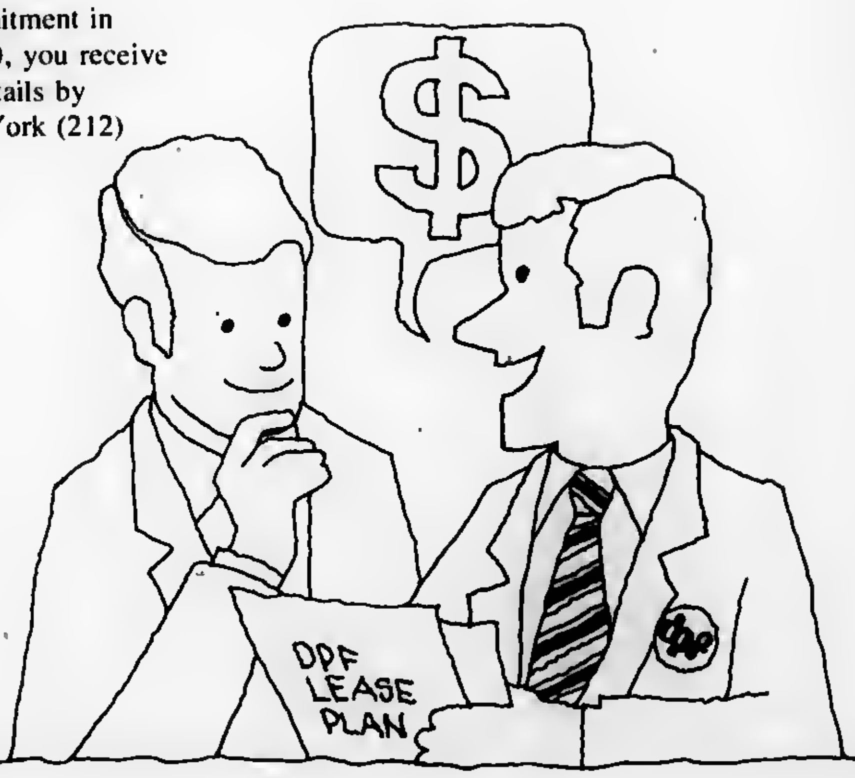

Firm Solves Weighty Problem

EL MONTE, Calif. — How can a large sand and gravel producer load, weigh, dispatch, deliver and bill 1,000 truck loads per day, at a rate of better than a truck per minute?

Livingston-Graham, Inc., with 19 plants in Southern California, uses a minicomputer-based system to do it.

The mini manages the data file and two CRT displays to help the dispatcher decide what load each incoming truck should take and where it should go. Trucks are weighed automatically and the minicomputer records the scale readout. The mini calculates net load weight and product cost, then prints the bill of lading.

The Data General Nova 1200-based system, developed by Sierra Data Systems, has 12K of core memory, two 70-foot platform truck scales, interface, CRT keyboard, disk, printer and TTY.

Before installing the computer, Livingston-Graham relied on the dispatcher to correctly time the flow of material to each customer job site. If delivery was too fast, trucks were kept waiting at the site, an expensive delay for the firm.

Now, the dispatcher gives the truck driver a customer order that tells him what kind of material to pick up. He enters information such as truck and job number and material code on the CRT. The truck driver picks up the material in the yard and stops on the scales to check the load limit.

In less than 10 seconds, a delivery ticket is printed with such information as customer name, date, material description, time, address, truck and job number, tons already shipped to the job, tons remaining to be shipped and gross and net tonnage on the truck.

Other benefits of the new system are complete billing data, truck use statistics, driver performance reports and elimination of the highway patrol fines for excess load limits.

For Want of a Cloth (and Backup) There Was Confusion at Airport

By Joseph Hanlon

Special to Computerworld

LONDON — Hundreds of passengers queued for the wrong planes, and some even missed their flights, because a new computer system here was tested without proper safeguards and no manual override system existed.

The problem occurred at Heathrow Airport in January in the international terminal, where a massive $1.2 million computerized indicator board system is nearing completion after four years of work. The computer drives more than 100 displays for departures, arrivals, baggage pick-up, etc. Some of the displays are simple CRTs, but many are mechanical.

The system is being phased in slowly over two years, so parts of it are already in use during the day and other parts are tested late at night.

Testing is done with a typical schedule composed of real flights, but with departure gates assigned arbitrarily.

The difficulty is that only the computer can change the huge mechanical departure display boards — there is no manual erasure system and no set procedure to simply throw a cloth over the board in the event of a power failure. Instead, in case of emergency there is a special sign which can be lit up to say "please disregard this information."

On the day of the mixup, in early morning, the engineers were working on the departure board system, and were testing restart procedures after a power failure. The system failed to restart, leaving the typical schedule on the departure boards. Recovery did not occur until 10 a.m. that morning when thousands of passengers were already in the terminal.

In the international terminal, many passengers could not read English and did not understand the "please disregard" signs; loudspeaker announcements were lost in the confusion. Many passengers believed the departure boards and queued for the wrong planes. Yet the whole problem could have been eased simply with a cloth thrown over the signs.

The indicator board system uses two Honeywell 316 computers with 80K of disk storage to keep an entire week's 1,300 flights on the computer. Four input terminals permit changes and special flights to be added.

Philip Rawson, the British Airports Authority senior engineer in charge of implementing the system, said most of the system is already in use and only the departure board subsystem remains to be completed.

No Standby

The computer system does not have standby power, but its emergency shutdown procedures are designed to keep all data intact in case of power failure. After a simple restart procedure, it should be able to pick up where it left off.

In this particular case, the engineers cut power and when they turned it on again, they could not restart the system. Rawson explained the difficulty was later traced to an "intermittent disk fault," now corrected.

The departure boards are 40 feet long and 5 feet high and list destination, airline, flight number and departure time and gate for up to 50 flights. The boards are called flap indicator boards because each space on the board has its own motorized drum with 40 flaps containing the alphabet and numbers to spell out the required information.

Rand Aims Research At Systems Aspects Of Data Bank Systems

SANTA MONICA, Calif. — The main thrust of research in privacy and security of data bank systems at Rand Corp. is presently toward data security engineering, according to Rein Turn, principal investigator at Rand.

By this, the investigator at the think tank said, the organization is trying to find a systematic way of describing a system that takes into account the value of the data and to develop some method to measure the security of the system based upon the value of that data.

Many Sidelights

In doing this, the hardware and software are not the only considerations in the equation, he indicated, noting "people can give away anything" if they want to and have the access.

What is needed, he said, is some method to determine the trade-offs between the cost of protecting a system and the value of the data in a system.

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Editorials

'Tooting Our Horn'

The Computer Caravan/73 has been launched on what promises to be a second successful year of operation.

With more than 300 products on display by 52 firms in 68 booths the exhibit floor offers users demonstrations of the types of equipment they need from data entry through minicomputers, communications gear and memory devices, to output equipment.

It's worth the $5 admission price which lets the user visit the exposition for three days.

The proven forum format with users discussing user-oriented problems in panels and workshops provides insights into improving day-to-day operations in such areas as software, data entry, data communications and installation management.

So even if it sounds like we are "tooting our own horn," we think the Caravan can be a useful tool for any user – whether he can only visit the exhibit floor or can participate in the workshops and panels.

The Peripheral Issues

It will take some time to adequately assess the impact of the IBM/CDC agreement on the DP industry. But some of the peripheral issues may far overshadow the actual agreement.

Telex has charged the wanton destruction of a data base. This is a very serious charge.

An antitrust case seeks to prevent business practices that are against the public interest. Does it not follow that data (an index) associated with such a proceeding affects the public interest?

Who will decide when a data base becomes a device that affects the public at large? And, more importantly, how will the public's right to preserve such data bases be enforced?

We hope these issues will not be lost in the specifics of the case at hand.

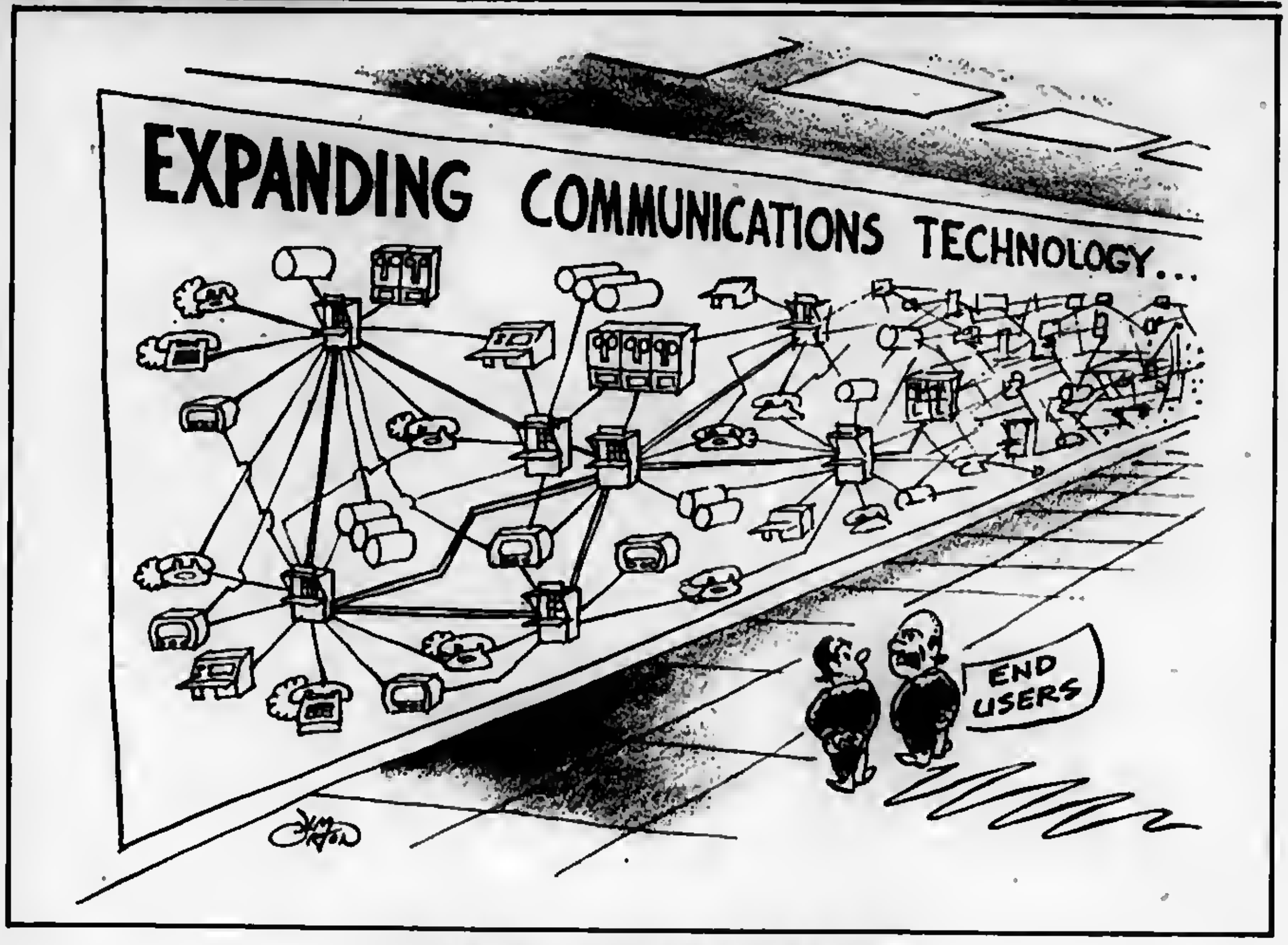
Windows on the World

The launching of *Shukan Computer, Computerworld's* new sister publication in Japan, is of more than passing importance to CW readers. It represents a major first step toward our goal of increasing our worldwide news-gathering resources.

Japan has one of the most active computer communities in the world. This community represents not only a market for U.S. DP products and services but a wealth of user experience that can be shared by U.S. users.

One of CW's major objectives has been to provide users with up-to-date information that may help them avoid mistakes and "reinventing the wheel." DP is now a worldwide industry, making it imperative for users to keep up not only with what is going on in the U.S. but elsewhere in the world.

CW intends to provide its readers with more of this information in the future via *Shukan Computer* and other international affiliations.



'It Includes Everything Except Us'

Letters to the Editor

Source Document Area Inhibits Use of COM

I have read with interest the article on COM trade-offs [CW, Jan. 17] and while I generally agree with the article there are other points I'd like to make.

The use of high reduction ratios does permit greater packing density but as in all photography the small image size complicates all phases of the operation from exposure to duplication.

Many EDP managers look upon their COM print units as replacements for line printers when in reality COM printers, limited though their capabilities may be, open vistas in the realm of data storage and retrieval that previously defied efforts limited by impact printers. This limitation was particularly severe where multiple copy requirements were large.

In the duplication area diazo is very much alive and several companies have solved the ammonia dumping problem. I find the addition of sizable quantities of citric acid to the water to absorb excess ammonia completely, eliminates the ammonia odor and if alkalinity indicators are used to signal when the absorber is depleted, ammonia ceases to be a problem.

COM is currently inhibited by two major factors – one of these takes the form of unenlightened EDP managers, the other and most serious, is the limitation imposed by forcing COM to operate in a source document environment. Education is the obvious answer to both of these problems.

Al Aron
President
Computer Micrographics
Technology
Los Angeles, Calif.

The Silent Majority Speaks for the Giant

Speaking from 20 years of significant data processing experience that has produced results in terms of reduced costs and improved services, I desire to add my views to what I believe is a silent majority in favor of and in defense of IBM.

I suggest this is not the time to freeze success, but to cast off the cling-alongs. Let both successes and failures take their natural courses.

The computer people need to remain free in their continuous quest to improve the production and delivery of relevant information directly to decision makers.

Charles E. Emswiler, Jr.
Information Systems
Administrator
Virginia Division of
Motor Vehicles
Richmond, Va.

IBM Has the Right To Protect Itself

IBM – like every giant successful corporation – did not become a giant over night. IBM has come of age through skillful application of managerial techniques employed by Thomas J. Watson and his staff.

IBM, historically, has caused the U.S. computer industry to grow in five-year leaps with the advent of the System/360 in 1965 and the System/370 in the 1970s. Millions of dollars were spent in the researching, designing, developing and marketing of these sophisticated systems.

In the late 1960s and early 1970s parasitic competition had swiped about 10% of IBM's installed equipment base. Customers were replacing IBM's own 360s with the same models under third-party leasing agreements. Third party lessors can afford to lease at a cheaper rate, because they provided none of the effort that goes with the manufacturing of a computer.

So IBM developed the 370/135 and 370/145 with virtual memory capability and will install it free of charge for its customers, but did not include these features in the 155 and 165. If these facts are true, then IBM did not and does not intend to take a swipe at its customers, but at the competition it considers parasitic.

The independents who were reducing IBM's profits with their "add-on" memories also got what they desired. IBM developed a new combined disk and controller (3333) which handles twice as many 3330 dual-spindle drives as the 3830 I. It's cheaper for the customers, but prevents competitors from attaching their disk subsystems to installed IBM systems.

Is the Department of Justice directing its efforts in the right direction? Perhaps if there were stronger legislation preventing parasitic competition of this nature, then IBM would not have to resort to these tactics to "Protect itself."

Johnnie R. Jackson
Chief, Data Processing
Walter Reed Army
Medical Center
Silver Spring, Md.

In Praise of IBM

Just a note on Wesley T. Saville's "Keep IBM Together" in the Feb. 14 issue.

It's a pleasure to see that *Computerworld* is – if only occasionally – willing to discuss IBM's virtues, as well as its alleged vices. As a satisfied IBM customer, and one who has "shopped around," I believe IBM has achieved its leadership by offering users what they want at prices they are willing to pay.

Jay Morrill
Executive Vice-President
Lyall Electric, Inc.
Albion, Ind.

Card Program Wanted

A number of years ago, a friend of mine had a two or three card 80-80 reproduce program for a 1401 system. A control card, which followed the program cards, was punched with a "#" in every column to be produced, a blank punched in every column to be omitted, and the actual character punched in the column to be gang-punched, if gang-punching was desired.

I am wondering if any readers have a program similar to this program that would work on a 360/20 with an MFCM.

Anton J. Wall
Data Processing Supervisor
Sioux Valley Empire
Electric Association, Inc.
Colman, S.D. 57017

Outside Evaluation Possible

Should CDP Exam Be Suspended?

The Taylor Report

By Alan Taylor, CDP

The first meeting of the Computer Foundation Organizing Committee last March was not all brightness. But it was not all dark either. In fact , the spirit of the meeting showed that a large number of disparate societies were prepared to work together toward the goal of certification, and were prepared to provide substantial funds to support it. Representatives disagreed with each other and then moved on to the next item without harboring bad feelings. Simply a common devotion to bringing professionalism to the field and a hearty understanding of the frailties of computers.

Yet one question was raised which was given much less attention than it deserved. L. Dale Holmberg, representing the Society of Professional Data Processors (SPDP), asked that we consider halting the CDP program. The result was a stunned silence, followed by a change of the subject.

Holmberg's arguments were really simple. The DPMA, he felt, had gone ahead with the program too early for a professional certification operation. At the time, he claimed, there was too little known about just what the operation really needed to be professional. Instead, he opined, the program looked more like something a trade association might put together.

What Holmberg wanted was not to discard the CDP program completely, but simply to halt it until it is clear it does what it professes to do. Holmberg, himself a CDP, said he did not believe that such evidence was currently available

And Holmberg was quite right. The CDP program is both controlled and evaluated by a single group of people – the DPMA Certification Council. It, in effect, sits in judgment upon its own work, and the general public is expected to rely entirely upon its judgment. A practicing data processing manager, Bruce Taylor, told me he simply is not convinced by this type of evidence, and I can't say I blame him.

It is not a case where Taylor does not believe in certification as such. He certainly does believe in it and feels that there is a real need for it in data processing. His current disquiet, like Holmberg's, arises from CDP examination process.

Unlike Holmberg, however, Taylor has some positive ideas as to what type of evaluation procedures would help. This is natural, for he is the data processing director of services for a national educational service – the Educational Testing Service (ETS) of Princeton, N.J.

ETS, at the suggestion of Holmberg, has actually looked into the possibility of providing a CDP examination which would be independently evaluated and which could be economically run. Dr. Albert Maslow, who is involved in designing tests of this nature, and who is no stranger to data processing problems, has done a rough design of such an operation.

He suggested that each separate area – programming, management, etc. – have its own task force. (The societies would be responsible for providing this help). The work of each task force would be evaluated by ETS and reported if necessary to the full board of directors of the foundation. After the examination would come the final studies.

At the same time, Maslow said, a continuing evaluation of the whole examination with regard to need and effectiveness could be conducted. All could be financed well within current CDP limits, Maslow said, provided that the societies which specialize in each area can and will produce the working task forces.

The organizing committee itself is clear evidence that such resources are available for these purposes. Already there are 11 societies ready to pool their resources. So the idea is practical.

Currently, the organizing committee has not adopted it. I think it should. I think the CDP, and professional certification in general, is too important to leave to the self-evaluation methods currently being used in the DPMA Certification Council (which is itself a partly appointed, partly self-perpetuating body).

I think the organizing committee should know the reader's views. There is an official way to express your views. The Public Information Subcommittee has been established; the acting chairman is Robert Sennet, and he can be reached at Quality Data Processing, 709 Ridge Circle, Streamwood, Ill. 60103.

Alternatively, there is a coupon with this article.

Whichever way you choose, your opinions will reach the organizing committee. And your opinions are important to the whole matter of certification.

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What Are Your Views on CDP Exam?

It has been suggested that the CDP program be halted until it has been shown that the examination is performing properly.

Such an evaluation is currently being conducted by the DPMA Certification Council, which also is responsible for the examination itself. The Computer Foundation draft constitution suggests that this council be the model for all foundation practitioner certification activities (including business programming, operations research, etc.).

Dr. Albert Maslow of the Educational Testing Service suggested it would be possible for his own operations, or a competitive one (such as the Measurement Research Center, Iowa City) to provide for both a continuation of the examination and a parallel independent evaluation.

There are therefore three alternatives – continue as is (recommended in organization committee plans), halt the exam until it is proven effective or begin outside evaluation.

Please check the alternative you favor and explain why.

☐ Continue as is ☐ Halt until proven

☐ Begin outside evaluation

Why? ____________________

____

Name ____________ Professional Position ____________

Address ____________ Society Memberships ____________

If interested in any society please circle: SPDP SDE Acpa SCDP Other ____________

After completion please return to Computer Foundation Public Information Subcommittee (CFPIS) c/o Taylor Reports, Computerworld, 797 Washington St., Newton, Mass. 02160.

Foundation Has Two Strikes

The prospect of many certification programs for data processors under a single roof with all the supporting societies having an equal voice was an attractive idea when it was presented publicly last year by DPMA. It was particularly attractive since three of the large societies were connected with the proposal; ACM and DPMA backed it, while ASM had at least an observer working on the committee.

Accordingly, this column welcomed the concept.

Since then, things have changed. ASM has now withdrawn from the operation, leaving just ACM and DPMA. And the participation of these societies is turning out to have a larger price tag than they revealed when they presented what they claimed to be "full" information in January.

At that time the price tag was set at $8,500. This was the sum provided for the organizing committee staff and office. The $8,500 was needed from the other societies, it was claimed, because it was necessary for everyone to realize that ACM and DPMA were not controlling the organizing committee.

Accordingly, it would be improper for the organizing committee to make use of the available ACM or DPMA staff, room or duplicating facilities. Former ACM President Walter Carlson made it clear that he felt any such use of DPMA or ACM facilities would hurt the project seriously by suggesting ACM/DPMA control.

The reality, as revealed at the first meeting of the organizing committee, is that the real price tag for ACM/DPMA participation is for the other societies to conceal from the public the real extent to which ACM and DPMA control the foundation (see Page 1 story).

The full price tag is not yet known. But a claim was made that ACM President Anthony Ralston appointed a cochairman to an officially independent committee, and the DPMA cochairman was given the right to prevent alternative nominations for committee officers from being entertained at the first committee meeting. These events show that the amount of actual ACM/DPMA control is significant.

As Carlson said, such control hurts the foundation's chances of success. ACM/DPMA control must be considered as one strike against the foundation.

However, the concealment of this control is something else. If ACM and DPMA had come out openly and said they were insisting upon appointing the officers, and were not prepared to have the officers' powers designated by the organizing committee there might still have been some cooperation from the community. Both societies have a great fund of community good will which might have carried them over this hurdle.

But no amount of good will can carry them over the present situation. The retention of control is unfortunate, but its attempted concealment is unforgivable.

The concealment is a second strike against the foundation. Now it only has one strike left.

I still support the concepts behind the foundation. I will welcome a genuine attempt to implement DPMA's Certification Program Advisory Committee's report. I await hearing from ACM and DPMA as to whether – and how precisely – the report will, in reality, be implemented.

Upon their actions lies the fate of the game.

Letters to the Editor

Managers Must Realize Resources Are Human

Frank Greenwood talks like a manager, without making any sense! The problem with any management and any organization is that they espouse and follow these compartmentalized credos which totally ignore the fact that the resources with which they are dealing – people – are individual social entities.

Anyone who has read Weinberg's *Psychology of Computer Programming* knows these management guidelines are like all the organizational diagrams – so much hot air and used toilet paper.

Michael Vrilinear
San Diego, Calif.

Government Control Would Reduce Quality

How many people are being paid to uncover what they think is embarassing information about IBM. The front page article in the Feb. 14 issue is an instant replay of *Computerworld* and many other periodicals of late: how dare IBM take such advantage of the consumer in order to make money.

The last corporate directive I heard from any IBM customer was not: "they made me buy it." If customers are willing to sacrifice their dollars and corporate free will to choose another vendor, then there can be no complaints about IBM's profit margins.

And anyone who thinks that government control will reduce prices is dreaming. What will result is an inferior product for a not so reduced price. The original objective of the antimonopoly legislation was to provide a better product at a competitive price to the consumer.

Robert J. King
Manchester, Conn.

How Would You Like To Be Research Rat?

An article in the Jan. 17 *Computerworld* concerning experiments to increase the learning speed of rats by feeding them the brains of learned rats, brings to mind a similar experiment in an isolated area of East Dakota where a two-century research project is nearing completion.

Fledgling rat researchers were fed the brains of older experienced rat researchers in an attempt to save the lives of future research rats by bringing rat research to a speedy conclusion.

The latest group of rat researchers achieves its full potential after 10 years, in contrast to rat researchers fed no brains, who mature after 30 years. The company is now offering job contracts of 10-year's duration.

R. Fink
Boston, Mass.

Logically Speaking Are We Professionals?

I must take exception to Joseph T. Rigo's letter [CW, Jan. 24]. Rigo assumes the prospective employer realizes with certainty that he is addressing a "brilliant young computer professional" whenever he is interviewing same. I wonder, if "brilliant young computer professionals" wear a lodge pin that indicates their exalted status.

I would hope that in the future, both defenders and deriders of certification would couch their arguments more logically. It was my understanding that logic is the reason for our "professional" existence.

Stephen M. Rush, CDP
Special Systems Consultant
Honeywell Information Systems
Willowdale, Ont.

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Random Notes

APL Conference at Goddard Cancelled In Budget Bind

GREENBELT, Md. – The APL Conference, previously scheduled for March 12, 13 and 14 at Goddard Space Flight Center [CW, Dec. 6] has been cancelled by the National Aeronautics and Space Administration (Nasa). Submitted papers are being returned to the authors, Nasa said. so they can be presented at other meetings.

A terse announcement from Nasa "regretted" the demise of the annual meeting but said it was necessary "in view of the current stringent manpower and budget limitations."

OS Unneeded for Disk Support Using 'Stand Alone Restore'

FLANDERS, N.J. – OS and OS/VS users can dump and restore their 2314 or 3330 disk files even if their system packs are disabled, with the Fast Dump Restore-Stand Alone Restore (FDR-SAR), self-loading bootstrap program from Innovation Data Processing.

The normal FDR package may be purchased for $990. FDR-SAR may be obtained free by all existing FDR users and all who purchase FDR before May 1. After that, FDR-SAR will cost $100, an Innovation source said. The firm can be reached through P.O. Drawer F, 07836.

Datapoint 2200 Gains DOS

SAN ANTONIO – Datapoint 2200 users gain more flexible capabilities with the Disk Operating System developed for the 2.4 Mbyte cartridge disk that is optionally available with the 2200. The DOS provides file management including the prevention of overrunning previously established files.

The Datapoint DOS also supports linkage, overlaying, interrupt handling, a library of subroutines and a dynamic debugging facility. An enhanced version of a high-level-language, Databus 7, runs under DOS and allows coding with Cobol-like instructions.

Datapoint Corp. (formerly Computer Terminal Corp.) is at 9725 Datapoint Drive, 78284.

Centurex Adds New Offices

LOS ANGELES – Centurex Corp., formerly Systems Associates Inc., has opened new sales offices to serve the banking industry in Pennsylvania, Illinois and Georgia.

The Georgia office is at 6065 Roswell Road N.E., Atlanta, 30328. The facility in Illinois is at 800 Enterprise Drive, Oak Brook, 60521, while the new Pennsylvania operation is in Dublin Hall, at 1770 Walton Road, Blue Bell, 19422.

Centurex is headquartered at 5959 W. Century Blvd., Los Angeles, 90045.

With Data Base Texts

Users Face Choice: Think or Skim

By Don Leavitt
Of the CW Staff

What is a data base management system and what can it do for me?

Users who want an answer to that question now have two new references to consider. The choice depends on how deeply they want to get into the subject and how much they want to spend.

The latest *Casebook*, distributed free by ADL Systems Inc., provides an overview of the subject, especially for senior executives interested but not actively involved in computer systems and software development.

In contrast, detailed descriptions of the elements that make up a data base management system are provided in a research study to be published shortly by Q.E.D. Information Sciences Inc. This report approaches the depth of the reports put out two years ago by the Data Base Task Group of Codasyl's Programming Language Committee. but Q.E.D. anticipates updating its work to keep it current.

Q.E.D. also goes further than the Codasyl effort by attempting to rate four of the most commonly available systems, point-by-point, so that users have an objective way of knowing which might be best for their particular requirements.

Not for Small Users

The *Casebook* "primer" notes that data base systems can be a major help to users with large file management and updating problems, high demand for one-time accesses and a large volume of changing retrieval needs. But they are "probably not a viable approach," the pamphlet warns, for the small-scale user or for an initial implementation effort.

During selection, the ADL publication said, users should weigh three areas within their own design requirements: complexity of the proposed data base, type of inquiry capability desired and anticipated response time. Most systems are biased toward just one or two of these, and the user has to consider the trade-offs.

The 200-page Q.E.D. report starts on the same basic ground but gets into much more detail. Q.E.D. sets its evaluation criteria on data manipulation, query capabilities and application programming, then on physical files, communications and installation requirements.

Most of the book is spent on point-by-point analyses of IBM's Information Management System (IMS), Cincom's Total, Software AG's Adabas and MRI's System 2000. These are described separately, then comparatively.

The book ends with extensive cross-reference glossaries so users can "translate" vendor's terminology.

The Q.E.D. book including updates will be available for $385 from 170 Worcester Road, Wellesley Hills, Mass. 02181.

The *Casebook* is being distributed by ADL Systems, Acorn Park, Cambridge, Mass. 02139.

Partition Balancing Improved, 3330 Support Added to 'Sprint'

MANTECA, Calif. – DOS/360 users can now spool data to and from IBM 3330 or compatible disk systems, with an enhanced version of the Sprint Spooling System just released by Jason Data Services Inc.

The update also adds the 3330 to the system resources being monitored by the job accounting portion of Sprint. In its initial implementation, all files to be spooled and/or monitored must be within the first 250 cylinders of the 3330 disk, Jason said.

The extension means that Sprint can now handle 2311, 2314 or 3330 type devices but, the company admitted, users are still unable to mix device types under Sprint. All files being handled concurrently must be on a single type of disk.

Sprint has also been extended to include a "device address independence" feature by which, Jason said, JCL entries are automatically changed based on the partition being used for a job. Related enhancements, including automatic volume recognition and scanning of the PUBs for available tape drives are scheduled for release later this year, a spokesman added.

Relocating Loader Expected

A relocating loader is currently undergoing field tests, he said, and is expected to be generally available during the next three months. With this feature in place, users will save storage space now devoted to duplicating copies of programs that are currently used in more than one partition, and should gain operating efficiency since jobs can be loaded into any available partition.

The basic Sprint package, including card reader-, card punch-, printer- and tape print-spooling, and job accounting, rents for $95/mo. A perpetual lease, for $2,200 plus $150/yr for maintenance is also available.

Special features, including multiple partition spooling, the device address independence feature and the upcoming relocating loader cost an extra $85/mo, or an extra $800 on the perpetual lease plan.

Jason Data Services is at 903 East North St., 95336.

Data Decks Massaged for $25

ATHENS, Ga. – Analysts who need to determine the effects of variations in tabular input data can make the changes easily and see the results with a Fortran program developed by North American Rockwell which is now available for $25 from the Cosmic clearinghouse at the University of Georgia.

The program (Cosmic number MFS-24360) can modify an existing data deck with a minimum of additional input data. In addition, two decks can be altered independently of each other, and merged to form a new single deck.

Changes which can be handled by this utility program include the biasing, in a positive or negative direction, of independent variables in one or two decks. Otherwise, the dependent variables of these decks can be added or subtracted to form a new set, Cosmic noted.

Going further with this program, the user is able to multiply the dependent variables by a constant factor, or a positive or negative term can be combined, with the results carried over to two new sets or to a combined set.

Program output includes printout and punched cards. The printout lists the input controls and factors, along with the case title, the old data card values and the new deck values which are punched.

The capabilities of this program lend themselves to the problems of creating test data in addition to supporting analysis of the original input data, a Cosmic source suggested.

Documentation for the 60-card program is available for $2.50. The program and documentation should be ordered from Cosmic, 112 Barrow Hall, 30601.

NCR Handles Queries Into CIF, From 260s

DAYTON, Ohio – Commercial banks using NCR's Central Information File (CIF) software system for maintaining account records can now use NCR 260 data terminals for on-line inquiries, with responses in one to six seconds, according to an NCR spokesman.

A new Commercial Bank Inquiry (CBI) program permits the 260 to access the CIF with responses directed to the terminal's heat-activated printer, which is said to produce copy three times as fast as conventional teletypewriters. The inquiries can be made either against account number or other numeric key.

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Data Briefs

Dartmouth Plans Upgrade To Dual Honeywell 716s

HANOVER, N.H. – The Kiewit Computation Center at Dartmouth College is planning to upgrade the Dartmouth Time Sharing System (DTSS) by installing new communications front-end processors.

Kiewit plans to install dual Honeywell 716s to replace the Datanet 30s now in operation. The 716s will process data 20 times faster than the existing front ends and will allow the DTSS to handle 192 access ports instead of the present 173.

The 716s will operate with terminals transmitting data at speeds from 110- to 300 bit/sec. The DTSS is presently used by 60 colleges and high schools in the U.S. and Canada.

NCR Adds Modems

DAYTON, Ohio – NCR has introduced two modems for its data terminals and the Century CPU series.

An integrated model, the 698-300 is installed within the 621-103 multiplexer while the 752-200 is a free-standing unit.

Both asynchronous modems operate at 1,200 bit/sec on dial-up or private lines.

The 752-200 costs $1,000 or $35/mo while the 698-300 sells for the same price but rents for $30/mo.

HP Unit Checks Errors

PALO ALTO, Calif. – Hewlett-Packard has announced a bit error rate measuring system, consisting of a 3760A Data Generator and 3761A Error Detector, for high-rate digital systems.

Using Pseudo Random Binary Sequences (PRBS) with bit-by-bit comparison to measure Bit Error Rate and Total Error Count, the 3760A/3761A system is designed for test equipment and systems using pulse-code-modulation (PCM).

Price of the system is approximately $8,100. Deliveries will begin in April from 1501 Page Mill Road, 94304.

Tester Selects Speeds

CHERRY HILL, N.J. – A lightweight, portable test message generator, designed for use with teletypewriter and data circuits, is available from Computest Corp.

The Model TG-542 operates at 12 data speeds from 45.5- to 4,800 bit/sec. Signals can be distorted in 5% increments up to 45% with switch-selectable marking, spacing or other variables.

Unit price is $750. Delivery is from stock from 3 Computer Drive, 08002.

– – –

Cornell University, the University of Virginia and Bowling Green State University have ordered UT-1 programmable, remote job entry terminals from Unitech. The terminals will be used for both administrative and instructional purposes.

Unitech is at 1005 E. St. Elmo Drive, Austin, Texas 78745.

User Eliminates Modems

Local Terminals Tied Directly to CPU

By Ronald A. Frank
Of the CW Staff

DALLAS – The exact conditions under which hardwired equipment will operate successfully are difficult to define. But users who transmit data over short distances may be able to hardwire their terminals to the CPU and thus save the cost of modems.

Alford Refrigerated Warehouses has nine Memorex 1240 communications terminals connected to its 360/40 in the same building. The terminals are up to "four floors and across the length of the building," according to David White, DP manager, and they operate without modems. Some of the hardwired terminals are "a half mile away," White said.

"We were not sure the terminals would work at that distance but we tried it and they did," White said. There were some wiring changes that had to be made to the equipment since the EIA interface pins are arranged for connection to a modem.

Semper Paratus

One major change was to strap the send pin on the CPU to the receive pin on the terminal and vice versa. Another signal Data Set Ready was strapped so the terminal is ready all the time. These changes are relatively easy to implement and often allow the user to install a more sophisticated terminal because of the money he is saving by avoiding the cost of modems.

The Alford terminals are not part of a seldom-used installation, according to Judd Human, programmer/analyst. The company is a public warehouse and processes about 1,000 orders per day through the Memorex terminals into the Model 40. The warehouse complex includes two half-mile-long buildings which store approximately 100 million pounds of food commodities.

When a food broker phones in an order, it is entered on a 1240 terminal and transmitted to the Memorex 1270 control unit which replaced an earlier IBM 2702. The order is processed by the 360/40 and a bill of lading and invoice are sent to a terminal in the proper section of the warehouse complex.

"Often a shipment can be on its way to the food broker's customer within minutes," White stated. The 2702 is about $500/mo less than the IBM line controller, he estimated.

In addition to its independent terminal equipment, Alford uses Calcomp double-density disks on its 128K Model 40 and the GMP multitasking software package from Computer Information Management that runs under DOS.

Not all of the firm's lines operate without modems. The warehouse also maintains a 400-mile link to Corpus Christi which includes Data Products modems and teletypewriters.

The hardwired terminal equipment, which includes Memorex 1250s operating in unattended mode to produce hardcopy control information, has saved the firm about $1,000/mo in modem rental charges and potential phone lines costs, White estimated.

The 1240s are used about nine hours per day by order clerks and also provide interactive information from the CPU to the operator. The 1240s can operate at five switch-selectable speeds, from 10- to 120 char./sec, which can be received by the auto-speed capabilities on the 1270 line controller. The IBM 270X series does not include the ability to handle various speed lines in the same manner.

Biplexer Provides 19.2 kBit/Sec Speed Without Wideband Line

NEWTON, Mass. – Codex Corp. has a communications device to allow data users to transmit at 19.2 kbit/sec over two voice-grade channels at up to 50% savings.

Under existing technology users who want to transmit at 19.2 kbit/sec must use Bell wideband facilities and high-speed modems. But the Codex device, the 296 Biplexer, allows the user to combine two conditioned voice-grade channels with 9,600 bit/sec modems and two Biplexers to achieve the 19.2 kbit/sec capability.

The Biplexer transmit section splits incoming traffic into two 9,600 bit/sec serial streams each of which is transmitted, using Codex 9,600 bit/sec or equivalent modems, through dedicated voice circuits, the company said.

The 296 can also be used at speeds below 9,600 bit/sec. It can be used with two 7,200 bit/sec data sets over two private lines for a 14.4 kbit/sec transmission capability. Or a 9,600 bit/sec line can be configured with four dial-up lines and 4,800 bit/sec modems.

The receive section adjusts continuously and adaptively for differential delays of up to 100 msec in the two channels and recombines them into one 19.2 kbit/sec output.

A 100-mile wideband data circuit using AT&T Series 8803 lines with Bell 303 modems would cost about $2,303/mo, a Codex spokesman estimated. A similar capability using two Bell Series 3002 voice-grade lines with C2 conditioning, four 9,600 bit/sec modems and two Biplexers would cost $1,948/mo.

On a 500-mile network, the Bell cost would be $7,175 compared with $3,020 for the Biplexer configuration. The Biplexer costs $5,000 or $150/mo and includes automatic fallback to lower data speeds and to single channel operation. In addition, the device has remote and local loopback features for diagnostics. Codex is at 15 Riverdale Ave., 02195.

Telephone Firms Seen Filing State Tariffs

PHOENIX – The telephone companies will respond to competition from customer-provided equipment by filing "responsive pricing" tariffs on the state, rather than the national, level.

Phone company competitive offerings should be allowed "at any price that does not cast a burden" on other subscribers, according to William K. Jones, a member of the New York Public Service Commission.

Speaking about interconnection problems at a seminar sponsored by the International Communications Association, Jones said caution with limited experimentation is desirable. Specific types of equipment should be interconnected with the phone network on a piecemeal basis to gain experience about any harmful impacts on the phone network.

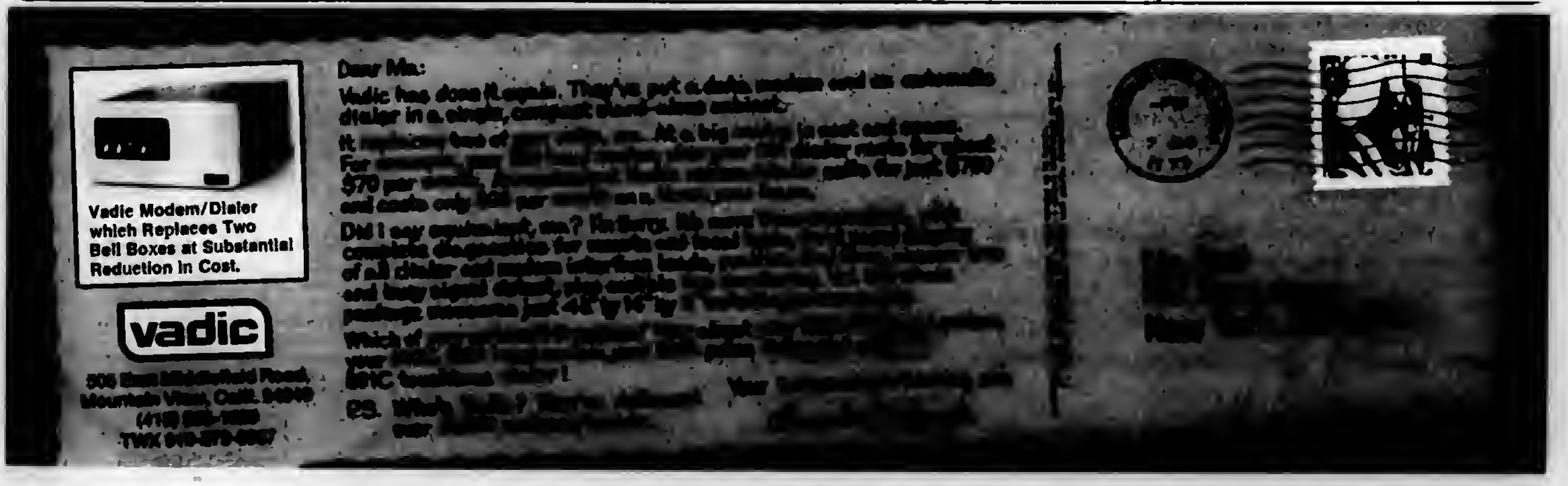
Terminal Reduction

The growth of customer-owned terminal equipment will be matched by a reduction in the growth of new telephone company terminals rather than a sharp drop in phone company equipment, Jones predicted. Noting it has been over four years since the Carterfone Decision, Jones said there has been no indication that the phone companies are burdened wtih quantities of obsolete equipment.

The "competitive process" between phone companies and independent vendors "does bring progress," he said. "Innovations first developed for the sophisticated business user" will be adapted to the needs of all users, he predicted.

The regulation of telephone companies often does not work effectively because the volume of work "simply exceeds the capacity of most regulatory agencies."

If a certification or inspection plan for interconnection equipment is developed, the phone companies should be responsible rather than independent testing agencies, he said. The benefit of central responsibility for phone network quality will outweigh any discrimination by the telephone company against non-carrier equipment, Jones said.



Vadic Modem/Dialer which Replaces Two Bell Boxes at Substantial Reduction In Cost.

vadic

Analysis—Part IV

Will Data Users Want to Share Their CPU Resources?

By Ronald A. Frank
Of the CW Staff
(end of series)

WASHINGTON, D.C. – The application filed by Packet Communications Inc. with the Federal Communications Commission proposes to bring the advantages of a packet-switched resource-sharing network to computer/communications users.

Industry observers who have studied the proposal find little argument with the viability of such a communications system. By arranging data into fixed lengths (packets) it is generally agreed communications facilities can be utilized much more efficiently than present methods.

But the resource-sharing concept raises more serious questions. The operating model for PCI is the Arpa network which is operated by the Defense Department for academic and research institutions. And organizations connected to the net are required to share the capabilities of their CPU with others who may want to access it.

Whether this communal DP approach can be translated to the competitive, proprietary environment of the business user is still to be determined. There are those who argue that a business user on a resource-sharing network would refuse to make work space on his CPU available to others who might even include his competition.

Many business users have highly refined in-house software programs they consider to be part of their business assets. This type of user might not want any outsider accessing his CPU, much less his data base.

There are, of course, elaborate safeguards that could be built in by users to restrict those sharing the resources of their CPUs. The time-sharing companies have done an impressive job of keeping data thefts to a minimum despite the fact that many customers access their DP centers. And undoubtedly resource-sharing customers could do the same, if they want.

But if the packet-switching methodology is the most important aspect of the PCI proposal, other carriers may be able to provide similar capabilities under existing services.

Datran has already told the FCC it plans to incorporate computerized switching centers into its data-oriented network. And it would not be too difficult for other specialized carriers such as Microwave Communications Inc. to incorporate a packet-switching service, if there were no regulatory prohibitions.

For that matter, the existing carriers might even consider offering such a capability if it really makes more efficient use of an already-scarce frequency spectrum.

It is hoped that the PCI application will not become the test case of the regulatory arena. The seven-year regulatory fight waged by MCI should not be duplicated by those who oppose the PCI plan.

There are important differences in the PCI approach that favor early approval. The company plans to utilize existing communications facilities; it will not be erecting towers or laying cables; it proposes instead to use existing facilities in a different way with DP equipment it plans to develop.

The PCI network will bring additional competitive factors into communications but it should be left to the customer to decide which services he needs.

AT&T Says DDS Net To Help All Its Users

WASHINGTON, D.C. – AT&T has told the FCC that those who oppose its application for its Digital Data System (DDS) "are motivated by private rather than public interest considerations."

The DDS system will provide "economic benefits to all users of Bell System services" and should not be delayed, AT&T said.

The FCC is currently considering a Bell proposal for the first link in its DDS network, scheduled to begin operations in 1974.

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Bits & Pieces

Calcomp Adds X-Y Digitizer To Flatbed Plotting System

ANAHEIM, Calif. – Calcomp has introduced a digitizer for the firm's flatbed plotting system.

The Model 942 free-cursor digitizer is a self-contained unit with electronics housed in a cabinet beneath the table, the firm's spokesman said.

The work surface is a standard size drafting table incorporating a digital display unit to show users X-axis position, Y-axis position and digitizing sequence.

With the digitizer, users can obtain software for a host computer, enabling operations such as: coordination rotation, independent X and Y scaling, variable gridding, absolute/incremental operation and conversion to user coordinates, the spokesman added.

Interfaces are also available for ASR 33, ASR 35 and Olivetti teletypewriters as well as for the IBM 029 keypunch.

Price with keypunch interface is $20,764 from 2411 W. LaPalma Ave., 92801.

Data Disc Enhances Terminal

SUNNYVALE, Calif. – Data Disc, Inc. will begin using the Matrix 1100DD combination printer/plotter – from Versatec – with its 6611/6612 terminal.

The 6611/6612 terminal presents graphs and charts of over one-fourth million individually addressable points and can display over 3,000 alphanumeric characters on the screen, a spokesman said.

The electrostatic hard-copy output plotter/printer reproduces any information shown on the terminal's video display screen – any combination of words, figures and graphs – on 11-inch paper, he stated.

A typical system of eight terminals, supporting devices plus one printer/plotter would cost around $56,000 from 686 W. Maude Ave., 94086.

Security System for Remote Areas

CHATSWORTH, Calif. – Users who wish to control security in areas with one or two access points, where traffic flow does not warrant security guards, can obtain a two-station security access control system from Cardkey Systems.

The 202 System is a card insert device that, besides admitting valid cardholders, will automatically void any invalid or stolen card.

An optional printer is offered to record entry and exit data concurrently with the actuation of the access controller.

The system has a capacity of one to 99 individual card numbers and starts at $1,936 from 20339 Nordoff St., 91311.

Through the 'Looking Glass'

DEC Offers PDP-11 Users Multiprocessing

By Michael Weinstein
Of the CW Staff

MAYNARD, Mass. – Digital Equipment Corp. has introduced a hardware "window" to provide PDP-11 users with many of the advantages available with IBM multiprocessor systems.

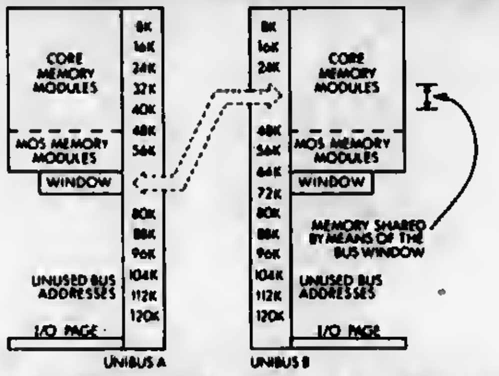
The window concept allows memories and control of peripherals to be dynamically shared among two or more processors in a multiprocessing configuration.

Each PDP-11 requests the portion of the other processor's memory it wishes to access, on either a read/write or read-only basis.

Connections are established between each processor's Unibus so that subsequent memory references are handled on a transparent basis.

Since all peripheral control registers also have addresses associated with them in the PDP-11 series, selecting the last 4K words of the other processor's address space permits peripheral sharing as well.

The DA11-F Unibus Window is a high-speed interbus channel needed to connect two PDP-11s into the "duplexed" configuration.



This simplified example uses identical processors and only one window port. A is the originating bus with an 8K window located at 64K. It has been initialized to connect to location 32 – 40K on Unibus B.

It is a bus-to-bus connection permitting interbus direct memory addressing transfers and single word accessing.

The DA11-F allows one processor to access addresses on a companion system's Unibus by translating requests through the unit's bus-address space into requests on the companion's Unibus.

Transparency is accomplished by having the synchronization done internally by the DA11-F's hardware.

Any unused block of addresses on the Unibus – from 32K to 512K words in size, can be designated as the window. Normally, it is placed on the Unibus locations directly above the last memory module. Thus, on a system with 64K words of memory, an 8K window would be placed from 64K to 72K on the Unibus.

Once the window is initialized, any access to a location between 64K and 72K will be translated automatically into an access to an 8K word access area on the companion PDP-11's Unibus.

The 8K area to be accessed on the companion system's Unibus is selected as part of the initialization process.

Thus, the window operation involves both the Unibus on which the access was requested – called the originator bus – and the Unibus through which the actual access was performed – called the target bus.

Any type of address access – instruction fetch, data fetch, data write or DMA-type block transfer – can be performed through the window.

Each processor in the multiprogramming configuration is not limited to a single window; thus multiple windows can be initialized to allow intercommunication between several processors.

Any processor in such a network can execute code contained in another computer's memory. Or a mass storage device can transfer data to any designated or requesting processor.

The DA11-F Unibus Window costs $5,950.

NCR Users Pleased With Hardware But Want More Software Support

By a CW Staff Writer

NCR users are happy with the cost of their systems, the performance of their central processors and the firm's efforts to support them.

They have some residual reservations about peripheral equipment – but feel the situation has greatly improved – and claim the most immediate need is in the area of software support.

A *Computerworld* survey also confirmed that NCR is largely the computer company of the first-time, small budget user, with many users coming from the ranks of the firm's cash register customer base.

Many NCR users are operating on low budgets without previous computer experience – or as one president of a local user group stated, "initially the software is smarter than the user."

Even with these added problems, many NCR users queried were high in their praise of the service they received.

Good Support

Robert Naylor, DP manager of Polymer Corp., related how NCR had set up a special team to help him and spent three weeks at his installation without charge to his firm.

Robert Neese, DP director of a New England bank, attributed the quality of NCR's service to the already existent branch offices set up to service the firm's other equipment.

By combining the offices, he felt, NCR was able to offer local service in many remote areas that would not support a computer service office alone.

Roby Robinson of Weben Industries was not so sure, since, he said, many servicemen were previous cash register repairmen who had been retrained.

"While they mean well, and try to solve all of our problems, they are really 'men for all season,' " he stated.

Neese noted that while he was an IBM user, he had access to a specialist for every application.

But he said IBM charged dearly for this service, both in consulting fees and in the increased cost of the system.

King for a Day

When users were put in the hypothetical position of being chairmen of the board for NCR and asked what areas should be improved, most responded they would like to see better software support and a few said they would like to see better peripheral equipment.

"It takes too long for software packages to be released and once released the local people are too much the generalists to help with specific programming problems," complained Clyde Weaver, president of the Mid-West NCR Users Group.

This was the only failing he could find in his relationship with the supplier.

But his comments were echoed by enough users to indicate this as an area where NCR should concentrate.

Other problems cited by users in the software area include the desire for a better operating system and easier access to key personnel.

One user related he did all his system work himself. "It would be foolish to ask my local branch for help as they know less then I do about programming. I realize in time the reps will learn and they are trying, but for the present I must solve my own problems."

In the area of hardware, all users had only praise for the central processors, but when the subject turned to peripheral equipment they had some disclaimers.

Of the peripherals, the one most under attack was the 655 disk subsystem which previously had experienced many head crashes, the users said.

But instead of detracting from their praise for NCR most users were impressed with the efforts the firm took to alleviate the problem.

Roby Robinson indulged in a little crystal ball gazing and felt the agreement with CDC would help the user in the area of peripherals.

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IBM Bubbles May Be in User's Future

YORKTOWN HEIGHTS, N.Y. – Within five years storage units may be able to hold more than a billion bits of data per square inch using magnetic bubbles on the surface of amorphous film with a process shown by IBM's Research Division.

Amorphous material is composed of molecules that are not set in a rigid order, thus they have not been previously investigated as a possibility for bubble applications, R.E. Gomery, IBM director of research, noted.

The bubbles are cylindrical islands that form on the surface of the material and can be observed under a microscope.

To create a computer storage device based on bubble technology the bubbles must be aligned in paths so the presence of a bubble would indicate a "one" and the absence a "zero."

Looking Ahead

Although scientists were reported unwilling to speculate on when this technology might reach the computer user, the researchers have already fabricated an experimental shift register to operate with bubbles two one thousands of a millimeter thick.

The potential breakthrough is not in the use of bubbles as a storage media but rather that amorphous material can be used.

Because of the difficulty of preparing crystalline material – used previously in research – many observers thought the bubble concept was dead as far as commercial memory makers were concerned.

"This new application gives bubble technology a new lease on life," Gomery claimed.

Similar research is being conducted by Cambridge Memories, Concord, Mass., with their Domain Tip (DOT) efforts.

The difference in the two approaches is that IBM is concentrating on amorphous film with Cambridge Memories working through polycrystaliine film.

Praveen Chaudhari, IBM Research Division, points out the irregular arrangement of atoms in a model of the film. Vertical alignment of atoms is shown by arrows pointing upwards.

Process Control Users Offered Program Control

SUNNYVALE, Calif. – Users with production and process control applications are offered a series of general-purpose, solid-state program controllers from Hugle Industries Inc.

The Real Time Programmer (RTP) series controls from 10 to 30 operations in any sequence and provides the user with up to 16.5 hours of unattended processing control, the firm's spokesman said.

Timing accuracy is provided by a precision electronic clock, allowing the user to select intervals down to 1/4 second.

Real time operation intervals can be directly programmed in hours, minutes and seconds, the spokesman said.

The RTP 10 x 10 has ten interval and ten output channels.

The RTP 10 x 10, costing $2,500, has 10 interval channels and 10 output channels, while 10 x 30 and 20 x 30 units are $3,500 and $4,900 respectively from 625 N. Pastoria Ave., 94086.

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SPOOLER provides an economic printer output spooling routine for DOS installations. It allows the printing of output to be independant of the generation of the output. The technique employed by the SPOOLER is to write the output onto disk as it is being generated, then write from disk to printer as the printer becomes free – performing all of its functions in a partition as small as 4K.

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BCCXREF will reduce by over 50% CPU usage for the generation of the CROSS REFERENCE listing provided by ANS COBOL. BCCXREF will significantly reduce elapsed time in the compiler partition or region, increase throughput, and allow greater system usage for other purposes.

DOSRELO

DOSRELO provides a method of making DOS problem programs self-relocating. DOSRELO accomplishes the self-relocation capability for all programs, regardless of the language, by adding entry point logic to the object code of the program before the Linkage Editor catalogs it on the Core Image Library.

CIMS

The Computer Installation Management System (CIMS) provides a method to supply management with pertinent information in the utilization of their data processing hardware. CIMS accepts data collected by the System Management Facility (SMF), formats the data and presents the data in varying sequences and formats. Reports for job accounting, multiprogramming throughput, hardware analysis, and others are provided.

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New OEM Products

Mini Standard Features Previously Only Options

IRVINE, Calif. – Microdata Corp.'s Model 400/10 minicomputer for the OEM marketplace incorporates several standard features normally offered as extra-cost options, the firm stated.

The features include power fail/auto restart, real-time clock, DMA channel hardware priority interrupt and hardware index register.

The 8-bit core memory has a 1.6-µsec cycle time and is expandable from 1K bytes to 65K bytes, accessible with direct or indirect addressing.

An optional I/O system can be specified to include four buffer input interfaces and four buffer output interfaces. Each interface provides three control lines and two interrupt lines.

Software for the mini is compatible with the previously announced Micro 400 minicomputer.

Price in 100 unit quantities is $2,250, including CPU, 4K bytes of memory, desk-mount enclosure, power supply, system control panel and supporting software.

Power Supplies for Peripherals

MINNEAPOLIS – Control Data, through its Magnetic Components Division, is offering a line of "building block" power supplies, designed expressly for builders of peripheral equipment.

All models in the Stak-Pak Series have adjustable outputs with a range of +15% to -10%, adjustable current limit foldback protection and adjustable crowbar over-voltage protection. Output regulation bandwidth is ±0.5% with peak-to-peak ripple at ±0.5% maximum. Input voltages are 115 Vac ±10% reconnectable for 230.

The Model LC Series are 5, 12 and 24 V, range from 1.5 to 5 A and measure 3.68 in. by 4.83 in. by 6.53 in.

Single quantity pricing ranges from $65 to $275, with delivery from regional stocking centers for "same day shipment."

Keyboards Are MOS-Encoded

JUSTIN, Calif. – A series of MOS-encoded TTY-33 Keyboards, featuring redundant contact BI-PAC switch modules, a 40-pin ceramic MOS chip for encoding four mode Ascii code and N-key rollover are available from Controls Research Corp., Santa Ana, Calif., for interactive computer printing, display terminals and related ASR-33-compatible applications.

Price is $125 in quantities from one to 25 and drops to $59 in quantities of 5,000.

Disks Offered Mini Designers

HICKSVILLE, N.Y. – Per Data has introduced a series of moving-head disk drives with storage capacities from 25M to 100M bits per drive.

Up to four drives can be daisy-chained for a total storage capability of 400M bits.

Access time is 10 µsec track-to-track, 35 µsec random; data rate at 2,400 rpm is 2.5 MHz.

Cost in single quantities ranges from $3,230 (25M bit) to $4,120 (100M bit). Controllers are also available enabling the interfacing of disks to nearly all minicomputers, for $3,500.

Volume discounts are available on all items.

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Banking System Can Replace Tellers

DETROIT – Financial institutions can install automatic teller systems from Burroughs to allow customers to perform transactions at any time of day, according to the firm.

Installed in lobbies or outside walls of banks, credit unions or in locations such as shopping centers, the RT 3000 and RT 4000 teller systems can be used to withdraw cash from a savings or checking account, charge a withdrawal to a credit card account, make deposits, transfer funds, pay bills by debiting an account or pay bills with cash, a firm spokesman said.

To operate the self-service system, a customer inserts a special magnetic card into a reading device to index a lookup table and verify if the user is a valid cardholder.

Instructions are then displayed on panels above the unit's keyboard to guide the user through the specified transaction, the spokesman added.

The card is returned after the transaction is completed. As a security feature, the RT systems can be programmed to retain any card reported lost or stolen.

The RT 4000 can be connected by telephone line to a central computer so accounts can be updated in a real-time application or information can be written on files for future programming. The RT 4000 can also perform as a stand-alone unit, the spokesman added.

The RT 3000 can only operate as a stand-alone unit with the unit recording transaction information for future processing.

The RT 3000 and RT 4000 systems are extensions of previously announced RT 2000 on-line and RT 1200 off-line cash dispenser units. The magnetic customer card can be used with other Burroughs terminal systems, such as the TU 500 commercial teller terminal and the TU 300 credit authorization terminal.

Eight Models

Presently there are eight models within the RT 3000/4000 series with purchase prices ranging from $27,829 to $36,630 and monthly lease prices from $696 to $816.

Present users of Burroughs remote tellers can have their systems converted to the new systems on-site with conversion costing $11,640 or at an additional monthly rental of $266.

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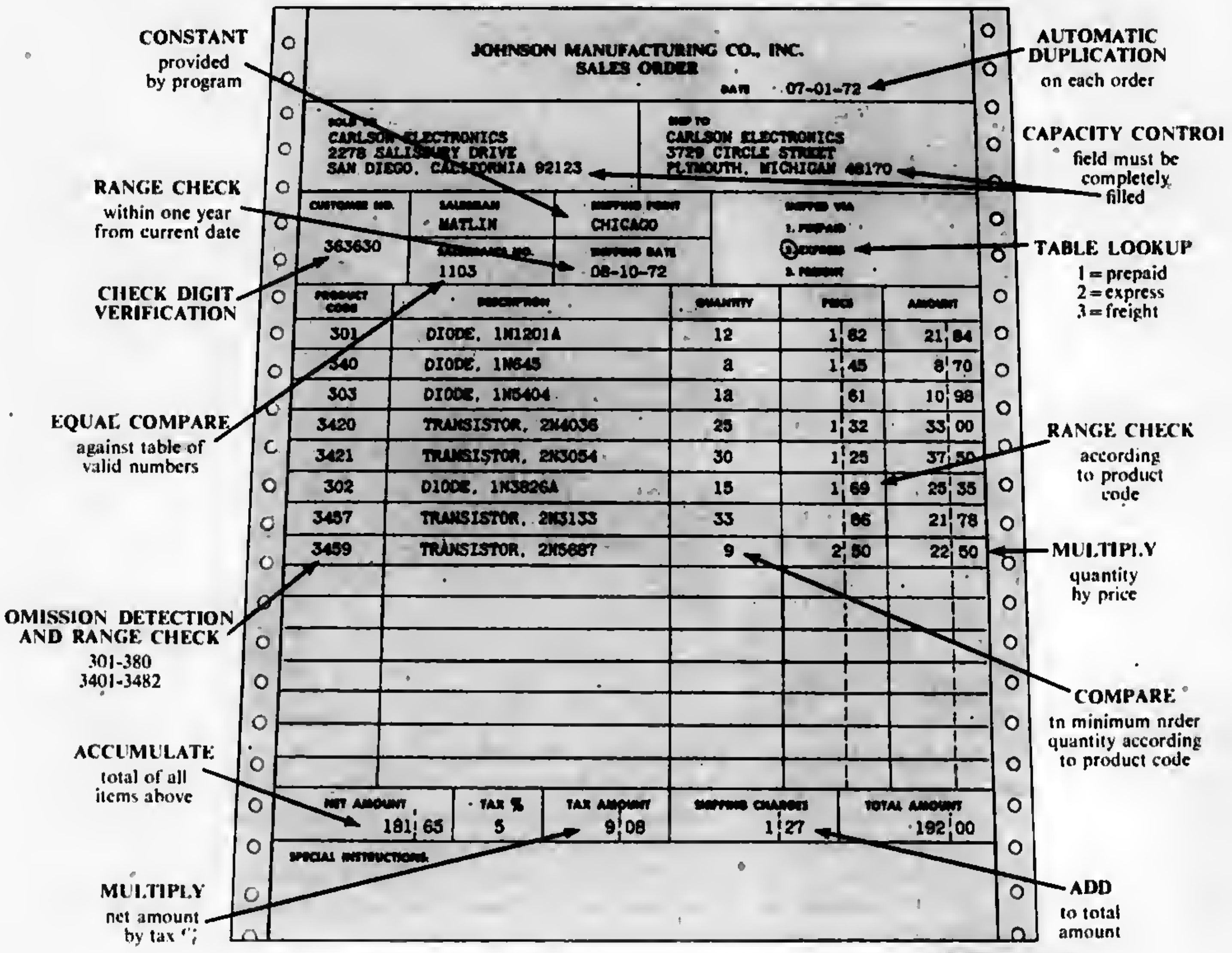
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340	DIODE, 1N645	6	1 45	8 70
303	DIODE, 1N5404	18	61	10 98
3420	TRANSISTOR, 2N4036	25	1 32	33 00
3421	TRANSISTOR, 2N3054	30	1 25	37 50
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Panelists Agree

Some DP Experience Needed Before Going In-House

By E. Drake Lundell Jr.
Of the CW Staff

BOSTON – Whether a business is small or large, a business needs to get used to the discipline of computerization and have its paperwork procedures well under control before installing an in-house system, a recent panel here on small systems agreed.

Both of the representatives of small businesses on the panel – Morris Carver, president of Atlas Paper, and Alvin Alosi, controller of Food Enterprises Inc. – indicated they had either used time-sharing or service bureaus before installing a system in-house in order to get their initial experience in computer use.

Carver said Atlas needed the help of computers just to meet its billing problems, particularly after it had instituted a policy of adding an interest charge to overdue accounts. The manual system just couldn't keep up, he said.

The firm first went to time-sharing, but as its needs for DP increased, so did its monthly bills so it switched to the Basic 4 computer for in-house use.

The Small Systems User

Carver said the firm wanted a system that could be operated by non-computer people, even though some people in any organization using small computers should know some of the basics of DP.

One of the major areas that Carver warned other users about was the tendency to go to fast when installing systems. "We're trying to move carefully," he said, but admitted that if the firm had it to do over again, it might move even more slowly than in the past.

Alvin Alosi said Food Enterprises first used a service bureau, but decided to go to an in-house system (a Singer 10) because the turnaround time from the service bureau was not fast enough due to delays in getting complete material to it.

One Toe In

The experience with the service bureau helped the firm get its "feet wet" in DP, but Alosi felt that even the small user should have at least someone in the organization that was capable of full-fledged programming, unlike Carver who thought only part-time programming would be needed.

The most important part of the planning for an in-house system, Alosi indicated, is in the configuration planning stage.

"This is where many systems go wrong," he claimed. Even with excellent assistance from the system vendor, the help is only "as good as the user's management input to the vendor's systems engineers."

Besides giving the vendor organization detailed input, the user also has to investigate and evaluate his needs carefully before launching an in-house project, he said, so that the equipment will fit his needs exactly – both at the present and in the future.

Alosi "strongly recommended" in-house programming efforts because it made the user more independent of the vendor and because it allowed the user to develop or tailor particular programs to fit the needs of his business more exactly.

At GTE Sylvania the need to go to small systems was for radically different reasons than in many small businesses, according to John Krenn, a DP consultant in the organization.

No Programmers Here

The company wanted to install compatible systems in each of its 23 warehouses around the country and it wanted to get systems that needed no local programmer assistance.

> *"Basically, we wanted a system that any gorilla could operate."*

Therefore its decision on which system to acquire was based to a large part on selecting a manufacturer that was capable of maintaining systems in remote locations – both the hardware and software – and systems which could accept remote programming changes.

The firm wanted to maintain a "low DP profile" at these warehouse sites and the Tempo II systems they acquired could be placed virtually anywhere without special environmental configurations and would not need trained operators.

"Basically, we wanted a system that any gorilla could operate," Krenn indicated.

"What separates the men from the boys offering small business systems is demonstrable software," Krenn indicated, "and one that is prepared to support the basic applications of the small user."

For example, he said, the small systems supplier should offer conversion programs so a small user will not have to convert all of his internal codes to the industry-accepted – and computer-accepted – codes by hand.

"If the firm does not have the software, don't bother with it," he told the prospective users in the audience.

He also told them: "Don't mechanize a mess. You have to have your paperwork under good discipline before turning to computers or you could just make the situation worse."

All Together

The installation of the IBM 3410/3411 magnetic tape system at Metro-mail Advertising Co, Mount Pleasant, Iowa, enables the firm to operate its System/3 compatibly with System/360s and 370s.

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Nasu Head Attributes Growth to Members' Helpfulness

By E. Drake Lundell Jr.
Of the CW Staff

LOS ANGELES – With 2,500 members, the National Association of IBM System/3 Users (Nasu) is now looking forward to a membership of over 3,500 by the end of the year, according to Irwin Cohan, president.

The reason for the growth is not only the growth in S/3 installations, he indicated, but also the increase in software available from the organization at little or no charge.

Nasu's Library

Presently Nasu maintains a library of over 100 systems programs written for the S/3, he noted, all of which are available at no charge to members of the organization.

There are also 30 programs in the applications library that are available for a $25 handling fee, which includes all documentation.

Some of the S/3 users, Cohan indicated, get all of the packages they need to get started from the organization's libraries.

All programs are given to the organization by members who seem willing to help newer users get started in the business. The most experienced members seem more than willing to donate programs to the library, Cohan noted, even though they probably are the ones who use the programs in the library the least.

Six for One

In order to foster this type of sharing between users, Cohan said, Nasu has implemented a system under which a user can get six applications programs free in return for submitting one to the library.

The programs are particularly valuable, he indicated, since only about half of them are available in any commercial form either from IBM or from independent software houses. Therefore, Nasu's library is often the only alternative for a user who doesn't want to or can't afford an in-house development program.

He also noted that S/3 users do not always have the resources to purchase programs, even if they are available for a fee.

All program improvements are also passed on to Nasu members as they are made, even if they are made by someone other than the original program developer. In this way, the small user can avoid the cost of maintaining a large staff just to keep programs up to date, he indicated.

Societies/ User Groups

The organization also invites non-IBM suppliers to speak at chapter and regional meetings, he said. The S/3 user is very budget conscious and, although he is locked into IBM to a certain degree, he can be very independent when there are less expensive products available.

In fact, Cohan said, the S/3 users probably use more independent peripherals than their brothers in larger 360 shops, with the predominance of the independent equipment being in the off-line category such as card readers and punches.

The organization also maintains a file of problems that S/3 users have experienced and how they were solved. This information is available to all users either through written inquiries or through a "hot line" telephone service maintained by the group.

In order to keep the dues for the organization at the rate of $30 yearly, Nasu will soon be moving its headquarters to the Las Vegas area.

Cohan indicated that the cost of doing business in California is becoming prohibitive. "We have wanted to keep the price as low as possible so that we can attract and serve a large number of users," he said. "With the low budgets for most System/3 installations, the cost of an organization like ours has to be rock bottom."

NCR Users to Meet

DAYTON, Ohio – The NCR Retail Users Group is gathering here for its spring meeting March 7-9 which focuses on point-of-sale terminals.

The agenda provides a chance for users to discuss subjects of common interest and exchange ideas.

For information contact Irwin B. Newman, Frederick Atkins, Inc., 11 W. 42nd St., New York, N.Y. 10036.

ACM to Rent, Sell Film, 'Computer History Digest'

NEW YORK – The Association for Computing Machinery (ACM) has released the film "Computer History Digest," which was prepared for viewing at the ACM Conference last August.

The eight minute black-and-white film is comprised of shots from major manufacturers, with a narration tying the history of the industry together.

The film is available for $95 or on a rental basis of $15 for two weeks use plus handling costs from ACM, 1133 Avenue of the Americas, 10036. ACM chapters can obtain the film for only handling and mailing charges.

ISA Brochure Lists Papers

PITTSBURGH – A free brochure entitled "1972 Annual Conference Publications" from the Instrument Society of America (ISA) lists over 100 instrumentation papers focusing on the state of the art and applications.

Papers from the 27th Annual ISA Conference are published ithe form of preprints booklets and bound proceedings.

Ten papers on data handling and computation are listed, along with others on scientific instrumentation, automatic control systems and other topics.

ISA, Publications Department, is at 400 Stanwix St. 15222.

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Topics Abound at Systems Management Conference

NEW YORK – The American Management Association's (AMA) 19th Annual Systems Management Conference will focus on specialized concurrent sessions geared to specific job problems and goals.

The three-day conference March 12-14 at the Americana Hotel here will be followed by a two-day briefing session on "Systems Performance: Measurement, Evaluation and Utilization."

On Monday, following a keynote address on "Management, the Computer and People" by AMA President James L. Hayes, two of the all-day sessions on project management and data transmission will convene.

Project management will examine the preparation phase, computer support and the execution phase of project management.

"Data Transmission: What is Happening – What Can Be Expected?" will include an overview: presct transmission services, high performance, data sets and cost, as well as a management-oriented perspective on present commercial practice in data transmission capabilities and costs. The last part of the session looks at the realities of MCI, Datran and Bell's digital data service as they pertain to specific 1973-74 system planning.

Other Monday sessions include cash management, management control of the corporate computer activity, understanding virtual storage and evaluating and purchasing software packages.

Societies/ User Groups

"Management Control of the Corporate Computer Activity" will examine such aspects as maximizing cost effectiveness. The session also will focus on the DP center as a stand-alone, self-supporting service bureau of the corporation as well as management and personnel education and development.

The session on evaluating software packages will be chaired by Lawrence Welke, president of International Computer Programs, Inc.

Tuesday, following the lead of Kenneth Olsen, president of Digital Equipment Corp., in his keynote on "Minicomputers in a Distributive Information Systems Environment," an all-day session on distributive computing systems will examine front ends and applications.

Chaired by William J. Horne and featuring Janet Norman, the Singer Co., Cmdr. Grace Hopper and Robert J. Curran of Polaroid Corp., the session also will focus on privacy and security in the data communications environment, knowing when to apply minicomputer technology, and the future growth of the market, equipment and user benefits.

"Data Base Design," another all-day session, is designed to help the user decide how to build and access a data base, as well as who should be involved.

Still other sessions on Tuesday are systems manpower planning, innovative techniques for specifying systems, EDP security management and charge-back systems.

Of concern to many data managers is the aspect of security. Robert Courtney, manager of data security and privacy at IBM, will chair the session which highlights physical security in operating procedures, and systems integrity to prevent loss of data. Other areas covered include structure for examining security measures and operating procedures to prevent accidents and duplication of efforts.

Wednesday's keynote address by John Diebold, president of the Diebold Group, on "The Cost Effectiveness of MIS" is followed by a morning panel session on "The Impact of Systems on Organizational Structures," chaired by Samuel B. Harvey, Singer Co.

Fee for the conference is $150 for AMA members, $175 for non-members. Price of the briefing session is $250 for members, $280 for nonmembers.

Attendance at both meetings costs $350 for members and $400 for nonmembers. Further information may be obtained from American Management Association, American Management Association Building, 135 W. 50th St., 10020.

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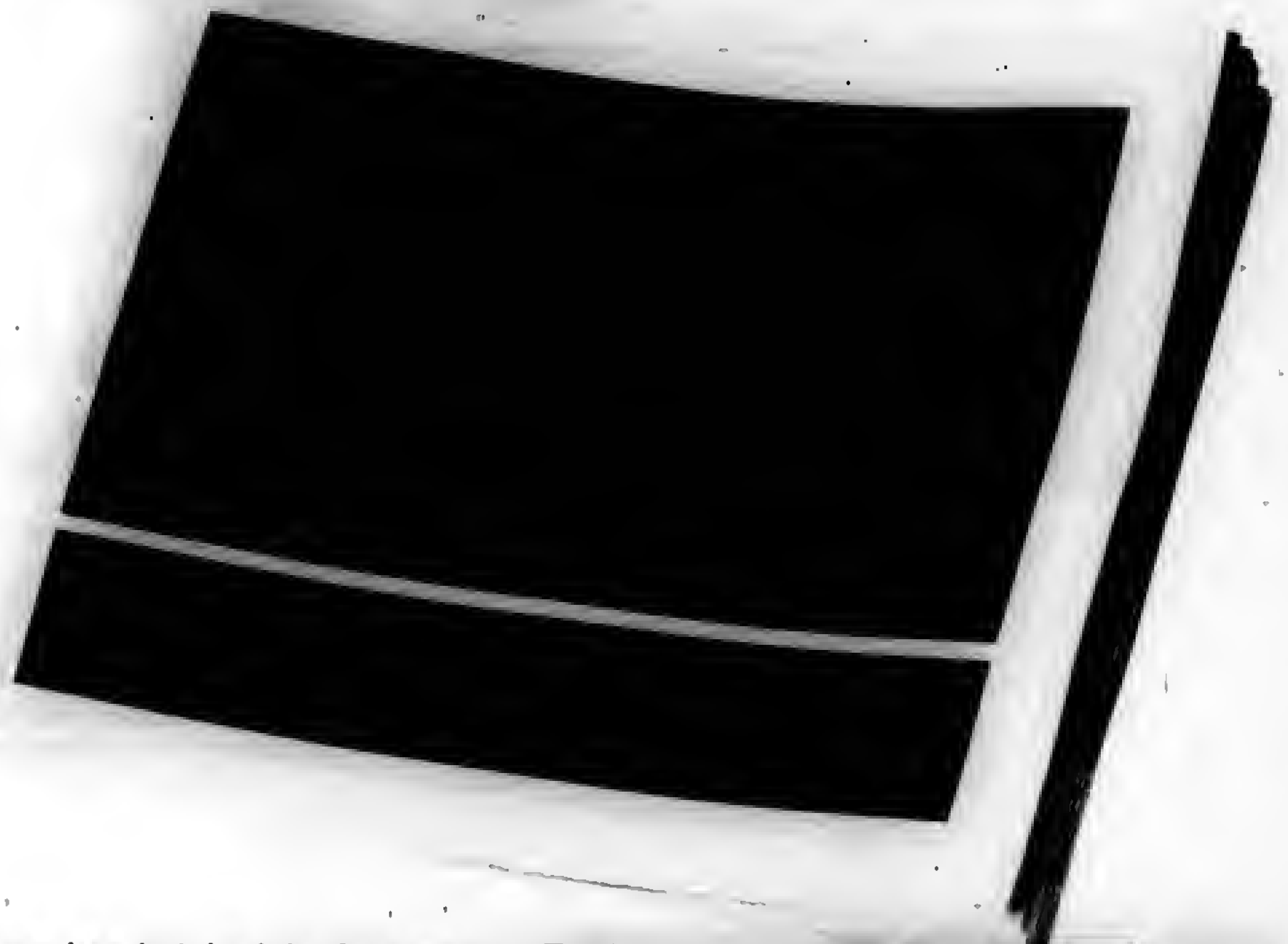

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Ralston Explains 'Fine Line' View For ACM, Industry

NEW YORK – The basis for the recent controversy over the role of the Joint and National Computer conferences [CW, Oct. 11, 1972] is still a lively issue, as evidenced in the January ACM president's letter in *Communications.*

President Anthony Ralston envisions the Association for Computing Machinery (ACM) as walking the fine line of independence in the societies' relationship with the computer industry.

"ACM can only have the influence it should have on the policies of government and society related to computers if it is independent and seen to be independent of any specific element of the computing community," he declared.

"It must be clear to all that, as an organization, ACM has no axes to grind and is beholden to no one except its members," he continued.

Ralston suggested that only by preserving its independence from industry interests might it retain a position whereby it could conceivably file an *amicus curiae* brief in issues affecting the computer community, such as the question of software patentability.

The degree to which the society is perceived to be an independent entity would determine the effectiveness of such action, he noted.

A Bit Sullied

However, there is the matter of finances, and Ralston stated his article "does not mean posture toward the industry which requires the purity of Caesar's wife.

"ACM must continue to be involved in cooperative ventures with industry such as the Joint Computer Conferences so long as these are beneficial to ACM's primary scientific-technical-educational purpose," Ralston continued.

Such industry support as advertising in journals and sponsorship of newsletters, as long as it does not influence such things as editorial policy, provide important benefits to ACM's basic technical-educational mission, he conceded.

Ralston lamented that ACM has not been more successful in getting firms to participate in the corporate membership program, which he calls "a most appropriate form of support. It has no strings attached to it . . ."

Ralston concluded his letter by noting: "ACM's role with respect to the industry should then be not only one of friendliness and cooperation but, most important of all, one in which our independence must be paramount."

Choosing Front-End Processor? Better Check Non-Technical Area

By E. Drake Lundell Jr.

Of the CW Staff

BOSTON – Non-technical as well as technical features of various systems must be evaluated when choosing a communications front-end processor. And in many cases these non-technical considerations may outweigh the technical evaluations, according to Stan Dunten of Dartmouth College.

Such factors as maintenance availability, cooperation of the vendors and support available after the sale could be just as important as the technical aspects of the system, Dunten noted.

Planning Ahead

For example, he indicated a user might be smart to get a front-end processor from the same company that manufactures his host computer system because such an arrangement would ease the maintenance problems that might arise later.

In addition, Dunten said, with multivendor systems the user would have to have a great deal of in-house expertise in order to pinpoint problem areas and therefore call the right maintenance organization for service. This in-house expertise is not always available and can be expensive, he added.

On the technical side, Dunten told the Computer Caravan/73 workshop on front-end processor selection that the interface between the front end and the data sets and communications world was the most important single consideration because that is the first thing the system user comes in contact with.

This connection to the data sets and the communications world must be smooth, reliable and error-free, he indicated, in order to serve the ultimate users of the system effectively.

The processor itself must be reliable, he said, and must have good character manipulation features since most of its time will be taken up with character manipulation functions.

On the other hand, the arithmetic capabilities of the front-end processor are not that important, he said, and in some cases might even be dismissed with.

The front-end system, unlike the general-purpose host computer, does not need relocation and protect features, he added, since it will be used primarily for running a dedicated program.

The system has to be operated in a multiprogramming mode because of the large number of lines it will be handling simultaneously and it is "nice to get a system with a lot of registers because they are easier to work with than memory."

Regarding the interface between the host and the front end, Dunten stressed the need for a strong "master-slave relationship."

"You can't have both the front end and the host computer initiating jobs," he said, because of the resulting confusion. Instead, he said, the host should drive the entire system.

Programmer-Boss Interaction a Must

By Molly Upton

Of the CW Staff

BOSTON – Sitting down with programmers and "contracting" for a schedule can be helpful to both the supervisors and the personnel involved, according to Jim Schantz, manager of systems and software at Polaroid Corp.

The programmer participates in projecting how much time he will need on certain jobs over the next month, and the schedule helps guide him and give the supervisor some input for overall scheduling of projects in the department, Schantz explained.

The monthly plans drawn up with the individuals are extracted from an overall six-month plan for the department.

Some tend to be overly optimistic about the time jobs will take, and the supervisor should temper this optimism with some questions, in order to evolve a realistic schedule.

By job accounting for internal purposes, the supervisor can then find how much time a job consumed, and can see where and why projects may be lagging behind schedule.

Although "technical types" are admittedly not inclined to bother with such paperwork, they can learn it is to their advantage, as well as the supervisor's, Schantz said.

The information obtained by the supervisor can be extremely helpful in justifying department expansion, or even the department's existence. Although not concurrent with salary reviews, performance reviews based on the input from the schedules can also aid the department in recognizing outstanding performers, who might not be as visible to top management as others.

The discussions between the programmer and supervisor also afford the programmer a chance to plan for individual advancement by discussing his interests and goals, and often an educational plan is mapped out, Schantz told a Caravan/73 programming management workshop,

"The key goal is to get a good interaction going," he noted.

Hailing a Cab as Easy As Inserting Card

FARNBOROUGH, England – The Department of the Environment, with the help of the Royal Aircraft Establishment, is doing experimental work here on an urban transportation system using computer-operated driverless taxicabs.

"Cabtrack" would use four-seater driverless cabs automatically guided along tracks. Passengers would buy a magnetically encoded ticket that is inserted in the vehicle to direct it to the required destination.

Using a model of the proposed system, consisting of a 50-ft-diameter track and 10 cabs, a Honeywell minicomputer built into the control logic is investigating the practicality of the operation. The computer diverts cabs from the traffic stream into stops, pauses to load and unload passengers and merges cabs back into the mainstream.

A full "Cabtrack" system of personalized, unscheduled travel is not expected to be operational before the late 1990s, a spokesman said.

14th Annual Southwest Systems Conference

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Technical sessions will present topics of interest to individuals engaged in systems and procedures activities.

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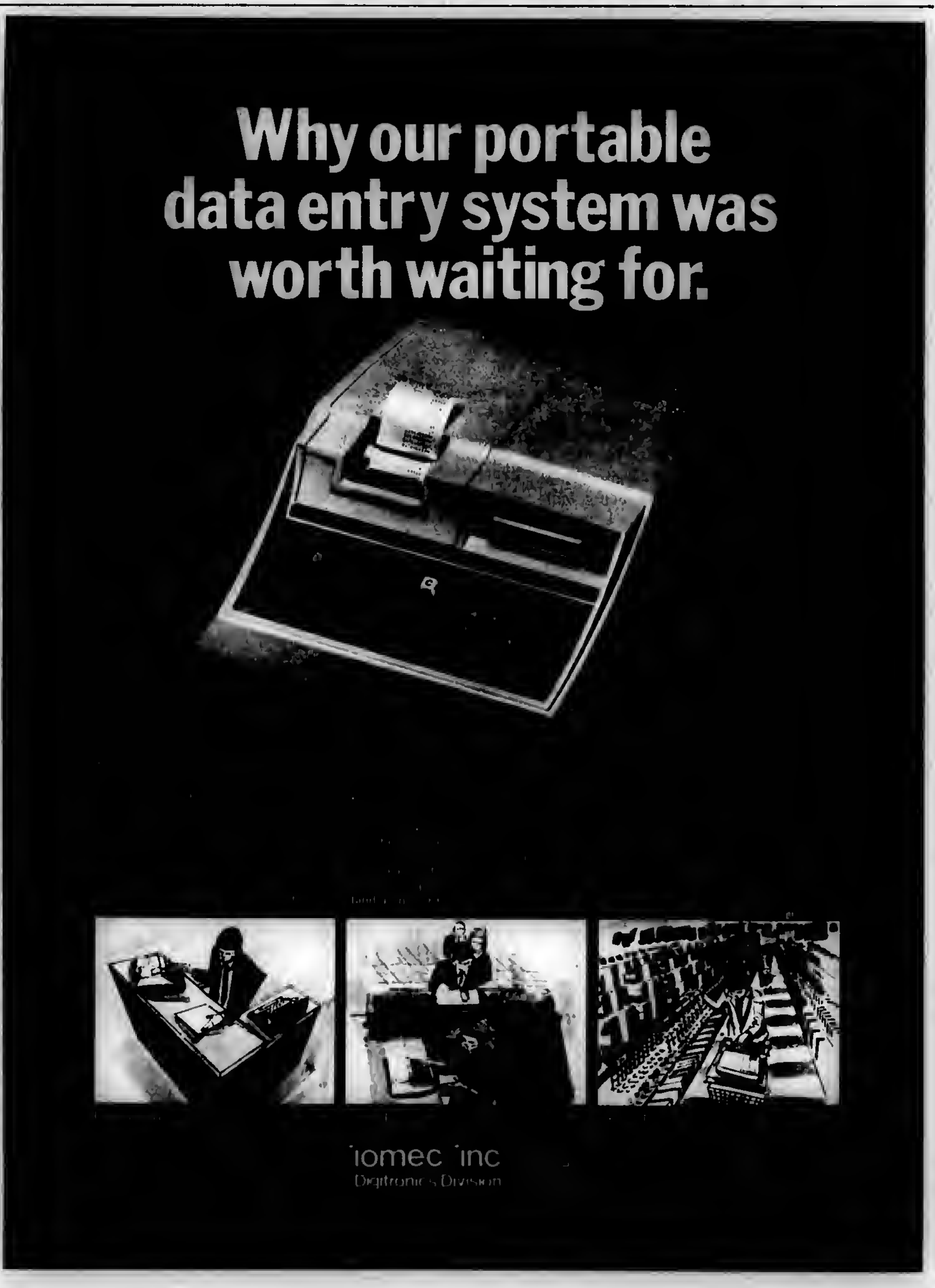

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May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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COMPUTERWORLD

CW SPECIAL REPORT

★Putting Software to Work★

Despite the strong (and justified) interest in system software enhancement packages, the real key to how much work will be done on the computer lies in the number of application programs available to it.

And it just doesn't make sense to build a system from scratch if a comparable one has already been built, debugged and packaged for general use, and is available for less than it would cost to do it yourself.

This special report provides an overview of the types of software available from outside sources, and of the things users have found to be good or bad about the vendors.

More Users Going Out For Software Support

Once users start to get software support from independent sources, they don't stop their acquisition programs with just one package and they tend to find that packages generally operate correctly. According to a survey conducted in January by Frost & Sullivan, a New York research firm, the average user who has acquired any outside software has gotten at least two types of package.

Some users found that the packages they acquired didn't perform as expected, but most dissatisfaction was scattered. Criticism of documentation was the highest single complaint, but even that was mentioned by less than half of the users who responded to Frost & Sullivan's inquiries.

The survey was part of an analysis and forecast of the packaged software and "packaged computer services" industry to be published in March. The user part of the survey consisted of questionnaires mailed to the nation's 1,000 largest industrial firms, plus approximately 500 banks, hospitals and other non-industrial firms, but major computer users.

Three hundred and twenty-five DP directors replied in time to have their answers tabulated. Another 75 or so come in after analysis had begun. This was an "exceptionally high response," according to Frost & Sullivan's research director Hank Berler, and indicates the degree of interest the users have in the subject.

Applications Popular

Eighty percent of the tabulated replies reported that packaged software had been leased or purchased from independent sources during the past two years. Application packages were acquired by 61% of these users, and formed the largest category of acquisition.

Perhaps surprisingly, the class of support Frost & Sullivan called "complete self-contained applications-oriented systems," but better known as custom programmed projects, appealed to 54% of the users who replied.

Systems software – generally designed to enhance software provided by the user's mainframe maker – was purchased or leased by 51% of the users. By contrast, packages defined as "plug-to-plug replacements for manufacturers' software were acquired by only 12% of the sample surveyed.

"Programming aids" were brought in-house by 51% of the users. Since the percentage for the various types of package acquired shows more than 100%, users clearly are acquiring more than one type, Berler explained.

Modification of packages has often been cited as one of the causes of the horror stories told about bringing in software from outside, but 63% of the users told Frost & Sullivan that they had changed or customized their purchases. The rest used them "as is."

Despite the modifications, 157 users said all packages performed functions for which they were acquired. Another 91 admitted that most packages did what they were supposed to do.

In the Budget

Annual cost of the acquisitions ranged widely from user to user, stretching from $135 to $300,000, and averaged nearly $33,000, the firm reported. Package expenditures represented as much as 25% of an individual user's total DP budget, but averaged only 2.75% across the entire sample.

An impressive 45% of all users said they expected to increase their annual use of software packages by more than 10%. Another 48% plan to jump their use of packages by up to 10%, while only 7% foresee a drop in their use of outside software.

When asked which aspect of software packages had disappointed them the

(Continued on Page 28)

Survey Snapshots

- **61% Bought Applications**
- **54% Have Had Custom Work**
- **93% Will Increase Spending**

Packages Form Standard Base for Firm

DETROIT – Packages are becoming more important to Bendix Corp. because they provide uniform approaches to applications and that fits well with the corporation's developing plans to consolidate its DP operations, according to director of information systems Jack Patterson.

Bendix is heavily committed to DP. Thirty-five divisions within the corporation are "active in DP," either having their own equipment or being linked to one of five centers around the country. Under the consolidation plan, the number of centers will drop but the services available won't, Patterson said.

Three major centers are at Ann Arbor, Mich., South Bend, Ind., and Teterboro, N.J. Each of these has a 370/155 except Teterboro, which has two of them in place. A lesser center, at Sidney, N.Y., has a 370/145, and another, at Baltimore, has a 360/50, but this is already being phased out.

"Many" other company locations have Remote Job Entry (RJE) terminals tied into these centers, Patterson noted. To support such a DP operation, he has 18 on his staff at the corporate level and a total of about 450 people throughout the centers.

One of the first packages acquired was the payroll system from Management Sciences of America (MSA), which Patterson uses as the basic module of a system that had to be much larger and more complex to meet Bendix's needs.

Patterson's staff put in "some additional work," he said, admitting that the extra effort brought the real cost of the system up to 20 times the package price. But the corporation really anticipated this kind of expenditure, he added, so this is not a package horror story at all.

The system is operational, serving Bendix's worldwide divisions. The combination of the ongoing MSA support and the Bendix modifications takes into account not only the tax laws in all the jurisdictions in which Bendix employees work, but the sometimes sharply different union requirements in the various states and local districts, Patterson explained.

Repeating the thoughts of many package users, he added that Bendix acquired another application – to handle stockholder accounting – from an outside firm because there was no point in redoing something already available.

The particular system Bendix is using, from Stockholders Systems, Inc. of Atlanta, is a "good operation, with good support" from the vendor, in Patterson's view.

Under the corporation's DP consolidation plans, Patterson wants not only to cut back the number of data centers, but to provide applications that can be used by more than one division, and hopefully by as many as possible. With that goal in mind, he is about to acquire at least two other packages.

Westinghouse sells a purchasing control package that Bendix expects to use to monitor that operation, which is common to many of its divisions.

Left unsaid, but certainly sensed, was the feeling on Patterson's part that since this system was developed by another manufacturing concern for its own internal use, it should serve Bendix better than one created by a software house which might be more interested in programming niceties than pragmatic, useful results.

Another impending acquisition is Atlantic Software's Project Control system (PC/70). While useful in structuring development projects within the DP department itself, PC/70 applies equally well for other projects and should provide management at all levels with a tool they haven't had before.

Users of application packages from outside sources often have one or more "data processing" packages as well, and Bendix is no exception. Informatics' Mark IV file management system and quasi-programming language have been used for some time. Patterson noted, as has Applied Data Research's Autoflow.

With all of its "in-house" facilities and applications, however, Bendix has also turned to another range of suppliers for capabilities it does not yet have through its own equipment. At present, Bendix is spending approximately $10,000/mo to $15,000/mo with time-sharing vendors, according to Patterson.

Citing GE and Applied Computer Time Share Inc. (Acts) as two vendors being utilized, he noted about 60% of the current T/S expenses are related to engineering research and development projects.

Thirty percent of the time-sharing load is what Patterson called "straight" financial analysis, presumably on actual historic data. The remaining 10% is used for "what if" games, simulating future financial situations, to choose the best of several alternative courses of action.

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Packages Are Puzzling

Choice Runs From 'As Is' to Near-Custom

Many users who have not used software from outside sources claim they just don't know what is available, what kind of support they can expect if they do buy a package or how much customization they would have to put into a project before it would be operational.

Not knowing what is available is in part a reflection of the scattered nature of the software industry but any user really interested in the possibilities could contact a local chapter of the various professional organizations or talk to other users.

More Direct Effort

Actually, however, users are looking for more direct effort on the part of vendors. Many of the DP managers answering a recent Frost & Sullivan survey on the package software industry said "more regular visits by software salesmen" would make them more aware of what is available, and presumably more interested in acquiring part of the action.

There are several distinct types of packages available that differ not only in what they do for the user, but in the level of initial customization and follow-up support from the vendor. Experienced package buyers warn the novice to read and understand the terms of any contract or licensing agreement before finalizing the acquisition of any software.

Sold 'As Is'

Some packages are intended to be used "as is." These include delicately devised modifications to the user's operating system, or better utilities than the user can get from the hardware vendor.

"Let us take over your payroll, bookkeeping, inventory control and management problems — and you can go retire to Florida."

These are never modified to user needs and are generally coded to be operating system release-independent, but are just as commonly updated by the vendor if a new DOS or OS release makes a change necessary.

> *". . . Users are looking for more direct effort on the part of vendors . . . 'more regular visits by software salesmen' would make them more aware of what is available, and presumably more interested in acquiring part of the action."*

Some vendors offer application packages on this same "as is" basis. If the system defined by the vendor meets the user's needs, this can be a good deal.

These packages are distributed – sometimes by mail – in either source or object form. Source code allows the user to alter the package but most vendors charge extra for this privilege since it effectively exposes any proprietary features they have in the coding.

Cost of this type of package is roughly determined by dividing the development cost by the potential number of users. Thus buying a package is generally going to be less expensive than developing the same application in-house for an installation's own use.

Even if the vendors do not want to modify their basic logic, some vendors – particularly those with payroll packages – do provide on-going updates to maintain such things as tax calculations which are legally binding on the user.

Control Cards

A more sophisticated type of package is designed to be modified by the user through entries on one or more control cards, rather than with "hard coding" of the program itself. These give the user more flexibility, but have their costs, both in dollars and in operating efficiency.

Any program that can adjust itself to a series of control parameters cannot be as efficient as a program built for a specific set of circumstances, a vendor's representative admitted.

Instead of control cards managed by the user, some vendors regularly offer some programmed modifications to their packages to make them more closely tuned to the user's needs.

These changes are seldom major redesigns of the original program logic. In many cases, they are only cosmetic changes, allowing a slightly different input and producing a minor revision in output.

If the vendor offers this type of minor customization at all, it is usually done at no apparent cost to the user. Obviously, however, the vendor has to pay for whatever work his staff does and the cost of the "free" modification is built into the basic price of the package.

And users will find that only a certain amount of recoding will be provided without adding to the cost of the package.

Skeletons of Logic

Closer yet to full customization are packages that are essentially skeletons of mainline logic for applications deemed to be crucial to a user's success in business. To these skeletons, the vendor adds all the particulars of logic that make the application sensitive to the user's specific needs.

A variant of this highly customized software involves the stringing together of precoded modules to create the system the user wants. Because of the labor-intensive effort that goes into each installation, these packages cost considerably more than those the user can install "as is." But they are less expensive, and probably more sophisticated (since the vendor has coded the same type of problem many times) than the same application would be if the user wrote it for himself from the ground up.

The vendors of these heavily customized systems typically have a background of consultation work in the particular area or areas covered by their products. These vendors don't try to be generalists, and their follow-up support reflects their concern for their clients.

Packages Are Way to Standardize

(Continued from Page 27)

most, four out of 10 users said documentation. A quarter of the users showed concern for better efficiency, and another 20% called for better "general performance." Maintenance by the vendors was criticized by another 20% of the users, and 18% said they were disappointed, but gave no specific reason.

Both users and non-users apparently compared the offerings of independent suppliers with those of the mainframe makers. A quarter of the DP directors feel the independent products are generally better. Almost 10% of the users said the computer makers' products tended to be too generalized.

Eleven percent of the users preferred to stay with manufacturer software; some pointed out that independents did not offer much to non-IBM users. Other responses to the question indicated that many users have had successful experiences with both independent and manufacturer-supplied software, depending upon the circumstances.

Nice Forecast

Respondants were asked if they felt that, in the long run, independent software package suppliers were likely to compete successfully against IBM and other computer-mainframe suppliers. The response was overwhelmingly favorable to the independent suppliers, with 86% expecting the independents to succeed in the long run.

Of those who qualified their responses, many suggested that the strength of the independent suppliers lay in the area of specialized applications-oriented packages, with a number of respondants mentioning the need for responsiveness and quality as prerequisites for success.

The few negative responses mentioned the independents' lack of good distribution and stability, insufficient support of packages and difficulty in competing against the vast marketing organizations of mainframe suppliers.

The final report, including a suppliers' survey to complement the users' commentaries, will be ready in late March or early April, according to marketing director Robert Sanzo, and can be ordered from Frost & Sullivan, 106 Fulton St., New York, N.Y. 10038.

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Planning, Control Keeps Custom Project on Target

University, CPAs Spend Six Months Defining Needs

SOUTH BEND, Ind. – By working closely with its accounting firm and a custom-programming team from Keane Associates, Wellesley, Mass., the University of Notre Dame moved within one year from a "ten-year-old kludge" of an accounting system on a Univac 1107, to an integrated, data base-oriented system on an IBM 370/155.

Much of the groundwork was done, according to the university's DP director Brian Walsh, by Ernst & Ernst, Notre Dame's accountants. The firm recognized that the old system was inadequate for the university's current needs, even if it could be transferred to the new equipment.

A new system had to include Federal government reporting and accounting for the use of restricted funda and for expenses incurred in the completion of research projects, as well as handling other functions that are more like those of any large business.

The system would have to keep a number of sets of "books" through which the university's activities could be properly recorded for a broad range of legitimately interested parties. Cost controls had to cross many departmental boundaries and sometimes, many years.

Ultimately Ernst & Ernst spent $50,000 and six months designing the different phases needed to bring the system to operational status. The only phase left out of the accountants' plans was actual programming, and that omission was deliberate.

For its part, the university's DP staff put together what Walsh called "vendor specifications" to define the target operational environment for the system. These were, in truth, programming specs that complemented the Ernst & Ernst system specifications.

Restricted to Cobol

The Walsh report called for the use of the IMS/360 data base system and defined how much core would be available for application programs. It restricted the vendor to a straight-laced use of ANS Cobol without, for example, the Report Writer feature which is not implemented universally.

The vendor was also limited to 3330-type disk systems and no more than two tapes, even though the university actually had more tape drives installed.

Keane Associates placed a bid for the programming job and won against competition from IBM's Contract Systems Division and Service Bureau Corp.

The contract was as detailed as the work specifications. It defined the communications, management and control paths to be followed so that progress could be maintained under almost any concelvable circumstances.

Parallel positions on the staffs of the university and Keane were set up so questions could be answered promptly and with authority.

The contract spelled out the testing pattern to be followed, and the details of warranty periods after programs had been accepted. It even named an arbitration authority in case such an extreme measure was needed, but recently Walsh could not even remember what group had been cited for the task.

True Togetherness

The system development was truly a joint effort. At final test sessions for any of the modules or subsystems, everyone at Notre Dame with any accounting responsibility for the work being done had to be physically present and had to sign off those elements of the system that fell within his or her responsibility.

For its part, in addition to the programming, Keane had to train Notre Dame personnel in the intricacies on the IMS data base operations. "I certainly didn't want a 'cold' turnover of responsibility in that area," Walsh noted.

Meanwhile, Ernst & Ernst prepared a new set of specifications, this time covering the human interface with the system that Keane was creating. The new Ernst & Ernst effort documented the non-computer accounting procedures and preparation of the documents that would become input transactions.

Keane's project manager Jim Donnelly checks a report layout and Frank Sullivan, a project leader, looks on.

University employees actually developed much of the routines and forms used in this phase of the project, but Ernst & Ernst personnel were available for help in resolving specific problems.

Walsh gave high marks to Keane for the setting up of six separate data bases under IMS, each of which ultimately will support financial analysis applications in addition to the current accounting system.

Notre Dame is just beginning to feel the impact of the integrated accounting system, he said, noting that the year-end processing has not yet been used in live operation. The university's fiscal year ends in June.

Accounting System Growth Monitored By Manager Pairs

WELLESLEY, Mass. – Many custom-programming situations arise because the user doesn't really know in detail what he wants done, but he hopes the outside analysts and programmers will do what needs to be done anyway, on time and within costs. Consequently, many custom-programming situations turn into disaaters.

That was not the case, however, when Keane Associates first became involved with the University of Notre Dame in South Bend, Ind. In fact, Keane found system specifications three feet thick for an integrated financial accounting system geared specifically to the university's peculiar needs.

The firm also found 100 pages of specifications prepared by the Notre Dame DP staff to define the programming environment in which the system was to be implemented. The combination of two sets of specifications, and a well-defined organization to oversee the project turned this into "one of the best projects we've ever handled," Keane's contracting officer Jack Phalen said.

The system specs had been developed jointly by the university and its accounting firm, Phalen was told. They provided a detailed description of a system that would include accounts payable, purchase accounting, journal vouchers and accounting for – and control of – financial grants and restricted funds.

All anticipated inputs and reports were specified. A number of functional modules were defined but these only spelled out the processing steps needed to accomplish certain goals, not how the programming had to be done.

Responsibility Defined

Keane was given the responsibility of determining whether to handle the work in one or several programs. Likewise, file content was closely defined, but the choice of access method, file organization and physical device was left to Keane.

In his specifications, Notre Dame's project manager Brian Walsh called for the system to be implemented using IBM's Information Management System (IMS/360), and Keane's project manager Jim Donnelly gives Walsh great credit for this decision.

Notre Dame had previously decided to use IMS on its newly installed 370/155. The Keane project was the first major one to go on the new equipment and Walsh stuck to the choice of IMS even though it was not necessarily the best technique for the current operation, Donnelly said.

Notre Dame personnel were extremely helpful in working out any ambiguities in the specifications, perhaps, he added, because they knew they didn't have to do the programming, no matter how much detail they really wanted.

By the same token, Keane won the right to work back at its corporate headquarters rather than in South Bend, arguing that any inconvenience to Notre Dame would be more than offset by elimination of the cost of travel and living expenses if the 13 people Keane had on the project had to work in Indiana.

Control was crucial to the project and everyone knew it. Before any programming was done, Walsh and Phalen read and initialed each page of the system specifications, signifying that at least to them there were no ambiguities. Once programming got underway, a management committee made up of top accounting and DP people from Keane and the university met weekly to review progress.

The review meetings also helped to establish responsibilities. Keane had the job, for example, of determining which of the IMS features to use, and to show the university how to use them, but it was up to Notre Dame to get the IMS software and to gen it properly on the 370.

Notre Dame supplied the test data and each piece of the program was tested as it was completed, first in Wellesley and then in South Bend. Both parties had to "sign off" on the test results, Donnelly noted, and he was generally the Keane representative who carried the programs between Indiana and Massachusetts.

The university and the software house made a clear distinction between logical and financial problems related to the project. When a logical problem arose, Phalen and Walsh would decide how it was to be handled, and leave to another matched pair of contract officers the question of what charges, if any, should be made for the change.

Under that separation of what to do and how much to charge for it, Phalen noted, there was only about $500 worth of authorized changes in the development of the nearly $200,000 system.

The system Donnelly and his team have built for and with Notre Dame is essentially a self-contained system, working from no more than nine types of input transactions.

The system provides a full audit trail of generated transactions as well as those entered by the user, and Donnelly is obviously proud of the way it operates.

"It's a Cadillac system," he said, summing up the feelings of the entire team.

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If you're a user who wants to look past IBM's looming frame, then our March 28th Supplement is the place to start. And if you're a marketer who wants to talk to the people who run this industry, your ad should be there when *The Non-IBM World* goes out. The supplement closes on March 9th. For details, just contact the nearest Computerworld Representative: *Boston,* Bob Ziegel, (617) 332-5606. *New York,* Don Fagan (212) 594-5644. *Los Angeles,* Bob Byrne (213) 477-4208. *San Francisco,* Bill Healey (415) 362-8547. Or write to: Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160.

COMPUTERWORLD

People's Problem:

'Writer' Use Swamps DP Staff

WASHINGTON, D.C. – A local user has found that the unrestricted availability of a "free-form English, designed for the nonprofessional" retrieval/report writer programs, can cause more problems than it solves.

People's Drug Stores Inc. began looking at report writers two-and-a-half years ago when a tight budget limited its programming staff. "If managers could whip up their own special programs, we could handle the regular work. That, at least, was the idea," explained DP manager Ron Compton.

People's expanded its DP equipment from an original 1401, through several 360s, and recently acquired a 370/145. The workload on the programming staff has increased in similar steps, Compton noted.

To get some of the unexpected reports handled by the end users, he looked at several retrieval/writer systems, but was discouraged to find most priced from $10,000 to $20,000. He decided to take a chance on a much less expensive package called Easytrieve, from Ribek Corp., Silver Spring, Md.

Within months, Compton said, even top management was using the system and expecting results in minutes or hours, rather than the days or weeks they'd faced before. Service was so good that requests for special reports were taking more time than the regular work.

Finally, People's reversed its approach, pulled the Easytrieve capabilities back into the programming department and assigned one specialist to work with the system.

This brought some order to the flood of requests and enabled the regular programmers to consider Easytrieve for some of the normal applications. Compton calls it a "very powerful" program that can often avoid the use of Cobol or Assembly Language.

People's uses Easytrieve in payroll processing, inventory control and sales management, as well as in store transfers. Accounts receivable and accounts payable and much of People's financial reporting are also handled by Easytrieve coding, Compton added.

Bob Lloyd, programming manager at People's, noted several minor problems with the system; coding errors are flagged but execution is not halted and one of the options requires dummy record creation before it functions properly.

But these problems won't stop Lloyd from using the package. "We're going to run the hell out of it," he said recently.

About the Author

This special report was prepared by CW Software Editor Don Leavitt, who has been responsible for the Software/Services and Education sections of the newspaper since March 1970.

'Soul Searching' Pays Off

MORRIS PLAINS, N.J. – The user should always check out the financial stability of any software vendor whose package is being considered. Everyone knows that; It's one of the rules that shows up on every list of do's and don'ts. But rules are made to be broken.

Warner Lambert found itself in a "unique position," DP manager Joe Donia said. The company had decided to use Management Sciences of America's (MSA) payroll package but about a week later the vendor declared bankruptcy.

That news gave Donia pause to think. "We did a good bit of soul searching" and then checked the contract carefully to see what liability there was for Warner Lambert and for MSA. It looked as if Warner Lambert was "pretty clean," Donia said. "The only way we could get hurt seemed to be in the area of support.

"So we decided to 'bite the bullet' and go in with the package anyway and," he added, "we've been very pleased."

Despite the long reorganization process (under which MSA recently came out of bankruptcy) "we never missed a beat," Donia said. "If I hadn't read about MSA's troubles in the newspapers, or if they hadn't told me about them themselves, I'd never have know about them."

Support was good during the bankruptcy and continues to be good now, Donia said. Warner Lambert has in fact installed the package in three other data centers in addition to the corporate location here.

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Maturing DP Manager Finds:

Cost-Consciousness Leads to Package Use

DP managers – and higher level corporate managers to whom they report – are much wiser than they were five years ago. Even those installations that didn't exist then (shops based on System/3s) are sharper, more concerned about their operations and more cost-conscious than comparably sized installations of the mid-sixties.

The still-growing sophistication is seen clearly in the number of installations that have gone to outside sources for disks, tapes and – particularly in the past half year – add-on or replacement core. On the software side, this sophistication is seen in the growing number of installations using packaged enhancements to the IBM-supplied operating systems.

Whether or not users add extra zip or new features to the system software, they are also beginning to recognize that the computer must do more to justify its presence. They are beginning more and more to consider the use of application packages or custom programming to get a job up and running quickly and cleanly.

In Their Wisdom

But decision-makers are human and the new-found wisdom is often applied in specific situations in diverse and contradictory ways.

"Why did you buy a payroll package?"

"That's easy. We tried to write our own."

That exchange between *Computerworld* and Ralph Fiorillo, manager of current systems for Avon Products (which acquired PHI's payroll system almost two years ago), illustrates the logic of many package users. The purchased package provides them with capabilities they felt they could not effectively create in-house.

Irving Trust's John Bunting neatly summed up an attitude worlds apart from Fiorillo's, but one that is also common, when he said, "Yes, we use PHI's package, but – like most packages – it doesn't really meet the requirements of our standards, so I doubt we'll get very many more application packages."

It would be wrong, he noted, to require programming generated internally to meet the standards, if they are to be waived when looking outside for additional programs.

A third view of packages came from William Dawson, vice-president of Girard Bank. He considers requests from end-user departments for work to be done, and matches the requests against a catalog of packages known to be available. The user department is asked to modify its specifications if a package can't be found to match the original request.

Help!

All three attitudes show a similarity in willingness to look for help. Fiorillo pointed to the problems of attempting to maintain a multistate payroll system as justification enough to go to a vendor who can spread the updating cost across many users.

"Users now recognize that there is a cost to software, and as long as they have to pay someone, they might as well look around and see who's best."

Dawson's approach seems to be gaining favor among many users: unless there are absolute and overriding circumstances, there is no reason to "scratch-build" a system that is very close to one already available. And it is ludicrous to consider modifying an operational application to meet some realistically unnecessary requirement.

Bunting's remarks pointed to another element in the sophistication of users. They see the need for order and standardization in all their work, even if it means that packages may be ruled out by the standards. That loss is more than made up by the control the standards provide overall.

'Not Invented Here'

All three attitudes suggest strongly the crumbling and in many cases utter collapse of the "Not Invented Here" syndrome that led DP managers of the 1960s to disregard any software that wasn't created in-house or supplied by the mainframe maker.

Users are now looking carefully and buying, if they are convinced they can save time, equipment or staff expenses, or gain a capability they could not develop in-house as cheaply as they can buy it.

This growing maturity is the result of a combination of factors. The simplest one, perhaps, is that many installations have been up and running long enough so that both DP and corporate management have put aside their rose-colored glasses.

They want the expected results on time and within budget. They are comparing notes with others in their industry and with others using the same software, to improve their own operations.

The IBM unbundling of software program products, now nearly four years old, is beginning to have its effect as installations outgrow the "freebies" they've been using. They now recognize that there is a cost to software, and as long as they have to pay someone, they might as well look around and see who's best.

Extra Pressure

The general downturn in the nation's economy added an extra layer of pressure on the DP manager to find the best way to utilize his existing equipment. Although the DP department wasn't the only one to feel this need to cost-justify its existence, it may have been more sensitive to the pressure than other more traditional departments within an organization.

Until general management really felt the dollar crunch, DP had too often maintained its privileged, almost mystical position, getting anything – in terms of staff and/or equipment – the DP manager requested.

Now he has hardware options to cut back equipment expenses, or at least control their growth. He has seen system software support which, if used well, can delay for long periods what seemed inevitable hardware upgrades.

And he is looking at applications packages to save his in-house staff for projects that can't be handled by outside help. The only problem lies in the fact that there are packages . . . and there are packages.

" 'Package' is a good term for programs you can get from outside vendors," Alex Bender of Maxim Data Systems said. "Some come in plain brown envelopes; other are almost literally gift-wrapped. It's tough to know what is in the first kind; you've got to watch for strings attached to the others."

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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Programming Methods 'Waste Time, Talent'

ENCINO, Calif. – "I really think almost everything that is done in the field is wrong," said Joseph Sider, an independent DP consultant who thrives on solving other people's problems.

Most installations can improve their operations sharply if they would honestly recognize the root problem: programmers and analysts spend too much time doing clerical work and, as often as not, installations don't even see the waste of talent involved.

But there is no magic cure for the problem. As far as Sider is concerned, each user has to do his own housecleaning, and the sooner the better. He does believe, however, that IBM is on the right track with its interest in lead programmer and team concepts.

Each development group should be as small as possible while still allowing a division of duties. If each group includes a leader, a junior programmer and a programming secretary, Sider said, work can get done efficiently. "The leader doesn't have to be great," he noted, "but he has to understand the total project."

He said he has been talking about this approach for twenty years "and it works. it works beautifully."

Coding shouldn't take vast amounts of time. Most systems are built around a series of basic functions and these can be, and should be, developed as subroutines that can be carried from job to job, he said.

Use Your Library

Sider noted that when he starts a new project, he doesn't take a complete canned program and modify it for the particular implementation. Instead, he uses a library of existing subroutines.

"I write a mainline and CALL these subroutines. They're already in object code so I don't even have to reassemble anything. I have the coding in core, just like an extension of the supervisor," he explained.

The function subroutines can ease program maintenance as well, he said. If common logic is used throughout an installation, any programmer can update any program whether he's seen it before or not. He may not even know which programs he wrote, and which the other programmers wrote.

Great Potential Wasted

Sider maintains that most system designs are little more than carryovers from tab days, with no real thought to the capabilities of the system software now available. Most people don't realize the great potential of variable-length records, but 99% of all applications can use them to advantage, he said.

With variable records, for example, users are freer to add new fields or include new record types on a file, without disturbing the basic program logic. The I/O control systems within today's operating systems cope with all the accessing problems; all the programmer has to do is use the data, Sider said.

Programmers should let keypunch operators, programming secretaries and console operators do their special things, and avoid a great deal of clerical work for which they are untrained. Without such help, Sider remarked, "programmers are getting a hell of a lot of money for their incompetence."

Coming under especially heavy attack by Sider is the way most installations handle test sessions, with programmers "waiting around for hours" and then taking a half-hour or longer on a single shot. Done right, he added, the typical test should take only 30 seconds and require minimal set-up time.

(Continued on Page 36)

Packages Get Bank Center Moving

LAWRENCE, Mass. – Some users have the knack of putting the work of many others together in a way that results in a stronger DP operation than if they had depended on their own programming skills alone. Such is the case of Bay State National Bank.

The bank has a data center geared to serving a variety of clients, both in general business and in the financial industry. A far cry from conventional, conservative bank management stereotypes, Bay State's leadership is willing to do anything reasonable in hardware or software to improve the center's operations.

The hardware at the center, for example, is a 360/30, but only 32K out of the total 96K bytes of memory on the system are from IBM. The rest came from Cambridge Memories. I/O peripherals now include Storage Technology tape drives and Calcomp disk units.

It is in software, however, that Bay State shows its willingness to shop around for the best systems. The "best systems," according to DP director Burt Hickman, are fundamental, "unfrilly" packages that can be modified by the bank's six-man programming staff.

Current general-business applications include accounts receivable and accounts payable, sales analysis and payroll, as well as "raw" inventory control. Hickman's crew is developing an on-line general ledger system, including responsibility accounting.

In banking, the center provides demand deposit (checking accounts, to the layman); savings; installment loan and certificate of deposit accounting. Account reconciliation, shareholder accounting and financial dealers' "floor plan" loan processing are also available at Bay State.

To put together this collection of services, Hickman and Bay State went to many vendors. The accounts receivable work, for example, is being handled by the AR/70 package from Computer Systems and Education Corp.

The payroll processing is done with a package from Information Laboratories, and the inventory control is managed by a system from Techgenics. Both of these vendors are from Wakefield, Mass., Hickman noted. The audio-response software comes from System Associates, Inc., Reading, Pa., he added.

Most of the banking applications – DDA, savings, installment loans, certificates of deposit and dealers' floor plan loans – come from Florida Software Services

As long as there are working programs around that will do what Bay State wants to do, Hickman concluded, there is no real justification for his staff's spending time to build from the ground up.

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Good User Should Be Willing to Compromise

PHILADELPHIA – Carefully chosen application packages can solve many problems. But more importantly, according to William Dawson, vice-president for DP at Girard Bank and Trust Co., packages won't create new problems if the controlling DP department takes a hard line with both the vendor and using department.

Girard has a pair of 370/155 mainframes and a DP staff of about 200, including operators. Along with several DP-intended packages, the bank expects to have "half a dozen or more" application-oriented packages in use by the end of the year.

Each of these packages has been or will be selected, Dawson explained, to answer a request from a non-DP using department to have a particular function made available on the computer.

In many cases, the in-house staff could handle the request. But if the user wants the function so badly he can't wait to have it developed in-house, "he should be willing to bend somewhat" on specific details if an available package otherwise seems to fit his needs, Dawson said.

Vendor Makes Changes

By contrast, the bank itself is unwilling to undertake any modifications of a package's coding, to make it work according to the user specs. Instead, even if it adds to the cost of the package, Girard requires the vendor to make any desired changes, and to make them before an extensive acceptance test.

That approach, Dawson said, cuts down on the number of changes requested and avoids any finger-pointing complications between Dawson's organization and the using department, once the package is being tested and after it has been installed.

Despite the size of its DP staff, Girard is utilizing packages as often as possible to meet user requests, because the bank wants to go to a data base operation, with IMS/360. Dawson doesn't want to spend a lot of his staff's time developing application systems that will only have a short life anyway.

Once Dawson's department gets a request from a potential user, it checks to see if the capabilities wanted are already available through a currently operational program. After that, the department checks *ICP Quarterly* to see what packages are available from outside sources.

When a package is found that seems to both provide the function wanted by the user and meet the DP techniques Girard utilizes, a meeting is held with the user and the DP staff to make sure the package is acceptable to both.

User Should Adjust

Almost by definition, a package is designed to work in a particular way and excessive changes could destroy that basic logic, Dawson noted. That being the case, the user should be able to change his approach more easily than the vendor can alter his logic, to make a proposed package acceptable.

Girard isn't especially interested in "free" trial periods, the vice-president said. Instead it pays 10% of the cost when a package is selected. It then runs an acceptance test to get a more detailed understanding of how the package works.

If the test is successful and any required changes are completed within 60 days, Girard pays the rest. If not, he doesn't. Some vendors go along with this policy and some don't, Dawson admitted.

Girard is currently using Mark IV from Informatics, and the Results package from University Computing, as well as a Bond Portfolio management system from Warrington. PHI's payroll has been used for some time and was recently upgraded to OS.

"We try to be careful in the [package] selection process and the results show we are succeeding." – William Dawson

A time deposit system from Computing & Software, and a fixed asset accounting package from a Minneapolis firm are also operational, Dawson said. An installment loan system will probably be selected and installed shortly, he added.

The Paces job accounting package distributed by Pace Applied Technology is also in use, in direct support of the DP operation itself, he noted.

The bank had no problems with any of these packages after they were installed and that came as no surprise to Dawson. "We try to be careful in the selection process, and the results show we are succeeding," he concluded.

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Non-DPers Using T/S 'Without Hassle'

LA GRANGE, Ill. – Grayhill Inc. has an in-house IBM System 3/10 that is being used for conventional batch-oriented accounting applications, but a whole range of innovative work is being done at the same time by middle-level managers working through a time-sharing terminal, "without hassling the DP staff at all," according to materials manager Dale Colosky.

The 3/10 – programmed by DP Manager C.P. Quinn and an assistant – handles payroll, general ledger, accounts receivables and aged trial balances, and other "history-oriented" applications for this company, which assembles rotary and push-button switches, largely on a special-order basis.

Various production-oriented applications are already operational on the terminal which is linked to the Computer Science Corp. (CSC) time-sharing service. Almost more important than that, however, is the fact that non-DP managers have been encouraged to try new things on it, and the results have been good, Colosky said.

"Anyone with any kind of wild idea that might help the company can spend a few bucks and play" on the terminal, he explained. "If the idea then seems like something Grayhill wants, the manager can work with it, change it any way he wants without disturbing anyone else.

"When we get something beneficial and that is making us money, we can consider converting it to in-house and save the time-sharing money."

Work being moved to the 3/10 now has to be converted to batch processing but if the use of applications that are "natural to run on time-shared mode" grows, Colosky hopes the company will acquire that facility in-house.

In the Beginning

Grayhill got into time-sharing and the use of the CSC services three and a half years ago, he said, because management wanted a quick way to compile data and compute work standards appropriate to the company's job-shop type of environment.

CSC's custom programming group helped develop the programs Colosky needed, using classic Methods and Time Mea-

(Continued on Page 38)

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Sider Cites Sins of Systems

(Continued from Page 35)

Programmers should get 10 shots a day, if they need them, and this function should have the highest priority in the shop. This would only be possible, he continued, if the programmer sticks to programming and lets the programming secretary run the tests.

As soon as he has solved a problem, the programmer should turn the project over to the secretary who – ideally – should be able to gather or plan the test data and anything else required, and then submit the job for testing.

Use of patching – even in Cobol – is a must if the quick tests are not to be bogged down with long compilations. But patching should be dynamic so that the basic stored object code always matches the latest program listing.

As soon as a patch is checked out and the logic is to be added to the program, the programming secretary should update the source code, Sider explained.

Test sessions should be based on data generated on the spot, so there is no need to mount special files, and they should include automatic dumping of user-defined critical areas, so that the operator is not responsible for taking tape or core dumps with conventional utilities.

Systems should be designed to be simple to run. "All the thinking should be done away from the machine," Sider said, adding, "don't depend on the operator not to make mistakes. He is human and he will slip up once in a while." The system should be able to catch these errors.

In the same vein, he noted that conversion of data to a new system represents a lot of effort, and that even though people try to do everything right, they may make mistakes.

Under normal file maintenance, once an application is up and running, the system "should allow the people to do anything they could do by hand" to update the records. If authorized, they should have the ability to look at any part of the file and make changes. The system should be geared to report the changes so that an audit trail is available.

Contract Details Called Vital And Impact Must Be Understood

By L.A. Welke

Special to Computerworld

After five years of experience, software buyers and sellers have finally resolved many of the difficulties of contracting for "packages." The lack of legal, tax and accounting definitions for software notwithstanding, more than $200 million of proprietary software was purchased last year. That's double the sales of 1971 and four times the sales of 1970.

And while the specific terms and conditions might have been different for each item bought, the general pattern takes the following points into consideration.

Proprietary software, with the exception of accidental sales by incidental sellers, is not sold but rather is leased or offered under a "license to use" for a specified period of time, usually three to five years. Some use a "lease in perpetuity" meaning the user has the software forever.

Additionally, about 15% of the independent software vendors offer monthly terms leading to a full payout lease or simply rent their products with a 30 day cancellation notice.

At any rate, title does not transfer, usage may be restricted to a given geographic location or specific installation, and the necessary clauses to protect under trade secret law are usually invoked.

All of this is due in part to the Supreme Court's narrow decision on the Benson-Tabbott patentability case, and in part to the intangible nature of the software product itself. The case for patentability may be argued for the next five years before anything is decided; meanwhile, it seems obvious that the marketplace will progress quite nicely with trade secret protection.

Trade secret protection requires a nondisclosure clause in the contract – something that allows the buyer and his employees to use the product but not to give away the processing algorithm, documentation or anything else indigenous to that program product.

Most system software and what might be termed data processing aids are offered only in object code form – source never leaves the seller – which is one additional way to protect proprietary software.

And in the final analysis, new versions and releases of the hardware manufacturers' operating systems provide a kind of reverse protection in themselves.

Probably the most important section of the contract is the bill of particulars that specifies exactly what is being leased. This should specify the media of the program being purchased, the type and quantity of documentation included, the type and amount of training, conversion and installation assistance provided, and the specific modules and options being purchased in addition to the basic system.

If a time schedule of events is not an integral part of the contract, it should be a supplement to the contract. The important thing to remember is that any materials to be transferred from seller to buyer should be specified in writing.

That, in turn, raises the question of delivery and payment, one usually being related to the other. Delivery of software is not a simple, straightforward process; it can be construed to be when the documentation arrives, when the training is performed, when the system is put up, when the program product is first used, or even 30 days after it is deemed "operational." The important thing is to have both buyer and seller agree – in writing – to whatever it is.

Lastly, the majority of proprietary software is warranted, usually for six months to a year. During this time, the seller will repair all defects (if any) and, additionally, might make any operating system revision upgrades or enhancements, at his own expense. Then again, he might not. The experienced buyer should seek a clear statement of definition for warranty.

And the experienced buyer will also want to know what happens at the end of the warranty period. Invariably the software seller will offer an annual maintenance agreement, at a charge that varies from 3% to 14% of the face value of the lease contract with an average of about 9% to 10%.

Because a maintenance agreement relieves the buyer of maintenance programming and at the same time allows him to benefit from any enhancements suggested by the other users of the same package, a maintenance agreement is invariably a smart buy.

In general, a knowledgeable software buyer need do no more than exercise good business judgment in contracting for proprietary software.

Welke is president of International Computer Programs Inc., and publisher of the ICP Quarterly review of commercially available software.

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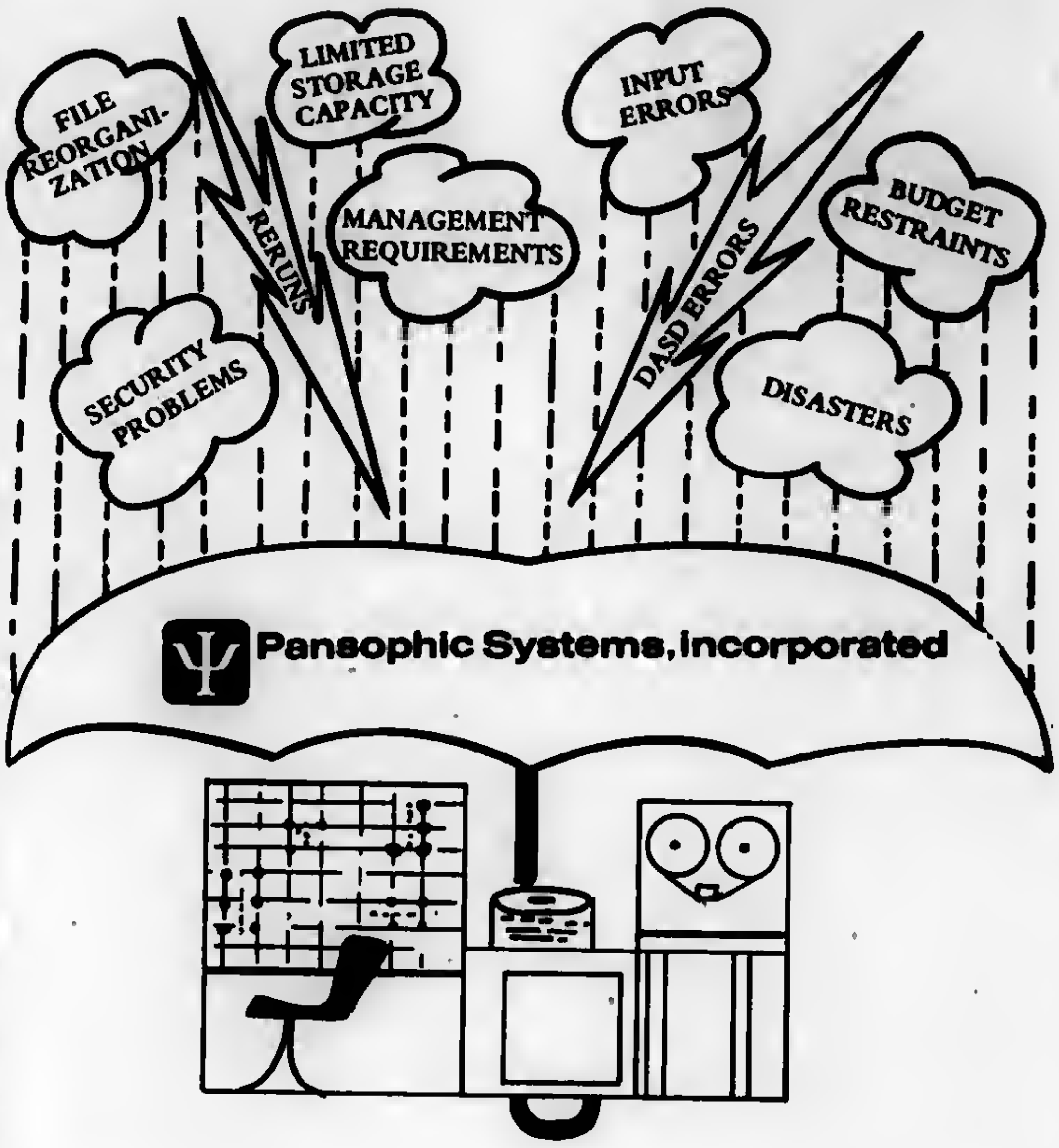

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T/S Saves Small Office Move to Computer

PHOENIX – A time-sharing service may be the best choice for a small company that "has to do something" to improve on its outdated manual operations but doesn't want a lot of in-house equipment. That at least has been the experience of Fiberglass Febricators, Inc.

Things were going along quietly, according to administrative assistant Lois Cassidy until the company added bathroom fixtures to its product line about two years ago. Then sales volumes expanded so they couldn't be handled adequately by hand.

The company wanted to maintain complete control of its operations, so releasing its invoices to a service bureau for batch processing was ruled out, she said. And with a one-girl office, an in-house computer was more than she could handle.

The Solution

"We heard about Computer Resources Services (CRS) (a local affiliate of Leasco Response) and asked them to come down," she added. This initial contact led to the installation of a teletypewriter and the use of both "canned" and custom-written applications from CRS.

Fiberglass started with a standard payroll package, and "it was hard at first" getting used to doing things the way someone else wanted them done, but it was worth it," Cassidy said. The only thing the company had to do – besides entering data the way the program wanted it – was to supply the continuous form checks.

"At first we didn't even do that. The 'checks' were printed on stock teletypewriter paper and someone retyped the information onto individual checks that were still in stock," she admitted rather sheepishly.

From payroll processing, Fiberglass went into accounts receivable work, based on a system written by CRS. Leasco has a receivables system available to its users but Cassidy said it was "much too complicated" for her small operation. It would have been quicker to continue the manual operation than to go with the complete Leasco approach, she estimated.

A Little Alteration

The company has been using the general ledger system developed by Leasco and that is "my favorite of all," according to Cassidy. "I can do in two hours what could, with mistakes, conceivably take me three days." CRS and Fiberglass apparently had to do some slight tailoring to meet the company's specific needs, but essentially the package was used "as is."

Monthly inventory accounting has also been run on the teletypewriter and that is "another good one," Cassidy said. The company has four primary supplies but also many, many small fittings and parts, particularly since Fiberglass entered the bathroom fixture market.

Cassidy uses an accounting package called Scribe to maintain the inventory records. Written by CRS or Leasco, Scribe takes all the quantities Cassidy feeds it and handles all the math needed to evaluate the stock on-hand or on-order.

Through CRS, Fiberglass also has access to the whole library of programs Leasco provides for "engineering and algebra and stuff," but Cassidy indicated the company isn't using those facilities with any degree of regularity. She has no background in programming and when she starts working in Basic, she makes mistakes and gets diagnostic messages that "no one at CRS or anywhere around here" has ever seen before.

Rather than depend on her own skills, she is very high on the support CRS and especially Kendall Johnson, one of the CRS owners, have provided. "At least for the beginner, Kendall Johnson is what makes time-sharing work," she explained.

He not only wrote the receivables system for Fiberglass, but Johnson – or one of his crew – makes himself available when and if Cassidy has a problem. This degree of support might not be available to all time-sharing users, she noted, and is practically possible only because both CRS and Fiherglass are in Phoenix.

She said she has had no major problems since going to CRS but that there is one peculiarity of T/S, in contrast to machine accounting, that does confuse some teletypewriter operators. The terminal responds so quickly and, usually, so coherently that the operators forget it is all part of a machine.

"Girls I have trained tend to regard it (the teletypewriter) as a person. They forget they have to tell it exactly what to do," she said. It takes a very specific kind of person, one with a lot of patience, to work with a terminal.

The teletypewriter (actually the computer behind the terminal) is very literal. "If you put something in wrong, you'll get it out wrong," she said, rephrasing the classic DP problem of "garbage in/garbage out."

The relationship between CRS, the terminal and Fiberglass has apparently been very satisfying and effective. Cassidy reported that just recently a salesman for a small in-house business system stopped by, "but the mere thought of having to handle all those cards, having to worry about machine maintenance and all those things, just left us completely cold."

Fiberglass is a small, custom shop that has to be flexible enough to react to a stream of situations, each of which is completely different from the previous one. That is why Cassidy felt the canned Leasco receivables system was wrong for Fiberglass, and the custom-built system was right.

T/S-Based Ideas Spark Grayhill

(Continued from Page 36)

surement (MTM) techniques. Then "as long as we had the standards, we figured we might as well use them" so the company and the CSC people wrote some productivity reporting routines "and other miscellaneous junk," Colosky went on.

The "junk" – in addition to weekly production reporting – includes a mark-sense-based application for shop floor control. To gather input on a timely basis, Grayhill has an MDR unit hooked up to the terminal. This permits the easy reporting of the location of every job in the shop on a daily basis.

Another "handy toot," he noted, has been the use of Pert programming to get a good handle on special projects.

Inventory control is a tough problem for a custom shop like Grayhill, but the company decided that it would be worth whatever it might cost. And, Colosky said, the decision was a good one.

Based on an off-the-shelf application system that was in the CSC library, inventory control was installed just when Grayhill and the rest of the industry had a lull in business. "It seemed odd spending money instead of conserving it, but it turned out to be a good deal," he said, noting that in the year after the lull, business was up 40% "but the cost of control hasn't jumped a penny."

Grayhill has been spending a little more than the $1,500/mo minimum charge for the inventory control package, and between $600/mo and $700/mo on the "develop your own/run your own" type service.

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Source Transliteration to Test Run

Conversion Task Proves Easy Sailing With 'Passport'

FULLERTON, Calif. – Often the major problem facing a user is one of getting new applications operational on installed equipment. Sometimes, however – as in the case of Hughes Aircraft Co. – the problem is one of getting existing applications operational on new equipment.

During the past year, the aerospace giant has been consolidating its DP operations, and as part of the effort, was faced with the task of converting Fortran programs from a GE (now Honeywell) 635 configuration to a dual 370/165 setup. Hughes had some 400 to 500 programmers and estimates indicated it might take an average of a week per program to do the conversion manually.

No one knew exactly how many programs had to be converted, and in some respects the count is still unclear. But when Creative Computing Techniques (CCT) proposed using its Passport system to handle the work, there appeared to be "above 400 and below 2,500 programs," according to Kevin Welch of CCT.

Passport provided mechanized, computer-based solutions to specific conversion problems, and relieved the Hughes programmers of about half the manual effort.

"In effect, Passport did – in minutes – what a programmer might take three days to do manually," Welch said. The system operates on a load-and-go basis, from source transliteration through program test run.

The ease with which Passport can be used is, in fact, one of the reasons the number of programs to be converted was in doubt. When the scheme was first proposed, the Hughes DPers tended to hold back, perhaps for fear of cost, perhaps out of concern for the safety of their original source decks.

Now, however, they are digging out more and more programs that "might as well be converted," Welch noted.

Three Basic Steps

Functionally, Passport is a 370-based software system that accepts GE 635 Fortran source decks and test data as input. It performs three basic conversion steps. followed by Fortran Level G compilation and link-edit steps, and climaxed, if possible, by a GO step for a program test.

At the end of either the compilation or test step, the user has a new source deck and listings to indicate what work, if any, still has to be done by the programmer to make the program operate properly.

The output consists of an IBM 370 job control deck, including certain JCL cards as well as a transliterated and partially converted Fortran source deck and transliterated data cards. Some of the original GE 635 source code does not require any conversion, CCT noted.

A Passport run also generates a listing of the changes made to the GE 635 source deck, the GE 635 control cards and the printout produced by the Fortran G compiler and linkage editor, along with all appropriate diagnostics.

If a load module is successfully produced and a GO step initiated, further diagnostic messages may be generated, in addition to partial or complete test results. Finally, a concordance is produced, tabulating each occurrence of every identifier and every constant appearing in the output Fortran source deck.

Transliteration, or the replacement of characters unacceptable to the 370, is a key step in the Passport conversion process. A single table is used to convert input punches to output punches. The table accepts input from the IBMF character set, the GE 635 set, Ebcdic or any combination of the three, Welch said.

Ebcdic Output

Output is always Ebcdic but certain input characters – particularly in the IBMF character set – are not transliterated properly, Welch acknowledged. All characters from the normal GE 635 set are handled correctly, he added.

In other conversion areas, Passport bypasses Gecos control cards, or converts them to Fortran comment cards, where they occur within or between programs. The system also generates prototype IBM JCL cards which the user must later modify for production runs.

Within the program coding itself, Passport zero-fills null arguments, inserts the Continue line required after a DO loop which terminates on a Logical IF statement, and converts basic real constants to double-precision constants. In fact, Passport documentation notes 21 specific points of conversion handled by the system.

Real Timesaver

The conversion logic and the automatic test appear to speed program changeover impressively. In one test, Passport enabled a program to run to normal completion, with 100% conversion, in 40 minutes of computer time, and two compiles.

Without Passport, the same conversion required 12 hours of computer time and three compiles, CCT said.

As installed at Hughes, Passport required about 225K bytes of storage. Because the number of programs to be converted is still unknown, the service is being priced on a per-program basis, a company spokesman noted.

The logic used in the Hughes GE 635-IBM 370 implementation of Passport has also been utilized with other source/target combinations, he added.

CCT is at 6980 J Knott Ave., Buena Park, Calif. 90620.

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Reduce Development Costs

Future Software May Obsolete Program Techniques

By Martin A. Goetz
Special to Computerworld

Viewpoint

Future systems software product innovations will drastically affect the very structure of programming – i.e., how programs are developed and maintained. The way we program today should be obsolete within five to seven years.

Programmers, of course, will still be needed and well paid, but the new software that will become available will change his role. New system software packages will be available to significantly improve the reliability and quality of a programming effort, while simultaneously reducing the cost.

The programmer will also have available even higher-level languages than Cobol or Fortran, as well as radically new programming tools. The overall results ahould be a reduction in program development costs by 50% or more.

Software product sales (exclusive of IBM) in the United States during 1972 exceeded $200 million. Further forecasts estimate such sales will exceed $300 million in 1973, and will reach the $1 billion level by 1976 or 1977.

In the opinion of many in the Industry, the largest growth potential lies in the area of packaged software.

The area of custom programming, on the other hand, will probably show relatively little growth, but should continue to produce revenues in the current $200 to $300 million range. This segment of the industry will continue to be dominated by local and regional companies similar to the more than 500 service bureaus currently scattered across the nation.

Today's Industry

There are a great number of organizations developing packaged software today – some "seriously" and others merely as a by-product of their internal data processing activities.

The independent software companies have established an enviable record over the last several years. Their products are innovative, well-supported and well-documented. Since they are in the software business for profit, they are well aware that their products must be superior to their competition.

A good percentage of the products still on the market today have survived the economic "trial by fire" of the early 70s when many of the inferior quality software houses were folding.

Growing Pains

Both systems software and applications packages will see tremendous growth during the next 10 years. Although data processing managers are finally beginning to buy more software packages, still less than 1% of the potential market has been captured. This situation is rapidly changing.

In the first place, today's relatively healthy economy has enabled data processing managers to investigate new programming developmenta. Application and system software packages that can improve programmer productivity or reduce the time to get an application operational are now very much in demand. In addition, there is again a shortage of programmers which makes commercial packages even more attractive.

Secondly, IBM has paved the way toward making unbundled program products an acceptable method of doing business.

Lastly, the data processing manager today is facing his greatest personal crisis. He is finally taking his appropriate place within the management ranks and, like every other manager, is finding that he must either shape up or get out.

Historically, most successful software products cost from $100,000 to $1 million and more to develop and maintain.

Furthermore, it is often highly unlikely that the user has available the necessary technological expertise. Even if he can develop the product, the time and cost to document and maintain it are prohibitive.

Even more important, buying commercial software allows the DP manager to free his personnel to perform the more critical data processing activities unique to his particular installation.

Tomorrow's Industry

The key to success may lie in defining the fine line between developing an application package that is either so generalized that it is impractical to build, or one which is so restricted that it is virtually unmarketable. As an example, perhaps applications packages should be developed which can accomplish 75% of a generalized requirement, and which include innate facilities for customizing to individual user specifications.

The duplication of effort which occurs when several companies within a similar industry develop payroll systems, order entry systems, inventory control systems, etc., is appalling. To avoid this waste, new technology is required to develop commercially available products to perform commonly needed functions.

The prime source of such technology will undoubtedly be the independent software companies. Tomorrow's programmer may be spending a good percentage of his time in customizing application packages purchased from an outside source.

Given a healthy competitive environment IBM'a domination over the software products industry may soon begin to decline. The software products industry, most probably, will not be dominated by any one company. There will probably be hundreds of smaller independent software companies involved in various fields of specialization within the total industry.

'Name Brands' in Software

As the entire software industry grows, it is inevitable that certain products will become recognized as leaders – i.e., trade names, or brand names, will become synonymous with quality software.

To date, IBM products have not succeeded in becoming the brand names for quality. In fact, several independents' products have come closer to being a DP "household word," since these companies basically have specialized in relatively restricted areas of expertise.

It is even possible that IBM will become "Brand X" in the software products market.

Martin Goetz is vice-president, Applied Data Research, Inc. and president, Adapso/Software Industry Association.

In-House Time-Sharing Can Be Costly, Complex

By Richard L. Crandall
Special to Computerworld

Viewpoint

Today, as on-line computing continues to revolutionize the use and availablity of computer power, many users have begun to identify the value of time-sharing with the means, or hardware, by which it is made available.

However, the creation of an in-house T/S organization can be a complex and costly endeavor, requiring both an in-depth knowledge of the Industry and its problems as well as considerable capital investment. Few companies realize the initial cost of installing a system and the organization to run it. And even fewer are aware of the numerous "hidden" costs of continuing to operate a viable in-house system.

The installation of in-house T/S is generally not a feasible alternative to the use of an external computer service organization.

What Are the Economics?

A T/S system costs between two and three times the hardware lease price if the following expenses are properly accounted for:

- Hardware and software lease and maintenance.
- Telephone and communications network.
- People.
- Facilities.
- Computer overcapacity.
- Computer usage accounting and reporting.
- Downtime due to hardware failures.

The real cost of implementing a viable in-house T/S system is even greater than the total of all the items listed above since the cost of certain intangibles must also be accounted for.

It is much more difficult to select an on-line system than a batch system because it is a dynamic product that must change over time to satisfy changing user needs.

If a company, however, is willing to make the systems programmer commitment to continually customize its own system, complicated technical evaluation should take place previous to procurement.

No one manufacturer has assembled a satisfactorily performing system of components for T/S, and so today's typical T/S system has components built by many vendors.

Such a system may result in a "Tower of Babel" in maintenance problems unless the concerned organization is willing to bear the responsibility for maintenance of all equipment.

Telephone communication network costs are the sleeper in the list. If all usage is to be in one city, communications costs are moderately easy to manage and account for. But if usage is spread through several cities, or across the nation, the communications problem multiplies and costs skyrocket.

Despite claims in the trade press, few T/S vendors have been successful in installing a reliable network. If a communications network is part of a company's requirement, it had better add several communications specialists to its staff and hope they are qualified.

Users must become reasonably proficient in using the system, and this requires training.

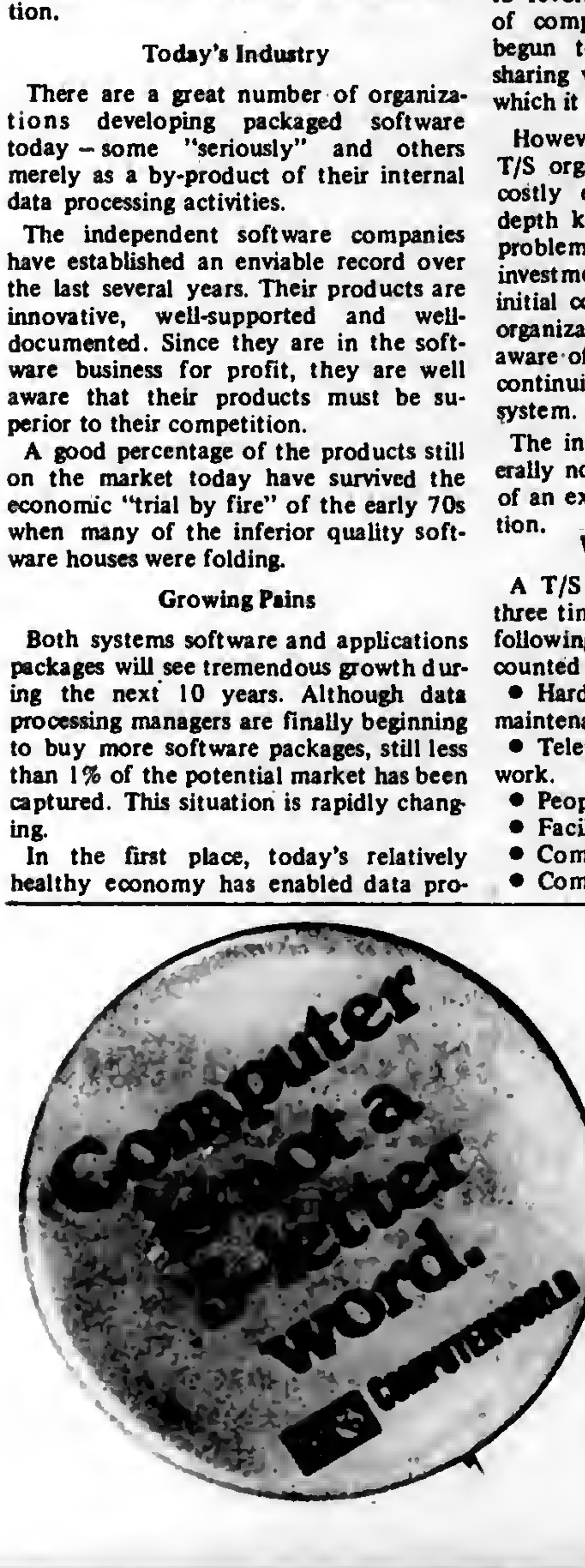
Personnel turnover, promotions and system enhancements create a further need for training, which, in turn, creates the need for expert help.

A cost for overcapacity must be shown because a company always buys too much system. A company's user load will never show up in increments of a full computer's capacity.

It has been claimed that a company has more control over services provided by its own in-house installation than it can obtain through the use of outside vendors.

The fact is that a company can get better and more controlled service from a service organization, which must perform to keep its business, than from an in-house organization which has no competition.

Crandall is president of Com-Share, Inc., a remote-computing network vendor.



For variety of reasons, IBM has dominated the EDP systems industry in a way that is almost unheard of in American business, except for publicly granted monopolies. But there are alternatives to the big boy. And that's what our March 28th Supplement is all about: *The Non-IBM World.*

Edited by *Computerworld's* Mike Weinstein, this study will include a look at the state of the industry, and a report on seven of IBM's competitors. Each of these companies – from Honeywell to Xerox Data Systems, has its own personality and its own place in the market. We'll be looking at their history, what they offer and where they stand. We'll also get opinions from their users, and try to create a picture of each one's strengths and weaknesses – to give you a clear idea of where it's at.

If you're a user who wants to look past IBM's looming frame, then our March 28th Supplement is the place to start. And if you're a marketer who wants to talk to the people who run this industry, your ad should be there when *The Non-IBM World* goes out. The supplement closes on March 9th. For details, just contact the nearest Computerworld Representative: *Boston,* Bob Ziegel, (617) 332-5606. *New York,* Don Fagan (212) 594-5644. *Los Angeles*, Bob Byrne (213) 477-4208. *San Francisco,* Bill Healey (415) 362-8547. Or write to: Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160.

COMPUTERWORLD

CI Notes

Telex-IBM Trial April 16

TULSA, Okla. – The Federal Destrict Court here has confirmed April 16 as the date for the Telex-IBM trial despite added claims and counterclaims and requests for depositions.

At a pretrial hearing here last week, Judge A. Sherman Christensen ruled against Telex's motion to sever the IBM counterclaim relative to trade secrets from the basic trial issue.

He took under advisement the Telex charge that it had information "leading it to believe that IBM, its agents and attorneys, are engaged in a concerted effort to induce Telex's independent witnesses to refuse to testify and thus impede the progress of pretrial preparation and materially hinder the ability of Telex to present its case at the trial."

At a hearing in Minneapolis recently, Judge Philip Neville made permanent a temporary injunction prohibiting CDC and IBM from rendering "unusable any documents or other materials still in existence if they pertain to the civil antitrust suit between CDC and IBM."

He also ordered CDC and its attorneys to make available to Telex any material pertinent to the Telex case upon request and without charge, according to industry sources.

Fujitsu Orders Key-Edit Units

DON MILLS, Ont. – Fujitsu has ordered $2.6 million worth of Key-Edit equipment from Consolidated Computer Inc. Shipment is expected to begin in June, although adaptation of the system to accept the Katakana characters has yet to be completed.

Under the agreement, Fujitsu has options for an additional $6 million of equipment for delivery within four years.

The Japanese firm also has marketing rights to the Key-Edit equipment in Japan and selected customers in North and South America.

Supershorts

Datacraft Corp. has established a European marketing operation with headquarters in Brussels.

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Cambridge Memories, Inc. has established a Canadian subsidiary to market and maintain its line of add-on and replacement computer memory systems in that country.

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Interdata, Inc. has signed a two-year OEM agreement with Adage, Inc. for shipment of 61 Model 74 systems that will be incorporated into the Adage/200 graphic display system. Adage has received five Model 70 systems for use in manufacturing and program development.

'73 DP Trends Viewed

User Spending May Hit $23.1 Billion

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Spending by computer users will rise 12% to a total of $23.1 billion during 1973, International Data Corp., a computer industry research firm, told an industry briefing here last week.

In 1974, the users' budgets can be expected to increase by another 12%, the firm said, reaching $25 billion that year.

During 1973, users should spend $13 billion for outside services, the report said, an increase of 13% over the $11.5 billion spent in 1972.

The expenditures for internal salaries will be $10.1 billion, it added, up 11% over the $9.1 billion spent on salaries last year.

During 1972, IDC said, the spending by the largest 750 computer-using organizations was up less than 5% on the average although they represented 35% of the installed computer base during the year.

These users, the firm said, were very cost-conscious during the year, making them targets for the independent peripherals manufacturers and the third-party leasing companies for the savings offered by these two groups.

In fact, IDC indicated, this group of users accounted for over 65% of the business of the independents and leasing companies during the year.

Trend Toward Consolidation

In addition, the firm said there was a stepped-up trend toward centralization and consolidation on the part of these large firms during the year as a further method of keeping costs low.

In the smaller- and medium-scale computer-using organizations, which represented 65% of the computers in use at the beginning of the year, the spending increased between 10% and 15% during 1972, IDC said, due mainly to the implementation of new applications.

During the year, users new to data processing only represented 10% of the shipments in the computer industry, IDC said, and added 2% to the growth of the installed computer base. However, the firm noted, in the future new users will contribute a smaller percentage growth to the installed base of equipment.

Hardware Expenditures

Out of the total outside expenditures for firms during 1972, spending for system hardware accounted for $7.1 billion out of the $11,5 billion spent, IDC said. Support hardware accounted for $795 million of the expenditures and services accounted for $1.9 billion.

The rest was split between software (which at $410 million was off 8% from the expenditures in 1971) and supplies which accounted for $1.2 billion of the expenditures.

In 1973, IDC predicted spending for system hardware and for support hardware will rise by 12%, while spending for software and services can be expected to rise by 18%. Spending for supplies will lag behind these other areas with a rise of only 10%, the firm predicted.

Present teleprocessing users will increase their expenditures by 30% next year and the year after, IDC said, outstripping the growth of the more traditional users. In addition, many new teleprocessing users can be expected to emerge in the next two years, the firm said.

In general, IDC indicated, user expenditures will continue on about the same ratio as in 1972: 44% on salaries; 35% on systems; 6% on supplies; 4% on support hardware; 2% on software and 9% in the services area, although there will be some small rises and decreases over the 1973-74 period.

In all, users are expected to increase their expenditures for outside services by 13% during 1973.

During 1974, however, the spending should rise 12% in total, with system hardware showing an 11% increase; support hardware up 12%; services up 17%; software showing a 15% jump; and supplies rising by only 9% during the year.

In the area of software, the firm predicted packages could be expected to grow at a rate of 25% to 30% yearly, while the growth in custom work would slow down somewhat.

Teleprocessing Spurs Growth

The major single factor contributing to the growth of user budgets over the next few years, IDC said, is the growth in teleprocessing systems, which will cause a need for communications-oriented mainframes and disk drives for on-line data bases as well as terminals, front ends and intelligent terminals.

In the services area, this will mean more user spending for remote services and for education courses to enable users to take advantage of the new systems.

In the software field, the growth of teleprocessing will cause a growth in the need for sophisticated software talent and for data communications-oriented program products.

Adapso Group Wants to Split IBM Software, Hardware Efforts

By a CW Staff Writer

NEW YORK – IBM's software operations should be completely separate from its hardware operations, the Software Industry Association of the Association of Data Processing Service Organizations (Adapso) told the Justice Department recently.

In a position paper on "IBM's monopolization of the Software Products and Services Industry," the Adapso group asked the Justice Department, in its antitrust action against IBM, to seek to prohibit IBM from directly or indirectly tying its hardware and software marketing efforts.

"To that end, IBM must be required to separate its software development and marketing so as to be separate and independent from its hardware operations," the group said.

Monopoly Alleged

The group charged that "IBM is currently, and has been since before the announcement of System/360, monopolizing in the area of software product development for IBM computers.

"This monopolization, which has resulted in the inefficient use of IBM hardware by the government and by commercial users, is a major contributor to high cost and poor utilization of computers," the Software Industry Association added.

The organization charged that IBM had no incentive to make efficient software tools available to users, since efficient software might slow down the sales of mainframes.

At the same time, the organizations said the classical antitrust relief of dividing IBM into several computer hardware companies – as sought by the Justice Department – "will not be to the short- or long-term benefits of the public, of other users of computers or of the software products industry.

"This proposed vertical restructuring of IBM could result in incompatibility between IBM hardware and software and also in increased costs in the overall development of software products," the organization charged.

Special Controls

At the same time, however, the group recommended that special controls be placed over the new software organization if its plan were adopted, since that organization would be able to control that market.

To do this, the Adapso group said "all IBM software, both existing and planned, must be priced on a basis which yields a return and reflects all associated costs, separate and apart from its hardware."

In addition, "safeguards must be implemented to insure that a competitive software industry, once established, will remain outside the domain of IBM," the group said.

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For a variety of reasons, IBM has dominated the EDP systems industry in a way that is almost unheard of in American business, except for publicly granted monopolies. But there are alternatives to the big boy. And that's what our March 28th Supplement is all about: *The Non-IBM World.*

Edited by *Computerworld's* Mike Weinstein, this study will include a look at the state of the industry, and a report on seven of IBM's competitors. Each of these companies – from Honeywell to Xerox Data Systems, has its own personality and its own place in the market. We'll be looking at their history, what they offer and where they stand. We'll also get opinions from their users, and try to create a picture of each one's strengths and weaknesses – to give you a clear idea of where it's at.

If you're a user who wants to look past IBM's looming frame, then our March 28th Supplement is the place to start. And if you're a marketer who wants to talk to the people who run this industry, your ad should be there when *The Non-IBM World* goes out. The supplement closes on March 9th. For details, just contact the nearest Computerworld Representative: *Boston*, Bob Ziegel, (617) 332-5606. *New York*, Don Fagan (212) 594-5644. *Los Angeles*, Bob Byrne (213) 477-4208. *San Francisco*, Bill Healey (415) 362-8547. Or write to: Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160

COMPUTERWORLD

GSA Sees Memory Awards Saving Over $17 Million

WASHINGTON, D.C. – The General Services Administration (GSA) has exerted its buying power in the award of two large contracts to memory makers, and anticipates the contracts will result in cost reductions to the government of more than $17 million.

The awards, to Ampex Corp. and Cambridge Memories, Inc., cover new or replacement memory units for the 360/30, 40, 50 and 65 and the Univac 1106 and 1108. The contracts are for one year with a renewal option for another two years.

Under these requirement-type contracts, all federal agencies within the continental U.S. must use these contracts when acquiring new or replacement memory units for the above configurations, according to the GSA.

GSA intends to use the requirements-type contract, although a relatively new procedure for the contracting of computer equipment, more frequently, according to Ted Trimmer, commissioner of GSA's Automated Data and Telecommunications Service.

Prices under the Ampex contract reflect cost reductions of 76% to 88% in relation to the list price of original equipment manufacturers, GSA said. Under the Cambridge Memories contract the GSA has gained a cost reduction of 73%, a department spokesman said.

An additional award that will include memory replacements for certain models of the IBM 370 series will be made soon, he added.

Dean Witter Orders Bunker Ramo Communications, Quotation System

TRUMBULL, Conn. – Dean Witter & Co., a brokerage firm, has contracted with Bunker Ramo for a data communications and quotations system to connect 76 branch offices to a central computer for routing, processing and recording of all buy and sell orders for stocks and commodities. The multimillion dollar system will include 1,300 terminals, 100 printers and a communications control processor.

Other Contracts

Computer Sciences Corp. has received a contract from the Defense Communications Agency to develop software for research and development of the intercomputer network that will support the World Wide Military Command and Control System.

Computing & Software has been awarded a $1.8 million contract by the California Department of Human Resources Development to supply data processing services for the Los Angeles County Job Bank.

Univac has been selected to supply DP equipment for the Air Force Human Resources Laboratory, Lackland Air Force Base. The equipment will replace an IBM 7040 computer.

Systems Engineering Laboratories will supply Combustion Engineering Inc. with computer systems to monitor and supervise operations of its nuclear power plant stations.

Contracts

Consolidated Computer Inc. of Canada has signed a contract with International Computers Ltd. for $1.5 million worth of ICL Key Edit entry systems.

Telefile Computer Products Inc. has received a subcontract from ITT Defense Communications for two DC-18 Disk File Controllers, eight DD-215 Dual Density Disk Storage Units and a specially designed dual-access switching unit. The equipment will be used by ITT for a communications system for the State Department.

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Experimental Memories Unveiled

RCA Uses Holographic Approach, IBM Puts 8K on Chip

By a CW Staff Writer

PHILADELPHIA – Two experimental memory systems have been unveiled, with IBM showing an 8K memory on a single-cell chip and RCA announcing a "breakthrough" that could bring the application of lasers and holographic memories a step closer.

The new unit, described by IBM engineers at the International Solid-States Circuits Conference of the IEEE, is basically an upgrading of the present technology which currently sees 2K and 4K as the maximum chip sizes.

The RCA development, however, appears to be one of the first practical applications of the holographic principles that have been long touted as the memory technique of the future.

The IBM 8K fully functional random access memory on a chip was fabricated using a p-channel, self-aligned poly-silicon gate process. It measures 145 by 201 mils and is organized 128 words hy 64 bits, the engineers said.

In order to achieve the bit density which equals 280,000 bit/sq in., the IBM researchers used a one-device dynamic cell configuration that was developed in the Yorktown, N.Y., facility.

A two-level memory hierarchy system, called a one-slot paging store, is built into the chip to maximize bit transfer speed. With each access, 64 data bits are transferred from the main array into a high-speed buffer in the center of the chip.

The buffer is then randomly interrogated a single bit at a time. This results in an initial access of approximately 2 μsec and subsequent buffer access of about .5 μsec, the IBM engineers said.

The field effect transistor (FET) chip contains all the support circuitry needed to operate it, including data registers, address inverters, decoders, word line biasing, phase drivers, input biasing and chip select.

The unit was designed at IBM's System Products Division Laboratory in Essex Junction, Vt., and was described by William K. Hoffman and Howard L. Kalter.

Buck Rogers?

The Buck Rogers-like invention from RCA employs a laser, liquid crystals, electro-acoustic deflectors and holograms stored on thermoplastics and can perform the full-cycle data processing operations of write, store, read and erase.

The new memory system could store as much data as large disk systems currently in existence, but would be 1,000 times faster, RCA said, indicating the new devices could bridge the gap hetween large-scale auxiliary storage and main computer memory.

Simplify Architecture?

"The holographic memory has the potential, when fully developed, to replace the entire hierarchy of core, drum and disk systems now used, and thereby to simplify the whole architecture of computers and many other information systems," according to Thomas O. Stanley, staff vice-president of research programs for the firm.

The memory stores data in holograms formed by a laser beam on a thermoplastic storage medium. Enroute to the storage medium, the beam strikes liquid crystal cells, which can be controlled electronically to scatter light or he transparent.

These cells introduce digital information into the laser beam in the form of tiny areas that are dark (where the cells are scattering) and light (where they are transparent). This pattern of darkness and light, recorded in the hologram, corresponds to the zeros and ones of binary code.

Once the data is stored in the hologram, it can be read by passing the laser beam through the hologram. The beam projects the holographic information onto a light-sensitive array which converts the optical data into electronic signals.

To erase the hologram, heat is applied to the thermoplastic storage medium, which then permits another hologram to be written in its place.

The unit was developed under partial support from Nasa's Marshall Space Flight Center.

Swedish DP Industry Urged to Specialize

STOCKHOLM – The Swedish DP industry should concentrate on equipment for special applications such as paper, steel, engineering industries, hospitals and banks, areas in which Sweden has received recognition for advanced technology, according to a recent government-sponsored study.

The total annual market for computer equipment, both hardware and software, components and services, is estimated at about $208 million, with a growth rate of 10% to 20% per year, the study noted.

The total value of installed and ordered computer equipment in Sweden in 1972 amounted to about $520 million, the report continued.

The report recommended that the position of the computer user be strengthened, possibly through the establishment of a consumer-oriented "center for computer development." It also suggested that DP training could be made a compulsory subject in schools.

Burroughs Names Two to Board

DETROIT – Burroughs Corp. has expanded the size of its board to 12 directors with the election of Clifton R. Wharton Jr. and Charles E. Exley Jr. to the newly created positions.

Wharton, president of Michigan State University, becomes Burrough's first black director. An economist, Wharton has served as a member of advisory panels on East Asian and Pacific Affairs of the U.S. Department of State, as well as on the U.S. panel of the United Nations Association devoted to world population and the quality of human development.

Exley has been vice-president, finance, since January 1971. He joined Burroughs in 1954 and became controller in 1963. In 1966, he became vice-president and group executive of the Business Forms and Supplies Group.

IBM Names Scranton

ARMONK, N.Y. – William W. Scranton, former governor of Pennsylvania, has been elected to the board of directors of IBM. He was a director of IBM's World Trade Corp. for four years until October 1971, when he became a member of the President's Price Commission.

Other Moves

- Robert L. Horowitz has been named president of GRI Computer Corp. He has been chairman of the board of directors since GRI's inception in 1967 and will continue to serve in that capacity.

Executive Corner

- Itel Corp. has appointed R. Douglas Norby, vice-president, finance, president of a newly created subsidiary, Itel Lease Funds, Inc., which will act as a development arm of Itel.
- Charles E. Byrne, formerly president of Logos Development Corp., has heen appointed vice-chairman of the hoard. Bernard E. Scott, formerly a vice-president of Logos, replaces Byrne as president.
- Norman P. Gruczelak is the new president of Bright Industries, a Sunnyvale, Calif., based firm.
- Gary L. Neale has heen elected president in charge of all domestic and foreign operations for On-Line Decisions, Inc. He was formerly vice-president in charge of domestic operations, including marketing and all consulting activities.
- H. Glen Haney, previously director of marketing, has been named vice-president of marketing in the Americas Division of Sperry Univac.
- Keydata Corp. has announced the appointment of Randolph S. Naylor as vice-president, marketing. Naylor was previously eastern area manager for the Service Bureau Corp.
- George O. Harmon has joined NCR as vice-president, technical services. He was formerly director of management systems in the Field Engineering Division of IBM's Data Processing Group.
- James E. Heaton has heen appointed a vice-president for Ann Arbor Computer Corp., a subsidiary of Jervis B. Webb Co.
- Jim Williamson has been named vice-president, manufacturing, of Telex Computer Products, Inc.
- Edward F. Kearns has been named vice-president, marketing, for the Sperry Univac Communications & Terminals Division. Kearns is the former president of Courier Terminal Systems Inc.

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March 27-29 – Disneyland Hotel
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April 3-5 – Civic Auditorium
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April 11-13 – Municipal Auditorium
CHICAGO
April 17-19 – Conrad Hilton Hotel
CLEVELAND
April 24-26 – Convention Center

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2:30 p.m. . . . . Software Evaluation Panel
Day 3:
9:00 a.m. . . . . . Installation Management
2:30 p.m. . . . . Small Systems Panel

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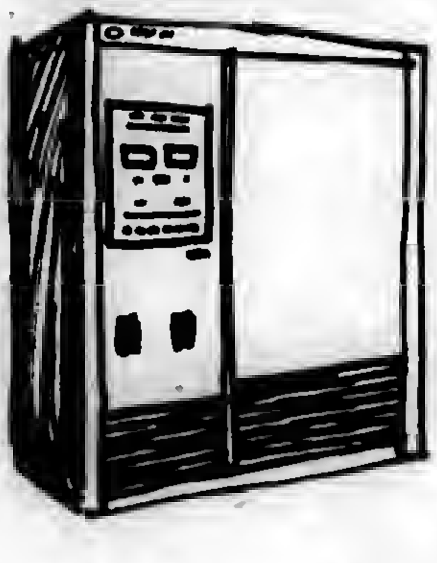

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Offshore Keypunching Breaks Bottlenecks

Special to Computerworld

KINGSTON, Jamaica – Several service bureaus have responded to users' need to break the input bottleneck without breaking their budgets by turning to the "punch and pack" business, or offshore keypunching.

The offshore approach has become increasingly popular, particularly with organizations faced with massive file conversions or huge supplies of source documents that require punching on a regular basis.

Ten years ago the idea of having valuable input documents flown 4,000 miles for keypunching would have been considered absurd.

But today source documents are whizzing all over the world – Mexico City, Hong Kong, Ireland and Kingston, Jamaica, are just a few of the places with successful offshore installations.

Jamaica was one of the first countries to recognize the potential of data processing as an export industry more than nine years ago.

DP is a clean, non-polluting industry that's well-suited to the country's educated and fast-growing white collar labor force.

Location in Jamaica has a number of advantages for the five U.S. service bureaus here.

It is only a three and one-half hour flight from New York, it's an English-speaking nation and, most important, it's profitable. The Jamaican keypuncher is paid a good local salary of about $35 a week, roughly a third of what her U.S. counterpart makes.

Salaries are the largest single expense of input preparation. That's why Jamaica and the other countries involved in preparing input offshore have been successful building up their DP industries.

None of the companies involved in the offshore data input business is willing to give an exact breakdown of figures, but it's apparent the payroll savings alone more than offset all of the other considerations.

John Ciarmella, president of Datatron Processing Inc., a New York-based company that specializes in subscription fulfillment listings, direct mail and book fulfillment, estimates the cost of processing source documents in Kingston is roughly 70% less in Jamaica than it is in the U.S.

The firm employs some 120 typists who prepare optically scannable input for the company's computers in Flushing, N.Y.

Questionable Image

Traditionally, one of the biggest objections to offshore service bureaus has been the "punch and pack" image. Eyebrows have also been raised about the turnaround time involved in going offshore and the security of the documents once they leave the client's premises.

However, it doesn't take a great deal more time to have keypunching done across the water, than it does across town.

Security isn't a big problem either because the keypunchers rarely work with original documents.

An offshore operation does not have to mean "just punch and pack." Most offshore operations can document excellent production records.

Data Key Ltd.'s keypunch room guarantees an error rate of .004%.

An example is Data Key Ltd., an Akron, Ohio, firm that can document an error rate of .004%. The company sells quality rather than price. It charges the same rates to its customers that it would if the punching were being done in the U.S., but it uses 100% verification to keep its error rate down and employs several full-time people to continuously sample the work.

Data Key has a contract with one customer that guarantees the repunching of an entire batch of 5,000 records if there are three errors in every 78,000 characters punched. The company has never had to repunch, according to President Arthur Williams.

"Most of our customers either microfilm or photocopy their source documents, so the girls don't have to handle the originals," Williams said.

"There's no question that control is a serious consideration for anyone thinking about the offshore approach. We take every possible security precaution," he added.

So do the other firms involved in long-distance keypunching. None of the five companies currently operating in Jamaica has reported losing a shipment. However, all of them insure their source documents for a considerable sum just to be sure.

Cultural Differences

"I think that anyone planning an offshore keypunching operation should be as cognizant as possible of cultural differences," said Louis O. Colburn, executive vice-president of Fimaco, Inc., a Philadelphia subscription fulfillment firm.

"For example, we had to familiarize our girls with Zip Codes and the standard abbreviations for U.S. cities and states. They were familiar with British spellings and abbreviations. It's not a big thing, and they picked it up quickly. But it is the kind of thing you'll run into in an offshore operation."

Turnaround is not as big a problem as one would at first suspect. The average turnaround time reported by all the companies is less than a week. Rush jobs can be turned around even faster.

Financial World Moves to Expand DP Use

NEW YORK – Various segments of the investment community are moving to increase the use and capabilities of automatic quotation and recordkeeping systems, in efforts to expedite processes and reduce paperwork.

The concept of a composite ticker tape, which would carry trades made on and off the Big Board, has been a cornerstone in the reforms being advocated by the Securities and Exchange Commission.

Securities industry leaders have agreed to set up a Composite Tape Association that would create two tapes, since one tape recording trades from both the New York Stock Exchange and the American Stock Exchange and all regional exchanges would move so fast as to be illegible.

One tape would display all transactions in securities listed on the Big Board, regardless of where the trade occurred, and the second tape would report trades in Amex listed stocks, as well as stocks traded only on regional exchanges.

A proposal submitted by industry leaders to the Securities and Exchange Commission provides for a 20-week test in which reports on 15 NYSE-listed issues would be fed onto the Big Board tape from regional exchanges.

At least one "third market" dealer would report his over-the-counter transactions in those issues, thus giving representation to all factors trading in these particular stocks.

The National Association of Securities Dealers (NASD) has made overtures to Bunker Ramo Corp., operator of the automatic price quotation system for over-the-counter stocks (Nasdaq), for the purchase of the system.

The NASD has indicated it would like to see the system enhanced, to include automatic execution of buying and selling shares, and to display the number of shares brokers are willing to buy or sell. The group also is looking at Nasdaq with increasing interest for financial reasons.

Although the system has not been profitable to Bunker Ramo, since price increases were held up until recently by the Wage and Price Board, the system can be expanded and enhanced.

In the area of communications, the Securities Telecommunications Organization (STO), a network to expedite handling of investors' orders and broker communications, is expanding its services to all regional exchanges and their members.

Until recently, the New York and American exchanges had been the sole users of the capabilities offered by STO, a subsidiary of the two exchanges.

The idea of a central depository for certificates, and a corresponding reduction in paperwork, is catching on.

The New York Stock Exchange's Central Certificate Service, Inc., a depository for securities certificates and a computerized system for settlements of securities transactions among participating brokers and financial institutions, has established three out-of-town locations.

Hartford, Conn., Richmond, Va., and Dallas are the new sites that enable participating brokerage houses to deposit their securities in a local bank.

Under the depository system, the change of ownership paperwork is done by computer once the securities are deposited.

During 1972, $170 billion in computerized depository deliveries were reported made through the system, a 70% increase over the previous year. CCS officials estimate the system has eliminated handling of almost two million pieces of paper each month in addition to reducing the movement of stock certificates.

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Earnings Reports

GENERAL INSTRUMENT
Three Months Ended Nov. 26

	1972	1971
Shr Ernd	$.38	a$.23
Revenue	82,955,876	72,653,400
Spec Cred	.....	250,000
Earnings	2,900,506	1,937,950
9 Mo Shr	.88	e.50
Revenue	228,554,363	205,633,132
Spec Cred	.....	250,000
Earnings	6,990,807	4,499,274

e-Adjusted for a 2% stock dividend in May 1972.

COMPUTEST
Three Months Ended Nov. 30

	1972	1971
Revenue	$1,161,624	$984,809
Spec Cred	a58,102	.....
Loss	142,485	258,912
6 Mo Rev	2,155,894	2,167,518
Spec Cred	e58,102	.....
Loss	299,330	381,022

a-From sale of land.

DPF
Six Months Ended Nov. 30

	1972	a1971
Shr Ernd	$.04	.....
Revenue	17,428,000	$22,605,000
Spec Cred	b150,000	.....
Earnings	150,000	(34,444,000)

a-Restated to reflect year-end retroactive adjustments. b-From repurchase of debentures.

SPERRY RAND
Three Months Ended Dec. 31

	1972 (000)	a1971 (000)
Shr Ernd	$.68	$.48
Revenue	565,353	453,935
Earnings	23,409	16,364
9 Mo Shr	1.77	1.19
Revenue	1,594,238	1,274,146
Earnings	60,825	40,733

e-Restated.

TEXAS INSTRUMENTS
Year Ended Dec. 31

	1972	1971
Shr Ernd	$4.34	$3.05
Revenue	943,694,000	764,258,000
Earnings	48,030,000	33,723,000

MSI DATA
Three Months Ended Dec. 23

	1972	e1971
bShr Ernd	$.09	$.04
Revenue	3,600,004	2,516,053
Earnings	165,983	55,994
b9 Mo Shr	.21	.21
Revenue	9,773,861	7,593,647
Tax Cred	.....	92,000
Earnings	375,593	330,444

e-Restated for inventory adjustments and computation of income taxes principally applicable to foreign operations. b-Adjusted for three-for-two stock split in May 1972.

VERMONT RESEARCH
Year Ended Sept. 30

	1972	1971
Shr Ernd	$1.36	.....
Revenue	5,744,059	$5,050,696
Tax Cred	114,000	25,000
Earnings	904,250	(678,323)

COM-SHARE
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.12	$.08
Revenue	2,169,947	1,718,363
Spec Cred	e22,118	b33,626
Earnings	146,785	88,408
6 Mo Shr	.22	.....
Revenue	4,038,768	3,209,485
Spec Item	e84,118	d19,374
Earnings	270,258	(15,880)

e-Credit; consists of a tax credit less loss from disposition and writedown of investment. b-Consists of tax credit less loss from abandonment of computer center. d-Charge; consists of loss from income tax reduction from carryforward of prior year's losses and loss from abandonment of computer center.

DECISION DATA COMPUTER
Year Ended Nov. 30

	1972	1971
Revenue	$3,395,723	$181,432
Loss	2,522,993	1,908,776

CENTRONICS DATA COMPUTER
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.23	$.07
Revenue	5,479,000	1,472,000
Tax Cred	.....	153,060
Earnings	1,107,000	317,000
6 Mo Shr	.36	.10
Revenue	9,039,000	2,423,000
Tax Cred	.....	227,180
Earnings	1,774,000	484,960

DATA-CONTROL SYSTEMS
Three Months Ended Dec. 29

	1972	1971
Shr Ernd	$.06	$.05
Revenue	1,308,000	1,529,000
Tax Cred	18,000	15,000
Earnings	51,000	44,000

COMPUGRAPHIC
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.39	$.13
Revenue	10,128,000	5,560,000
Earnings	710,000	224,000

DP Seen Scarce Down Under

Special to Computerworld

SYDNEY, Australia – Computer industry growth in Australia has not progressed because of a lack of trained experts in the field, said Dr. J.L. Byrne, head of the mathematics department of Queensland Institute of Technology.

Byrne is outlining a new course in computer operation beginning at the Institute next year.

"There is a shortage everywhere of people trained to use computers," he said. "Employees of computer firms are inclined to leave after 18 months, just as they are becoming productive.

"With more qualified workers in the community, they would not be able to change their jobs so frequently."

Byrne said this rapid turnover of staff is a cause of concern.

Minis to Control Link Between U.S., Soviets

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CMC Breaks Into the Black

SANTA MONICA, Calif. – Computer Machinery Corp. attained its first profitable quarter, which has helped reduce losses for the year.

Earnings for the quarter ended Dec. 31 totaled $373,000 or 8 cents a share, including a $61,000 special credit on revenues of $10.3 million. This compares with a loss of $3.7 million or 78 cents a share in the same period last year, when revenues totaled $1.9 million.

"Past losses resulted from building a CMC-owned lease base which accrues recurring revenues to the company," explained President Thomas L. Ringer.

"We are confident that 1973 will be a profitable year and expect to ship systems with a sales value exceeding $65 million," he said.

For the year, CMC showed a loss of almost $2 million or 40 cents a share, including a $168,000 special credit, compared with a loss in 1971 of $6.8 million or $1.65 a share.

Revenues in 1972 totaled $29.6 million, a three-fold increase over 1971 revenues of $8.9 million.

Deliveries at sales list price totaled $47 million in 1972, up from $27 million in 1971. Backlog at the end of 1972 stood at about $20 million, compared with $16 million in 1971, the firm said.

Computer Sciences Takes Writeoff

LOS ANGELES – Computer Sciences Corp. (CSC) announced losses for the third quarter and nine months ended Dec. 29. And the firm declared it would write off $2.3 million in the fourth period, as a result of the termination of CSC's contract with the New York City Off-Track Betting Corp.

The $2.3 million covers the total writeoff of receivables which were previously anticipated to be recovered from monthly transaction charges for use of the system through June 30, 1974.

In the third quarter, revenues rose to $35.6 million from $30.6 million, but the loss totaled $277,000 or 2 cents a share compared with earnings of $1.2 million or 9 cents a share in the year-ago period.

The nine month loss totaled $2.1 million or 15 cents a share, in contrast with earnings of $3.5 million or 26 cents a share in the same 1971 period. Revenues rose to $101.4 million from $96.5 million.

Record Half

Computer Automation Earnings Top '72's

IRVINE, Calif. – Computer Automation, Inc. has completed a record first half, with earnings 25% above those for all of fiscal 1972.

The burgeoning OEM market for the Naked mini machines was in large part responsible for the sharp rate of growth in sales, according to President David H. Methvin.

Revenues almost tripled to $4.8 million from $1.7 million in the year-ago period ended Jan. 2, 1972.

Earnings, meanwhile, rose to $577,907 or 38 cents a share from $153,443 or 13 cents a share in the same period last year. Both periods included special credits, of $183,000 in 1972 compared with $73,000 last year.

In the quarter, sales totaled $2.7 million compared with $940,352, while earnings doubled to $237,736 or 15 cents a share compared with $106,436 or 9 cents a share.

Methvin said he is pleased with the growth rate in sales and that he expects the company to continue to grow, although "not at this extraordinary rate" over the long term.

"This kind of performance is indicative of the leverage which is characteristic of our kind of business – the dedicated OEM business," he explained, "where we sell large numbers of computers to many companies which supply products and systems to dozens of applications areas that we would never attempt to reach."

Odec, Centronics Show Increase In Revenues in Half-Year Period

Two printer manufacturers – Odec, Inc. and Centronics Data Computer Corp. – have reported increased sales in the six months ended Dec. 31.

Odec's revenues totaled a record $2.4 million, a jump of 146% from the same period last year.

Earnings, however, declined after writing off deferred product development costs. Earnings sank to $43,000 from $55,000 in the same period last year. Also, there was a $14,000 special credit in the current period, compared with a $20,000 credit in the year-ago period.

At Centronics, a strong second quarter helped lift six month revenues to $9 million compared with $2.4 million a year ago. Earnings for the six months totaled $1.8 million or 36 cents a share compared with $484,960 or 10 cents a share.

In the second quarter sales reached $5.5 million, a 54% increase over the first quarter, with earnings climbing to $1.1 million or 23 cents a share compared with $317,000 or 7 cents a share in the same 1971 quarter.

C&S Looks to 15% Rise in Earnings

LOS ANGELES – Computing & Software Inc. "sees no reason it can't achieve a 15% increase in earnings and sales" in the current fiscal year, according to President Norman Friedmann.

The firm had record revenues of $110.9 million for 1972 compared with almost $95 million in the year-ago period. Earnings climbed to $7.5 million or $1.25 a share compared with almost $6 million or 96 cents a share in the same year-ago period.

During the year C&S divested itself of three service businesses. Per share losses from these and prior discontinued operations were 5 cents compared with 2 cents a year ago.

"The record 1972 financial results reflect successful expansion and increased penetration of our basic business services markets. We anticipate futher increases in sales and earnings next year based on the current rate of internal growth," according to Friedmann.

Pertec Explains Earnings Decline

LOS ANGELES – Pertec Corp. cited proxy contest costs and increased engineering, marketing and production start-up costs as factors contributing to the lower earnings in the second quarter and six months ended Dec. 29.

The proxy fight showed as an $80,000 charge on the books.

Revenues remained relatively constant in the second quarter – almost $6 million compared with $6.1 million in the year ago period – but earnings declined to $193,000 or 6 cents a share compared with $647,000 or 21 cents a share in the same period a year ago.

In the six months, revenues rose slightly to $11.9 million from $11.7 million, while earnings fell to $647,000 or 21 cents a share from $1.2 million or 38 cents a share in the year ago period.

The second quarter of 1971 was the last period in which revenues were affected by accelerated shipments of key-to-tape systems to the Singer Co., according to Frank Grisanti, chief executive officer. Shipments to Singer have remained at a relatively constant level since then, he added.

Graham Quarter Sales Set Record

GRAHAM, Texas – With record sales for the quarter, Graham Magnetics Inc.'s second quarter and six months showed improved revenues and earnings.

In the quarter, earnings reached $327,973 compared with $204,274 in the year-ago period. Revenues topped $3 million, compared with $2.3 million in the same 1971 period.

Six month earnings totaled $548,376 or 60 cents a share compared with $488,481 or 67 cents a share. Results for the 1971 period included a $186,400 tax loss carryforward.

Graham is developing specialized magnetic tapes for use in severe environments of temperature and humidity, revealed President George A. Jaggers.

The company has also developed a miniature tape certifier, which will be available in April, he said.

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CLOSING PRICES THURSDAY, FEBRUARY 22, 1973

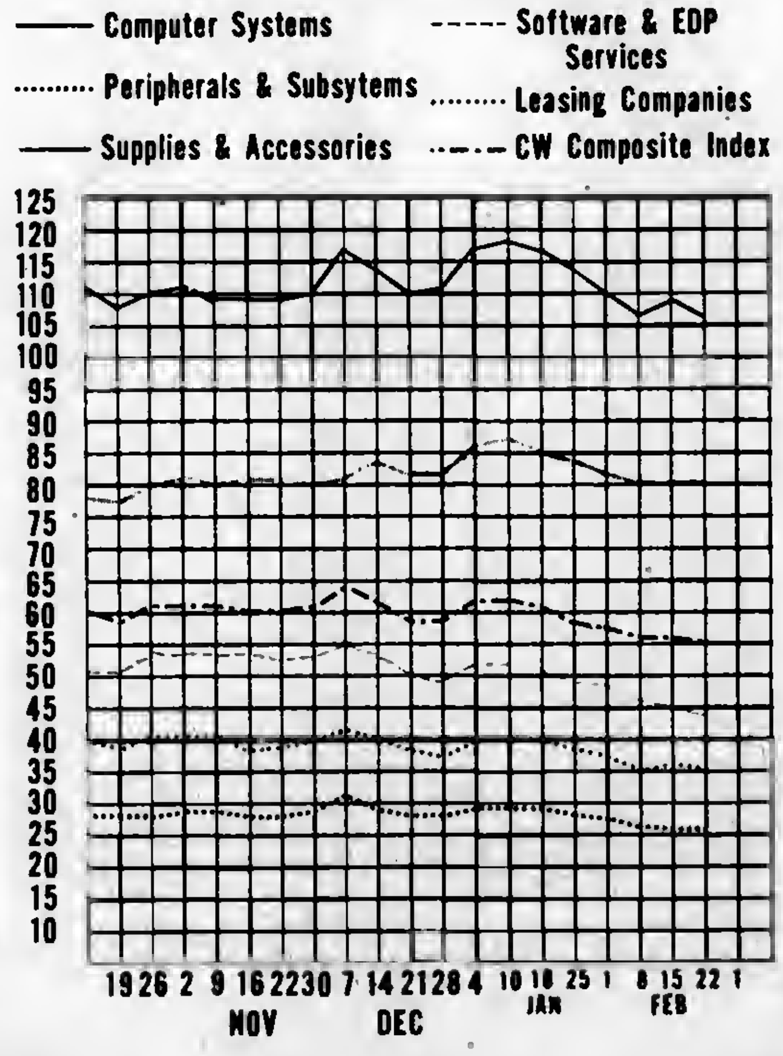
EXCH		1972-73 RANGE (1)	CLOSE FEB 22 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 5/8	0	0.0
A	APPLIED DATA RES.	5- 7	5 5/8	+ 1/2	+16.0
O	APPLIED LOGIC	1- 4	2 5/4	- 1/8	-4.5
N	AUTOMATIC DATA PROC	0- 99	76 1/2	- 1/4	-0.5
O	8RANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	4- 14	3 1/2	0	0.0
O	COMPUTER DYNAMICS	1- 4	7/8	0	0.0
O	COMPUTER NETWORK	2- 7	2 1/4	- 1/4	-10.0
N	COMPUTER SCIENCES	0- 10	4 1/4	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	2- 8	2 5/8	0	0.0
O	COMPUTER USAGE	7- 14	7 1/4	- 1/4	-5.3
N	COMPUTING & SOFTWARE	0- 28	10 1/2	- 1/8	-1.1
O	COMRESS	1- 5	7/8	0	0.0
O	COMSHARE	0- 10	7 1/2	- 1/8	-1.6
O	OATATA8	4- 9	5 1/2	- 1/8	-3.4
O	EDP RESOURCES	2- 8	1 1/2	- 1/4	-14.2
A	ELECT COMP PROG	0- 5	1 3/8	- 1/8	-8.3
N	ELECTRONIC DATA SYS.	45- 65	49 7/8	+1 3/8	+2.8
O	INFORMATICS	0- 11	3 5/8	- 1/4	-6.4
O	I.O.A. DATA CORP	1- 3	3/4	+ 1/4	+50.0
O	KEANE ASSOCIATES	4- 7	3 5/4	0	0.0
O	KEYOATA CORP	7- 13	9 1/2	- 1/8	-1.2
O	LOGICON	4- 9	6 1/4	+1	+19.0
A	MANAGEMENT DATA	3- 10	5 1/4	0	0.0
O	NATIONAL CSS INC	0- 37	35 5/8	- 1/8	-0.3
O	NATIONAL INFO SRVCS	1- 5	1 5/4	0	0.0
P	ON LINE SYSTEMS INC	8- 28	22 3/4	- 1/4	-1.0
N	PLANNING RESEARCH	4- 17	4 1/4	- 1/2	-10.5
O	PROGRAMMING METHODS	20- 25	22 1/2	0	0.0
O	PROGRAMMING & SYS	1- 2	7/8	- 1/8	-12.5
O	RAPIOATA INC	5- 27	21 1/4	0	0.0
O	SCIENTIFIC COMPUTERS	0- 4	1 3/8	- 1/8	-8.3
O	SIMPLICITY COMPUTER	1- 5	3	+ 1/8	+4.3
O	TDS COMPUTER CENTERS	3- 6	3 1/4	0	0.0
O	TCC INC	1- 5	1/2	0	0.0
O	TYMSHARE INC	0- 12	7 7/8	-1 1/4	-13.6
O	UNITED DATA CENTER	5- 8	5 1/2	+ 1/4	+4.7
N	UNIVERSITY COMPUTING	7- 26	11 3/8	+2 7/8	+33.8
A	UOS SYSTEMS	0- 10	5 7/8	- 1/8	-2.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	25- 49	22 5/8	-1 7/8	-7.6
O	ADVANCED MEMORY SYS	0- 23	18 5/8	+1	+5.7
N	AMPEX CORP	5- 15	6 1/2	+ 1/2	+8.3
O	ANOERSON JACOOSON	4- 8	5 7/8	+ 3/8	+6.8
O	OEEMIVE MEDICAL ELEC	1- 8	6 1/8	+ 1/8	+2.0
A	BOLT,8ERANEK & NEW	0- 21	9	0	0.0
N	8UNKER-RAMD	8- 14	7 3/4	- 1/2	-6.0
A	CALCOMP	0- 25	12	- 1/4	-2.0
O	CAN8RIOGE MEMORIES	9- 15	10 1/2	- 5/8	-5.6
O	CENTRONICS DATA COMP	6- 28	19 1/4	-4 1/2	-18.9
O	COOEX CORP	0- 25	14 1/4	-1 3/4	-10.9
O	COGNITRONICS	2- 5	1 5/8	0	0.0
O	COMPUTER COMMUN.	0- 7	2 3/4	0	0.0
A	COMPUTER EQUIPMENT	2- 4	2 1/4	0	0.0
O	COMPUTER MACHINERY	0- 15	11	- 1/8	-1.1
O	COMPUTER TRANSCEIVER	2- 9	5 1/2	0	0.0
A	COMPUTEST	3- 9	4 1/2	+1	+28.5
N	CONRAC CORP	0- 59	23 3/4	- 5/4	-3.0
A	DATA PRODUCTS CORP	3- 7	5 3/4	- 1/8	-3.2
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	0- 5	3 7/8	- 1/4	-6.0
O	OI/AN CONTROLS	0- 8	5 3/4	- 1/8	-3.2
N	ELECTRONIC M & M	0- 8	4 1/8	- 1/4	-5.7
O	FABRI-TEK	2- 5	3 7/8	+ 1/4	+6.8
O	GENERAL COMPUTER SYS	6- 16	8 1/2	+ 1/4	+5.0
N	GENERAL ELECTRIC	0- 74	67 7/8	-2	-2.8
N	HAZELTINE CORP	7- 13	7 1/4	- 1/8	-1.6
O	INFOREX INC	14- 36	14 1/8	+ 1/4	+1.8
O	INFORMATION DISPLAYS	1- 5	3/4	- 1/8	-14.2
O	INFORMATION INTL INC	0- 25	12 1/4	-1 1/4	-9.2
A	LUMOY ELECTRONICS	6- 14	6 5/8	+ 1/8	+1.9
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	0- 44	22 1/4	- 5/4	-3.2
N	MOHAWK DATA SCI	8- 27	8 5/8	- 3/8	-4.1
O	OOEC COMPUTER SYST.	3- 12	3 1/4	- 1/4	-7.1
O	OPTICAL SCANNING	0- 16	3 1/4	- 1/4	-7.1
O	PERTEC CORP	6- 17	6 7/8	+ 1/8	+1.8
O	PHOTON	0- 15	4 5/4	- 1/8	-2.5
A	POTTER INSTRUMENT	7- 21	7	- 1/2	-6.6
O	PRECISION INST.	0- 15	5 1/4	+ 1/4	+5.0
O	RECOGNITION EQUIP	5- 15	6 1/4	- 3/4	-10.7
N	SANDERS ASSOCIATES	0- 21	11 1/4	-1 1/2	-11.7
O	SCAN DATA	3- 13	5 1/4	- 1/8	-3.7
O	STORAGE TECHNOLOGY	17- 59	20 7/8	-2 5/8	-11.1
O	SYCOR INC	7- 11	9 1/2	0	0.0
O	TALLY CORP.	0- 15	12 1/8	+ 1/2	+4.3
N	TEKTRONIX INC	34- 64	40	-8	-16.6
N	TELEX	0- 15	4 1/8	0	0.0
O	WILTEK INC	10- 26	15 3/4	0	0.0
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	6 3/4	+ 1/4	+5.8
A	BARRY WRIGHT	9- 14	9 1/4	- 1/2	-5.1
A	DATA DOCUMENTS	0- 26	19 7/8	- 1/8	-0.6
O	DUPLEX PRODUCTS INC	8- 16	9	+ 1/2	+5.8
N	ENNIS BUS. FORMS	0- 10	6 1/2	- 1/4	-3.7
O	GRAHAM MAGNETICS	15- 27	16 3/4	-1	-5.6
O	GRAPHIC CONTROLS	11- 15	12 1/4	+ 1/2	+4.2
N	SM COMPANY	0- 88	82 1/2	- 1/2	-0.6
O	MOORE CORP LTD	42- 57	55 1/8	- 1/2	-0.8
N	NASHUA CORP	0- 62	54 1/8	- 5/8	-1.1
O	REYNOLOS & REYNOLO	57- 77	47 1/8	+ 5/4	+1.6
O	STANDARD REGISTER	0- 20	19 3/4	+1 1/4	+6.7
O	TAB PRODUCTS CO	14- 25	19 1/2	- 1/2	-2.5
N	UARCO	20- 28	21 1/4	- 3/8	-1.7
A	WA8ASM MAGNETICS	0- 11	6	- 1/8	-2.0
N	WALLACE BUS FORMS	21- 26	24 1/2	+1 1/2	+6.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	0-240	229 3/4	-5 1/4	-1.3
N	COLLINS RADIO	14- 27	21 7/8	+ 1/4	+1.1
N	CONTROL DATA CORP	0- 78	49	+ 1/2	+1.0
O	DATA GENERAL CORP	56-131	123 1/2	-3	-2.5
O	DIGITAL COMP CONTROL	4- 25	3 1/2	0	0.0
N	DIGITAL EQUIPMENT	0-105	97 5/8	+ 5/8	+0.3
N	ELECTRONIC ASSOC.	6- 13	7 1/8	- 1/2	-6.5
A	ELECTRONIC ENGINEER.	0- 14	9 3/4	+ 3/4	+8.3
N	FOXBORO	23- 41	28 1/2	- 5/8	-2.1
O	GENERAL AUTOMATION	0- 55	49 1/4	-3 5/4	-7.0
O	GRI COMPUTER CORP	2- 5	2 1/8	- 1/8	-5.5
N	HEWLETT-PACKARD CO	0- 94	87 1/2	-2 1/8	-2.5
N	HONEYWELL INC	107-170	107 1/4	-7 1/4	-6.5
N	IDM	0-451	444	+2 1/2	+0.5
O	INTERDATA INC	8- 16	9 7/8	-1 1/4	-11.2
N	MEMOREX	0- 38	12 5/8	- 1/8	-0.9
O	MICRODATA CORP	5- 10	8 7/8	+ 1/4	+2.8
N	NCR	27- 38	28 3/8	- 5/8	-2.1
N	RAYTHEON CO	0- 47	50 1/4	-1 5/4	-5.4
N	SPERRY RAND	50- 50	45	-1 5/4	-3.7
A	SYSTEMS ENG. LABS	0- 16	5 1/2	- 3/8	-6.3
N	VARIAN ASSOCIATES	14- 22	15	-1 3/8	-8.5
N	WANG LABS.	0- 61	24 1/4	-2 1/4	-8.4
N	XEROX CORP	121-172	165	+3 7/8	+2.4
	LEASING COMPANIES				
A	DOOTME COMPUTER	0- 18	5 1/2	- 3/8	-9.6
O	8RESNAHAN COMP.	1- 5	1 5/8	+ 1/8	+10.0
O	COMDISCO INC	3- 18	13 5/8	-1	-6.8
O	COMMERCE GROUP CORP	0- 11	4 5/8	- 1/8	-2.6
O	COMPUTER EXCHANGE	1- 3	3/4	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4 5/8	-1 3/8	-25.0
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	0- 15	7 7/8	+ 1/2	+6.7
N	DATRONIC RENTAL	2- 4	2 1/8	- 1/8	-5.5
A	DCL INC	2- 10	2 1/4	+ 1/8	+5.8
A	DEARBORN-STORM	0- 26	20 1/4	-1 1/8	-5.2
A	OPA, INC.	5- 8	6 1/2	- 1/8	-1.8
A	GRANITE MGT	0- 11	5	0	0.0
A	GREYHOUND COMPUTER	5- 11	5	- 1/8	-2.4
A	ITEL	0- 12	8 5/4	- 3/8	-4.1
N	LEASCO CORP	12- 24	15 1/2	+1	+8.0
O	LEASPAC CORP	0- 15	6	0	0.0
O	LECTRO MGT INC	1- 4	1 3/8	- 1/4	-15.3
A	ROCKWOOD COMPUTER	2- 7	2	- 1/8	-5.8
O	SYSTEMS CAPITAL	3- 20	8 7/8	+ 1/8	+1.4
N	U.S. LEASING	0- 55	29	- 7/8	-2.9

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID

(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

COM-STUTE
Year Ended Sept. 30

	1972	1971
Shr Ernd	$5.79	$1.93
Revenue	312,445	236,322
Earnings	16,916	5,050

EDP RESOURCES
Six Months Ended Oct. 31

	1972	a1971
Shr Ernd	$.64	$1.37
Revenue	7,826,647	7,322,913
bSpec Cred	240,560	19,179
Earnings	637,362	1,035,594

a-Restated to reflect adjustment for additional charges to operations for fiscal 1972. b-In 1972, gains on purchase of company's 8-1/2% secured equipment notes, purchase of 7-7/8% debentures and sale of equipment; in 1971 on purchase of 8-1/2% notes.

TAB PRODUCTS
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.25	$.12
Revenue	5,180,000	4,197,000
Earnings	209,000	106,000
6 Mo Shr	.47	.26
Revenue	10,408,000	8,450,000
Earnings	390,000	223,000

COMPUSCAN
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.12	.....
Revenue	1,408,000	$457,000
Earnings	166,000	(107,000)
6 Mo Shr	.20	.....
Revenue	2,453,000	601,000
Earnings	273,000	(459,000)

CAMBRIDGE MEMORIES
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.09	.....
Revenue	1,896,580	$659,705
Tax Cred	57,000	.....
Earnings	116,099	(31,782)

ALANTHUS
Three Months Ended Nov. 30

	1972	1971
Shr Ernd	$.27	$.02
Revenue	1,567,972	271,766
Tax Cred	49,173	.....
Earnings	210,609	10,236

DATA CARD
Three Months Ended Dec. 23

	1972	1971
Shr Ernd	$.10	.....
Revenue	1,335,000	$490,000
Disc Op	(13,000)	(24,000)
Earnings	151,000	(31,000)
9 Mo Shr	.16	.06
Revenue	3,442,000	1,829,000
Disc Op	(60,000)	(54,000)
Earnings	266,000	82,000

DATA GENERAL
Three Months Ended Dec. 23

	1972	a1971
Shr Ernd	$.46	$.22
Revenue	9,627,000	5,316,000
Earnings	1,252,000	595,000

a-Restated.

URS SYSTEMS
Year Ended Oct. 31

	1972	a1971
Shr Ernd	$.52	.....
bRevenue	27,654,371	$24,059,343
Disc Op	.....	(410,604)
Spec Item	c100,541	d(633,533)
Earnings	1,807,985	(350,635)

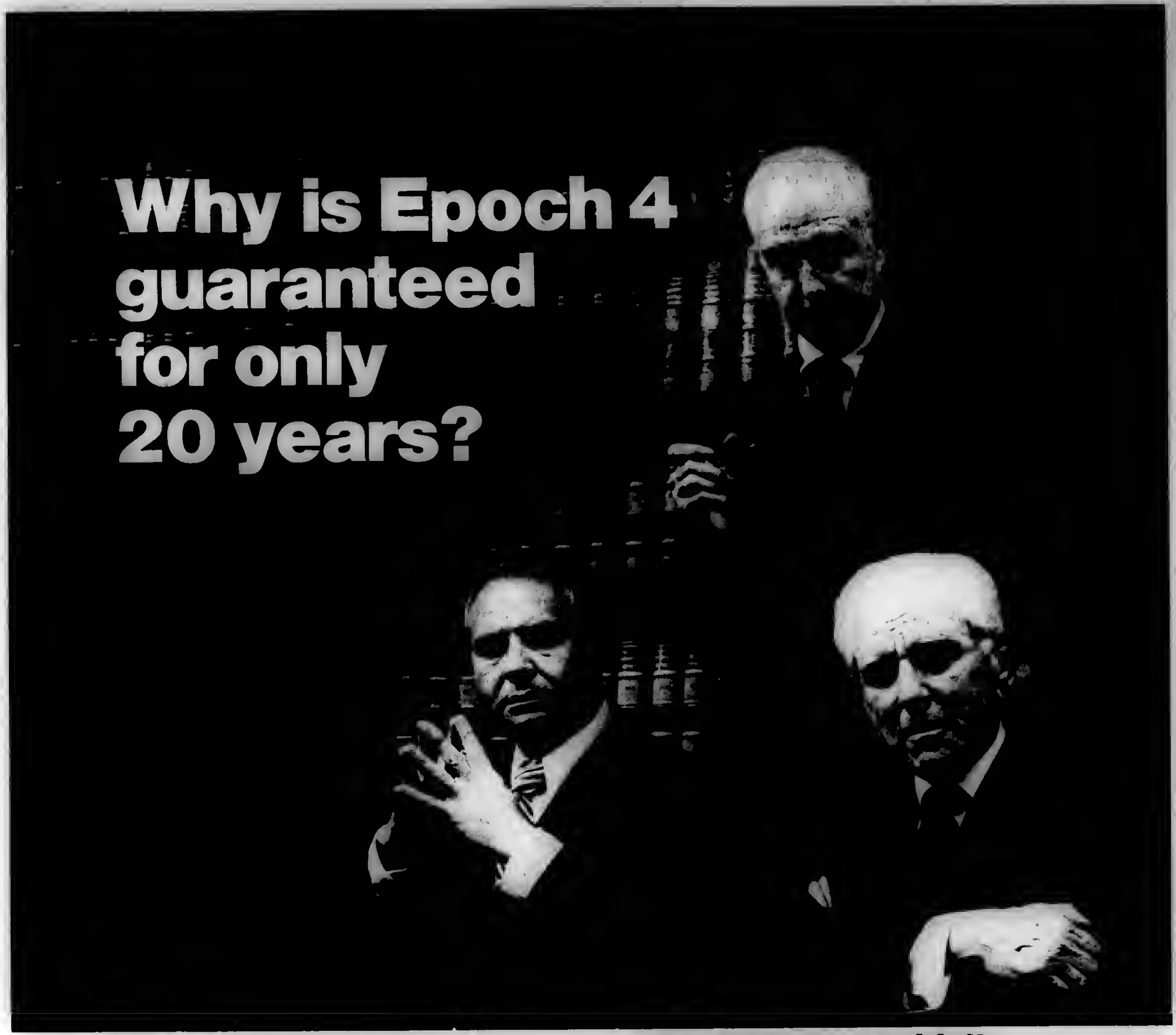
a-Restated to reflect mergers on a pooling-of-interests basis. b-From continuing operations. c-Credit; tax loss carryforward less other charges. d-Debit; consists of writeoffs of certain deferred charges, capitalized development and loans relating to the computer software field.

COMPUDYNE
Year Ended Sept. 30

	e1972	1971
Shr Ernd	$.16	.....
Revenue	22,967,653	$22,337,166
Spec Cred	b386,910	.....
Earnings	712,314	(1,057,200)
3 Mo Shr	.06	.....
Revenue	5,836,413	6,247,245
Earnings	245,267	(322,566)

e-Preliminary. b-Tax loss carryforward and discounted debt prepayment.

SYSTEM/3 PRODUCTS
ISC/PRYOR COMPUTER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Our lawyers wouldn't let us say "forever."

We figure a 20-year warranty will make our point, even if we can't legally say "forever." *Epoch 4's new coating is so tough, so flexible and resilient, that it withstands the kind of handling that would instantly kill a conventional computer tape.*

Put another way, Epoch 4's new coating is 8000% tougher than the best competitive products on the market.

We're serious about the 20-year warranty. Because we're serious about Epoch 4's fantastic performance.

Isn't it time you got serious about eliminating dropouts? Isn't it time you got serious about Epoch 4?

GRAHAM
MAGNETICS
GRAHAM, TEXAS 76046

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

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NEWSPAPER

NEWS IN BRIEF

IBM 370 Lease Has No Overtime Charges

WHITE PLAINS, N.Y.—IBM has announced a 48-month term lease plan—with no overtime charges—in addition to standard lease and purchase plans now being offered.

The plan covers the virtual storage central processors of System 370 models 125, t35, 145, 158 and 168 and their associated multisystem units, channels, consoles, power and coolant units.

The monthly charge under the term lease plan is the same as the standard monthly lease charge for these machines, but the machines can be used for an unlimited amount of time at no additional monthly charge, the firm said.

IBM said the new plan will benefit customers with high utilization of data processing equipment. Users of teleprocessing and data base data communications systems will now be able to run their applications round-the-clock at no added rental cost.

The term lease plan is being announced for the U.S. and Canada.

Hawaii to Double-Check Election Results Programs

HONOLULU – Who checks the election results here? The same program that produced them in the first place. A loophole in auditing? Yes, and according to Gerald L. Mann Jr., director of the city's Department of Information Systems, it's one quite common in other cities he's contacted.

But a legislative bill being proposed here promises to end nightmares of undetected program errors.

Currently, election results are processed by an outside computer service. The only audit made on the outside program is to rerun data from selected precincts using the same program and computer.

If the state legislature approves the proposal, the city will write its own Cobol election results program which will be run using selected precincts to check on the outside firm's program. The program will also be run on a different computer.

On the Inside This Week

Interactive 'Basis/70' Solves Special User Needs *–Page 10*

CIA Would Make Public Telex/IBM Suit Papers *–Page 21*

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Rating High on CAI

Students in the "Model Schools for Model Cities" program in Los Angeles have their own terminals to converse with a time-sharing system. The students averaged a gain of 1.4 years in mathematical reasoning ability after the first four months of using computer-assisted instruction, school officials said. Story on Page 3.

'Packaged' B700s Have S/3-Like RPG, Key Entry

By Don Leavitt
Of the CW Staff

DETROIT – Burroughs has filled the gap in its small computer series with two B700 systems. Introduced here last week the B700s have from 32K to 48K bytes of core and fall between the already available L8000 Series minicomputers and the B1700.

Described as a "perfectly valid" alternative to the smaller IBM System/3, the B700 combines some of the design concepts of the B1700 with an ease of operation Burroughs feels is necessary for the less sophisticated user.

The B700s provide operator communications with the system through the direct entry keyboard similar to that on bookkeeping machines. Other media, however – disk, tape, cassettes, paper tape and punch cards – are available for large-scale jobs.

RPG Like S/3's

RPG, similar to IBM RPG II, and Cobol are available as languages, but Burroughs has developed and is stressing a series of business management systems (BMS), packaged programs for specific businesses, for those users with no in-house programming capabilities.

In the B700's microprogrammed processors, hardwired logic is replaced by interpreter micro instructions. A new feature called Dynamic Interpreter Configuration, which is controlled by the BMS programs, is said to optimize the efficiency of the interpreter micro instructions so that main memory is allocated only to those resources needed for a given program.

This results in the largest possible area of memory made available to the user programs and increases system throughput, the firm said.

The interpreter also contains the System Control Program, which monitors and directs systems activities. It includes an interrupt system, an imbedded I/O manager, and all the "soft" controllers for the I/O processors.

Since most of the functions of the usual I/O controller are performed by software, Burroughs explained, the principal task of the hardware device is to translate from the I/O media's code to Ascii code which is the internal machine code, and vice-versa.

(Continued on Page 3)

Money Men Reappraise 360, Find $ Value Zero in 1978

Special to Computerworld

NEW YORK – Peat, Marwick, Mitchell & Co., a major auditing firm employed by several large third-party leasing firms, has reappraised its policies on residual values of System 360s and related peripheral equipment, according to its Management Information Letter 1973.3.

The letter, signed by J.P. Cummings, said that third-party computer leasing companies must reduce the asset value of 360 equipment and peripherals to zero not later than Dec. 31, 1978. At the same time, the value of all enhancements should also be totally recovered, the letter noted.

The firm recommended as an intermediate step that 360 values after Dec. 31, 1975, should be carried at no more than 15% to 25% of the original cost.

In addition, the leasing companies are asked to consider their customer base, marketing capability, the terms of leases and the accuracy of the company's financial forecasts. To adopt a maximum undepreciated cost of 25% by Dec. 31, 1975, a company must be strong in each of these items, according to the auditing firm.

Peat, Marwick, Mitchell & Co. includes Itel Corp., Computer Investments Group, Data Processing Financial & General and Rockwood Corp. among its clients.

Users Not Directly Involved

The evaluation guidelines in the management letter need not necessarily apply to users of purchased equipment. The utility of the equipment does not change, and if the user has a known workload so that he will not be remarketing the equipment, there need be no direct impact on his evaluation of the equipment.

One of the curiosities of the report is that enhancement programs, which have been developing the power of the 360, appear to be regarded as a contributory cause of the change in policy, apparently considered as a liability rather than an asset.

The auditing firm commented that some lessors have been compelled to step up their enhancement programs by installing technologically advanced peripheral equipment to make the systems more attractive to new or old lessees, and that this involves the problem of remarketing the peripherals replaced.

Apparently based upon this deduction the firm said peripherals which enhance the system should be assigned a maximum useful life of five years, provided it is neither beyond 1978, nor beyond the remaining useful life of the system to which it is connected.

The policy regarding 360 enhancements which do not consist of peripherals, or which do not cause replacement of other owned equipment – such as the CHCS Model 30 Accelerator, or the over IBM limit add-on core systems – appears not to be directly covered in the statement.

However, it would appear that any attempt by a Peat, Marwick client to get its approval for such enhancements retaining value beyond 1978 would have to be very well-documented.

Peat, Marwick, which has previously been approving straight-line depreciations

(Continued on Page 2)

Private Line Charges

Bell Asks Rate Revision

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T has asked the Federal Communications Commission for approval to revise its private line rates to compete with the specialized common carriers. The rates would affect more than 19,000 private line users.

Can Bell cost-justify its proposed changes? Story on Page 21.

Under the proposal Bell would set up a two-level rate structure based on high-density and low-density routes. For users along high-density routes, monthly rates would drop from $3/mile to 85 cent/mile, while rates in low-density areas would be increased.

Bell defines high-density areas as geographic centers where it has the facilities to terminate 1,200 or more voice channels from its L-carrier transmission routes. These 382 high-density centers in many cases coincide with the areas where the specialized carriers such as Microwave Communications Inc. plan to provide service. All others would be classified as low-density centers.

The high- and low-density rates would apply to interstate voice-grade private line services of more than 25 miles. On smaller "short-haul" links AT&T proposes higher rates based on several phased increases.

How Dense?

While the exact effect of the proposed rate restructuring will depend on the density classification of the user's routes, some of the increases will be tied to higher end termination charges. Current private line users pay a service terminal charge at each end of their links. This charge is now $10/mo for "foreign" ex-

(Continued on Page 2)

Bell Asks FCC to Approve Private Line Rate Revision

(Continued from Page 1)

change customers and $15/mo for other private line users.

The service terminal charge will be split into two rates that would apply at each end of the user's line. A channel terminal charge would cost $35/mo for a high-density location; $15/mo for a low-density location; and $3/mo for a short-haul link.

In addition, the user would pay a proposed station terminal charge of $25/mo on both high- and low-density locations. $10/mo for FX short-haul; or $15/mo for non-FX short-haul lines.

Under the present private-line tariff no. 260, all private line users pay the same monthly rates according to distance. The rates are $3/mile for the first 25 miles; $2.10/mile for the next 75 miles; $1.50/mile for the next 150 miles; $1.05/mile for the next 250 miles; and 75 cent/mile for each additional mile.

This system would be scrapped in favor of three new monthly rates. The user would pay 85 cent/mile for high-density routes; $2.50/mile for low-density routes; and $3/mile for short-haul routes. The short-haul monthly rate would later be raised to $3.75/mile, AT&T said.

For users in a low-density area, the higher rate would apply only for the distance required to the nearest high-density area. And the lower high-density rate would apply for the remainder of the route, so long as the lines remained in high-density areas.

On a typical 250-mile route a user who now pays $488/mo would pay $333/mo if he were in a high-density area at each end of his link. If the same user included one high-density and two low-density links in his network, the rate would be $518/mo, according to AT&T estimates. The specialized carriers would charge about $367/mo for full-time service and $304/mo for part-time service along the same route, a Bell spokesman estimated.

How Much Pain?

Although the private line charges will be restructured, overall changes will not cause undue hardships for the typical user, AT&T said. The crossover point at which a network charges under the proposed rates equals charges under the existing rates is at about 3,000 miles, AT&T said.

AT&T said it would also change its private line tariff to provide for the "resale" of its lines by value-added carriers such as Packet Communications Inc.

Stating that it would not oppose the PCI application to the FCC [CW, Feb. 7], an AT&T spokesman said the value-added applicant could operate as a non-regulated customer if the tariff change is approved by the FCC. The PCI application had asked for status as a regulated carrier.

If the tariff changes are approved, the Bell System will provide intercity links to the specialized common carriers under contractual agreements, an AT&T spokesman said.

If the FCC approves the AT&T changes, it will take at least six months before the rates could go into effect, an FCC source estimated.

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POSTMASTER: Send Form 3579 (Change of Address) to Computerworld Circulation Dept., 797 Washington St., Newton, Mass. 02160.

Money Men Reappraise 360, Find $ Valuation Will Be Zero in 1978

(Continued from Page 1)

with residual values up to 10 years, said the accounting policy had been based on five occurrences during 1972. These are:

- A failure by leasing operations generally to achieve the profits projected during 1971 and 1972.
- The cost of enhancement programs particularly in the peripheral equipment area.
- The introduction of IBM virtual memory systems.
- An apparent reduction in the IBM cycle-introduction, production, phase-out-cycle on System 370 compared with that of System 360.
- A consultant's forecast that by the end of 1975 fewer than one-half of the system 360s installed today will remain operational.

Peat, Marwick recommended that if the implementation of the policy results in a forecasted loss in any future period for lessors, the prospective losses should be spread out over the profitable years preceding the period of anticipated losses by the provision of reserves, and that if the implementation of the policy results in a forecasted cumulative loss through Dec. 31, 1975, the loss should be recognized immediately as an additional charge for depreciation.

User Sues Burroughs on B4700

CHICAGO – Burroughs Corp. has been sued by a user who alleges that its B4700 system failed to operate properly and that software support was lacking for the system.

Advance Schools, Inc., a Delaware corporation, filed its $1 million damage suit in the Circuit Court of Cook County charging that Burroughs failed to live up to the "warranties and representations" it made in selling the system and that Advance "was required to expend substantial sums of money in an effort to correct the situation caused" by this failure.

The basis for claims of damages comes from the downtime resultant from the unit, according to the suit.

What appears to have happened is that Advance Schools, unhappy with the performance of its computer, withheld payments allegedly due Burroughs even after Burroughs had acted to rectify the situation.

Advance's contention was that Burroughs owed it credits against the lost time and efforts.

In an attempt to get Burroughs to respond to its demands Advance sent a brief of a potential lawsuit to Burroughs, hoping the firm would allow Advance the credits it sought in return for the dropping of the suit.

On Jan. 26, Burroughs then sued Advance for $130,000 for "premature, wrongful termination" of its contract.

Advance agreed to upgrade to the B4700 system under the terms of the original contract (except for a higher monthly rental), the Advance suit said.

But, the suit continued, "contrary to all the defendant's warranties, representations and promises, the aforementioned electronic data processing equipment was not rendered fully operational and capable of performing all electronic data processing required in connection with plaintiff's operations."

CW Opens Washington, D.C. Bureau

WASHINGTON, D.C. – *Computerworld's* new Washington, D.C., bureau has been opened in Suite 1129 of the National Press Building (Zip 20004).

The office, under the direction of E. Drake Lundell Jr., will concentrate on congressional and agency activities that affect the computer user and the computer industry. These activities will include such items as privacy debates, procurement activities, federal standards actions and governmental applications that might have wider application to the computer community at large.

The telephone number for the new office is 202-638-0901. The office can also be reached through Telex number 89-544.

All news releases sent to the new office should also be sent to the newsdesk at CW's Newton, Mass., headquarters office.

Lundell will continue to edit CW's computer industry section in addition to his duties as chief of the Washington Bureau. Molly Upton, in the Newton office, will be assistant editor of the industry section of the paper in addition to her duties as editor of the financial section.

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Burroughs Packaged B700s Have System/3-Like RPG, Key Entry

(Continued from Page 1)

The B700 is a single program machine. However, an interrupt-and-resume feature allows the operator to break into extended jobs for inquiries for an urgent management report. Pertinent data from the original job, including memory and register contents, is stored on disk cartridge. When a priority job is finished, the information is retrieved and reloaded and the system resumes processing at the point of the interrupt.

Part of the BMS software includes parameter-controlled Audit Entry programs which check direct entry information for accuracy of preparation and transmission to the system. Additionally, Audit Entry provides a written law for auditing purposes.

AE300 Off-Line System

As volumes increase, one or more free-standing Burroughs AE300 programmable systems can be added. Input through the AE300 keyboard is verified against a control program before being recorded on tape cassettes for subsequent loading into the B700.

Two central processors are available. The B705 processor speed is .5M cycle/sec. Main memory read/write cycle time is 1 μsec for two bytes.

The B711 processor speed is 1M cycle/sec. Main memory read/write cycle time is again 1 μsec for two bytes.

Disk cartridge drives available with the B700 have an average data access time of 80 msec including latency, transfer rates of 1.55 Mbit/sec and capacities of 4.6M bytes or 9.2M bytes.

The systems may also include magnetic tape cassette drives, on which each cassette may contain 240,000 characters. In addition, users may include one 9-channel, 800 bit/in. conventional mag tape unit.

Available line printers range from a chain printer which prints at 90 line/min to a train printer which goes at 400 line/min with a 48-character set.

Two 80-column card readers may be attached to a B700 system; 96-column card equipment includes a simple reader or a full-blown reader/punch with up to six output stackers. This unit can be used off-line as a data recorder or a multifunction card machine.

Paper-tape reading and punch peripherals compatible with all industry standards are also available.

The B700 system sells for between $42,000 and $110,000 or leases for $950 to $2,600/mo. Average sale price, Burroughs estimated, will be about $50,000.

The BMS software will be separately priced as will be the training. Perhaps typical of BMS prices is a system for wholesalers and distributors which will have a one-time cost of $7,500. Training will cost $2,000.

CAI Students Want More

LOS ANGELES – The Los Angeles Unified School District is working to solve the problem of underachievement and absenteeism for 3,000 students in Watts junior and senior high schools, through the use of computer-assisted instruction (CAI).

The key to the program is individualism. One time-sharing system converses directly and individually with 32 students at once. Each student is addressed by name.

In turn, each student tells the computer, via his terminal, what subject he wants to study and even how difficult he wants the material to be.

Results of their progress with the CAI programs are stored for later analysis by the teacher. Periodic examinations show dramatic success for students taking remedial mathematics, the only CAI course offered the first year of the program.

Their average grade level in mathematical reasoning increased 1.4 years, after four months of CAI. Their computational skills increased eight months, also after four months of CAI. At this point, attendance had improved over 20%, school officials said.

Terminal classes, which this year include reading and language arts, generally last 15 to 30 minutes and are designed to supplement, not replace, the teacher.

Approximately 80% of the total computer time is devoted to remedial exercises. Twenty percent of the time is for enrichment exercises.

The program involves six schools. Each one has a staff of five: one teacher-coordinator and four teaching assistants, and is equipped with a Hewlett-Packard 2000C. Peripheral equipment includes 96 teleprinters and 96 CRT terminals.

The school district finances 30% of the program's costs. The Housing and Urban Development Agency (HUD) pays the rest through a Model Cities Program.

Cobol Conformance Review Chance Lost

Special to Computerworld

WASHINGTON, D.C. – A chance for a general review of the situation regarding implementors' conformance with Cobol specifications was lost recently when the Conference on Data Systems Languages (Codasyl) Executive Committee abandoned attempts to organize the annual general meeting. The abandonment apparently occurred because no member of the executive committee volunteered to make the arrangements.

Control of Codasyl, however, is not affected by the dropping of the annual meeting. Codasyl control remains in the hands of the executive committee which elects its own chairman annually at the beginning of the year, unlike corporations where the directors are elected at the annual meeting.

The meeting, which was to have taken place here May 15, would have reviewed various recent developments. In addition, it would probably have considered the situation of Cobol conformance in the light of the recent abandonment of the Ansi audit routines which were made available in 1968.

Bob Barton, Honeywell Information Systems, assured the 1971 annual meeting that the audit routines were working and that they would make the Cobol language "more transferable." He also told the meeting the X3 committee would review on a quarterly basis conformance reports from all the implementors, based upon the use of the audit routines, and that these reports would be made public, if possible.

However, the current chairman of the operative X3 Committee recently reported that the audit routines are not working, and that the task may never be completed.

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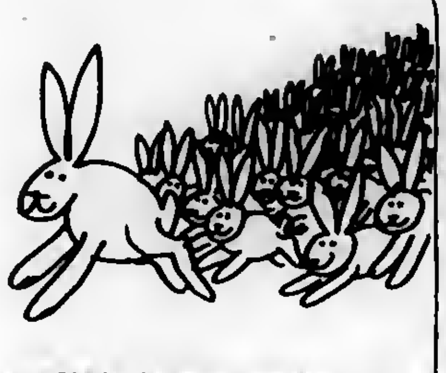

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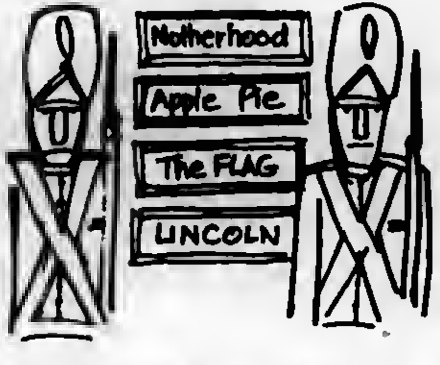

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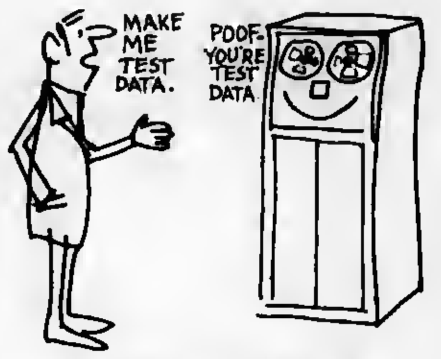

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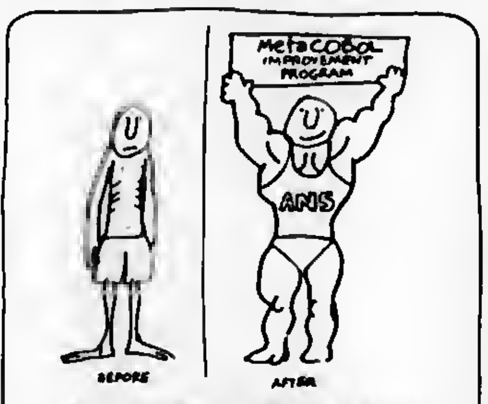

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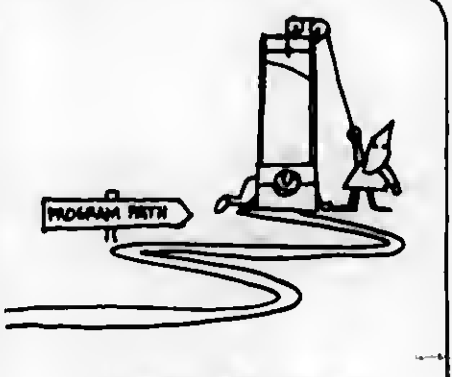

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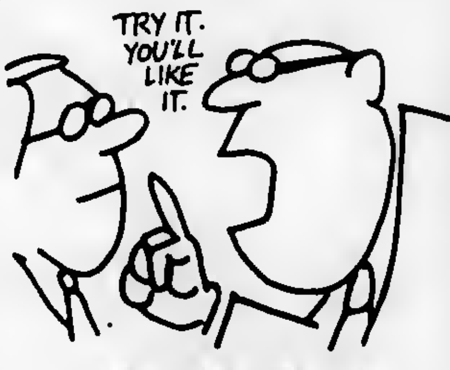
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Worldwide Spy Net on the Horizon

WASHINGTON, D.C. – The Defense Intelligence Agency plans to begin running tests this spring on an Arpanet-like system to link all of the defense-sponsored Intelligence agencies into one worldwide network.

The system, which carries the title of Experimental Analysts Station, will use PDP-11/45s as a front-end device for wide range of different computers, but primarily for Honeywell and IBM systems used in the network.

The hardware in the system will be completely transparent to the user, Air Force personnel have said, which will allow a user with IBM equipment to call for information from other computers in the network without any problems.

Presently, Bunker Ramo is configuring the system and is writing the software for it – software which the developers at Rome Air Development Center say will also be transparent to the user.

One of the objectives of the network, besides allowing for the internetting among the different systems operated by Defense spy agencies is to allow for distributed data bases.

For example, in the system any computer or even one of the 11/45s will be able to access information kept in 2314 disk units at any other center in the network without going through the computer at that site.

To update information in one of the local data bases, however, the user would have to go through the computer at that site.

Ideally, the system will also be completely hardware transparent to the user, the developers indicated.

They want to make it possible for any analyst using the system to be able to call for information without having to use any special protocols or have any programming knowledge in order to access a computer at a different site.

Full Communications Processor 'Best Bet' for Terminal Mixing

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Data communications users should consider getting true communications processors as preprocessors for their systems and not just controllers, according to Maj. Glen Vincent of the Defense Intelligence Agency.

The major reason the user needs a full communications processor, he told the Computer Caravan/73 recently, is because it gives him more flexibility in his terminal selection task and lets him mix more terminals in his communications systems than do many front ends of the controller type.

In addition, it also gives the user some flexibility when he wants to replace his host computer with another host machine.

"With the true processor," he said, "the host machine can be replaced without having to replace the communications processor or network."

For this same reason, Vincent said the user was often better off getting a communications controller from some firm other than the mainframe supplier, so that if the mainframe was replaced the entire communications network would not have to be.

In addition, Vincent noted the true front-end processor could relieve the central computer of a great deal of overhead work, adding this could run up to 40% of the central processor's time in some installations.

"In some cases where the CPU is overloaded, this savings in CPU time might be a reason in itself for going to a communications processor without any of the other factors having to be considered," he stated.

However, he noted, most central computers are today being underutilized, so this factor might not be the deciding one in present installations.

A further reason for getting such a system, he claimed, could be that the communications processor allows the user to do some things a controller will not allow.

For example, it could ease a user's connection with a network of other systems, he said, and it would also be used for some local work such as printing operations or local small-scale processing.

In addition, a communications processor allows a user to offer the people using the system some extra services while the host computer was down for maintenance or for some other reason.

Reliability, Cost Brought One User To Independent Line

WASHINGTON, D.C. – Most of the reasons for using independent peripheral equipment revolve around the price savings the user can get from the independent's gear when compared with the same piece of equipment from IBM.

But at least one user at the Caravan here got into the world of the independents because of the increased reliability available with that type of equipment.

Dave Whitestone, DP manager at Potomac Electric Power Co., stated that both reliability and the cost factor led Pepco toward independents.

In 1969, he said, the firm was experiencing reliability problems with its IBM 2401 tape drives.

Pleasant Dreams

After an evaluation, Pepco turned to the Ampex tape drives that replaced the 2401s. In addition to providing Pepco with savings of more than $5,000 yearly, he indicated the increased reliability with the Ampex units, when compared with the IBM ones, would have been enough to justify the switch even without the savings.

The only problem with the Ampex drives, he noted, was when the firm upgraded to a 360/50 from a 360/40 and IBM claimed it could not run its diagnostics on the new system from the Ampex tape drives.

But after some negotiating, Pepco was able to convince IBM to use the independent drives for the installation checkouts.

Happy with the tape drive experiment, Pepco then replaced IBM large-core store with extended memory units from IBM. With this move, the utility found it could get twice the capacity, and twice the speed, for only a 50% increase in price.

Today the organization presently has independent disk drives in addition to the tape drives and memory units – both single-density and dual-density units.

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Rail Freight Yard Routes Take Direction From Mini

SELKIRK, N.Y. – The Penn Central Railroad's Alfred E. Perlman Yard is one of the busiest freight train classification yards in the U.S. And two minicomputers make it one of the safest.

The minis verify the route a switching engine will take inside the yard, and prevent other engines from being on that route or conflicting routes.

The freight yard is divided into three yards: receiving, classification and departure. Individual freight cars, ready to leave for their destinations, are shunted onto the appropriate track, where they join other cars going to the same place.

When a train is to be formed, a yard conductor in a tower overlooking the yard directs one of the switching engines to a classification track. He has the cars on that track transferred to the track in the departure yard where the train is being assembled.

The yard conductor must select the route the switching engine takes to get from the classification yard to the departure yard. It is this route the Data General Nova computer verifies and secures.

In practice, an operator selects one of the yard's 55 routes, and the Nova, through hard-wired connections to the track switches, checks it to see if it is available. If there already is a train on the route, the yard conductor can either select an alternate route or wait until the train is off that route.

If the route is clear, the dispatcher pushes a button and the mini activates that route by moving the switches into the proper position and locking them. The Nova then checks to make sure all the field hardware responded correctly to the command. If a device did not respond, the mini notes it as an alarm condition and notifies the yard conductor.

If another yard conductor wants to use the same route, the mini will detect the locked switches and tell him the route is unavailable. As the switching engine pulls a line of cars over a switch, the computer detects the movement and releases that segment of track back to the yard conductor's control.

Childbirth Data May Set Stage For Study on Mental Diseases

WASHINGTON, D.C. – A comprehensive 14-year study of childbirth is nearing completion but the six million pieces of data stored on computer tapes may set the stage for a second study on the causes and cures for such diseases as mental retardation and cerebral palsy.

The aim of the original study, sponsored by the National Institute of Neurological Diseases and Stroke, was to see how the events of pregnancy affected the child's later physical and mental development. Information on 56,000 mothers and 40,000 of their children during the first eight years of life was stored on a computer.

One of the early findings included the relationship of the mother's weight gain to the baby's birth weight which is known to affect the baby's future health; doctors no longer restrict a mother's weight gain during pregnancy as they did prior to this study.

When the study is completed, the data will be used for other research projects. Doctors believe there are clues hidden in the childbirth data for the cure and prevention of neurological diseases such as mental retardation and cerebral palsy.

Mini Heralds POWs' Return

IRVINE, Calif. – When the first returning prisoner of war stepped off the plane at Clark Field, a TV camera focused in on Capt. Jeremiah A. Denton Jr. of Virginia Beach, Va. But the instantaneous biographical information about Denton came from half a world away where a minicomputer sent subtitle descriptors across the nation's TV screens.

Hours before this historical arrival, some 590 names had been read into a Varian 620. Full names, rank, service and related information were provided by the government. But individual order of arrival could not be anticipated.

As the visual and audio signals came off a communications satellite, a keyboard operator at the TV studio in New York City listened to the name announced at Clark Field. He immediately keyed in the first three letters of the last name, "DEN." Out came the full text on Jeremiah Denton, mixed electronically with the signals from the Philippines, and transmitted nationwide by ABC network.

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News Wrapup

Airport Subway System 'Stalls'

SEATTLE – The Sea-Tac airport automated subway system [CW, Oct. 25], ready to roll since late 1972, has stalled on the tracks of legality, waiting for several contract disagreements to be settled.

The Port of Seattle commissioners have agreed to pay $5.9 million for the underground transit system. But Westinghouse Electric Corp., which built and installed the highly computerized system, wants an additional $650,000. Most of the difference stems from a $400,000 disagreement on contractual "escalation costs."

That disagreement is coupled with ongoing, still unsettled negotiations between Sea-Tac and the airlines over higher lease fees the airport wants to charge. The two-loop subway system serves two satellite passenger terminals; the airlines are reluctant to pay increased fees for the use of the satellite centers.

No starting date for the Sea-Tac system has been predicted.

3,000 Dads 'in Debt' Due to Keypunch Error

SACRAMENTO, Calif. – A keypunch error in the county DP center here resulted in 3,000 erroneous bills to fathers who had already made monthly child support payments.

According to county officials, the computer was making its February run to check for all payments due in January. But an operator punched in "March" instead of "February" so the computer checked for all February payments.

Naturally, there were no February payments yet, so the computer sent delinquency notices to 3,000 fathers.

The district attorney urged all fathers who received the notices, which threatened legal action within five days, to ignore them.

Czechs Ask Hawaiians for Conversion Help

HONOLULU – The city Department of Information Systems here received an unexpected request for programming help recently – from Prague, Czechoslovakia.

The Czechoslovakia Institute for Regional Planning wrote to its counterpart here for help in converting its Symap program (which prepares data for plotting) from 360/40 OS to DOS.

The conversion was necessary, the Czechs wrote, for "financial and time reasons," due to a reduction from 256K to 110K.

Honolulu sent the Czechs a copy of its DOS version of Symap along with source listings, notes on the conversion and "alohas."

Milos Stepanek, director of the Czech Institute, wrote that he learned Honolulu had the program he needed through Harvard's Laboratory for Computer Graphics and Spatial Analysis.

Dartmouth Computer Achieves 99.8% Uptime

HANOVER, N.H. – Computers sometimes take scheduled vacations for maintenance, etc., but hopefully, they rarely take unscheduled vacations, i.e., breakdowns. The Kiewit Center computer at Dartmouth College is no exception.

In fact, "of the 500 hours of time-sharing scheduled for the month of December, 99.8733% was available to users. The lost time totaled 38 minutes," according to Dr. Thomas E. Kurtz, director of the center.

In all of 1972, the Dartmouth Time-Sharing System missed only 60 hours of its 6,000 scheduled hours.

System uses ranged from homework problems to computer chess games to financial projections for the college's administration.

Computer Prediction of Heart Disease Seen

NEW YORK – A heart specialist predicted that within 10 years computers will be used to predict the onset of heart disease.

"I believe," said Dr. Charles A. Bertrand, chairman of the cardiovascular committee of the New York State Medical Society, "that these predictions will be accurate in the majority of patients above the age of 40."

Bertrand's prediction was just one of 30 placed in a time capsule by the New York Heart Association here.

Will the prediction come true? One prediction made 10 years ago at a similar ceremony did come true – a successful human heart transplant.

DP Specialist Named Railroad Man of Year

CHICAGO – A computer specialist has been named the railroad industry's Man of the Year for 1972.

James W. Germany was selected by *Modern Railroads* magazine because "the emergence and growing effectiveness of comprehensive, sophisticated, computerized management information and control systems" is revolutionizing the industry.

Germany supervised the installation of a $22-million railroad computer system for the Southern Pacific. The SP offered the system free to other railroads and it is now being used by the Union Pacific, is being installed on the Burlington Northern and is used with modifications by the Missouri Pacific.

'Cross at the Green and Not in Between'

PORTLAND, Ore. – In a world of law enforcement in which the computer plays a significant role, fugitives must watch every step they make – literally.

John R. Outlaw was cited for jaywalking here and was held while police made a routine check of their files.

The computer came up with an outstanding warrant issued over a year ago charging Outlaw with larceny in Kansas City, Mo. He was held awaiting extradition proceedings.

The Computer Caravan/73
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Pre-registration form on p.22

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Editorial

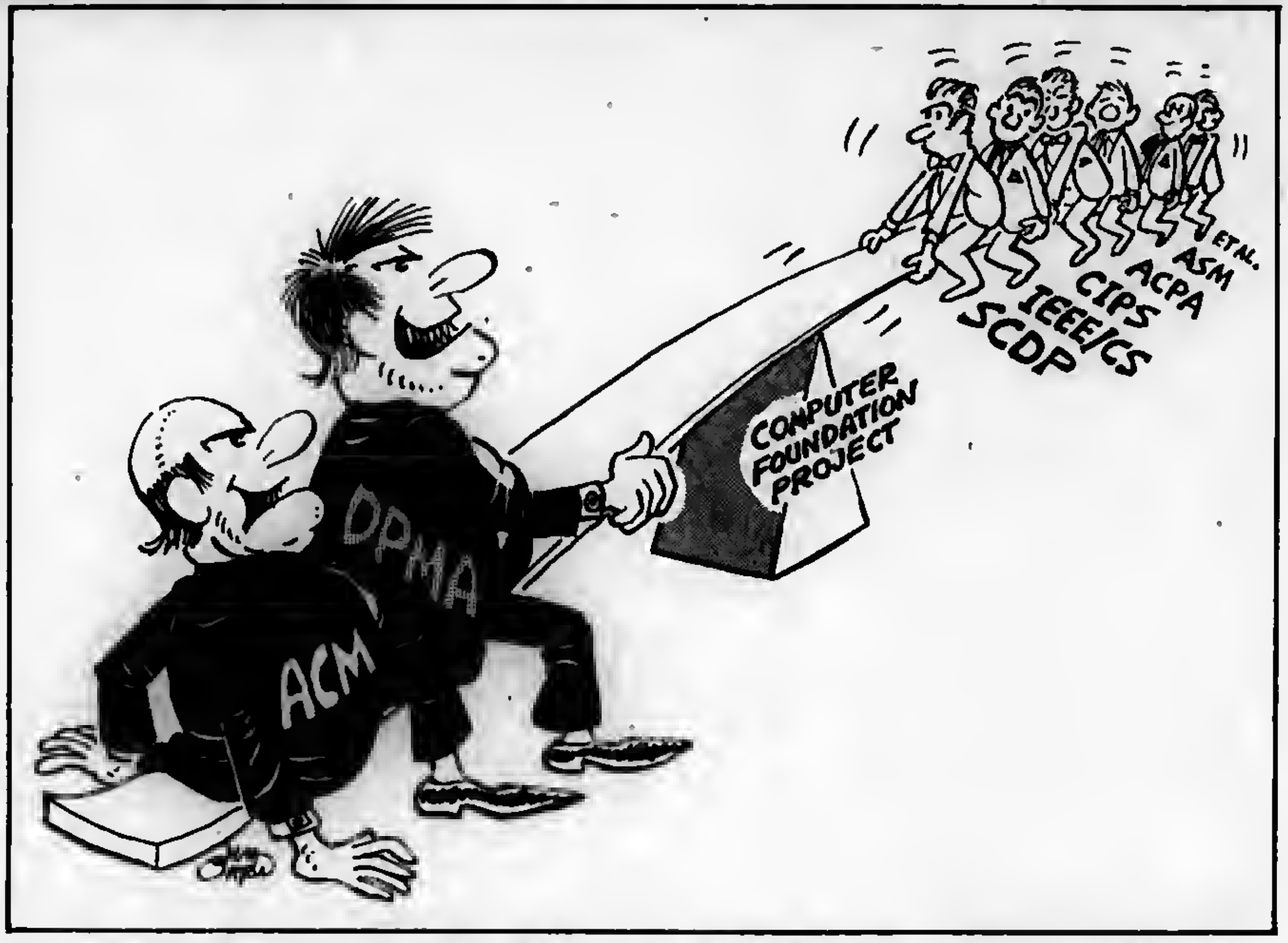
Off-Site Emphasis

IBM has served notice it will no longer provide CPU time for production work at its data centers.

At the same time it has renewed its commitment to support users with program testing at IBM installations. While attributing the move to the CDC settlement, the IBM announcement is also recognizing the increased sophistication of the user.

The prospective user is demanding more and more authoritative proof that the system he is contemplating will actually perform "as advertised."

If IBM data centers now plan to provide more off-site support to the user with program testing, benchmarks and other systems work, all users will benefit.



'So If We Don't Like the Way Things Are Going, We Can Always Stop Playing.'

Manage Yourself First Before Directing Others

Management

By Frank Greenwood, PhD

Working in a computer center would be fun if it weren't for the people.

Understanding people requires comprehension of the other person's idea of what will benefit him most – his private notion of what constitutes his own best interests. (See Gellerman's prize-winning American Management Association book, *Motivation and Productivity.*)

A person's view of his own psychological advantage depends upon his assessment of the environment, particularly as to power ("To what degree can I control it?") and reward ("Is it benevolent or harsh?").

For example, someone who expects much power over his environment and high rewards will probably drive hard for achievement. Another, also expecting much power to influence his environment, but with serious doubts about its rewards, will probably fight hard for money. A third, with low expectations as to both power and reward, will probably settle for a steady job.

True to Yourself?

Each of us is thus always following a sensible strategy to be oneself in the kind of world he thinks he lives in. It is more a matter of striving to be a certain kind of person than it is a question of having certain things.

If your computer operators, for example, believe they do not have a significant, self-respecting role, this may surface indirectly as excessive wage demands (because pressuring management recovers some of the dignity that has been denied).

To be an effective manager, support your subordinates psychologically. Standards and measurements, for example, are tools and not ends in themselves. Accordingly, subordinates should work in their own way (so long as the work gets done). Programmers who see their own ingenuity in the results are usually more productive than those who contribute little but their obedience to instructions.

This freedom from specific direction does not produce loafing – if general goals are set and subordinates help set them, actually participating in the decisions. This philosophy, which requires that you trust your people to work properly, usually results in high productivity (which is mostly controlled by your subordinates).

Freedom is usually more possible for systems analysts and programmers than it is for data conversion people and computer operators, however, because the technology tends to strap us to very specific requirements in operations.

The alternative – exercising control through authority – emphasizes job descriptions, standard methods, quota, budgets, etc. This philosophy usually results in greater direct control for you but at the price of lower productivity.

The antagonism of subordinates is a normal problem of leadership. Using your power with care and justice is usually the appropriate answer.

Since much depends upon our informal authority and because we can expect little help from the formal authority of our position in the hierarchy, the capacity to generate informal authority is important. Before promoting a programmer to lead programmer, for example, observe whether his associates now turn to him for advice and guidance. If so, he has established his informal authority and you probably risk little promoting him because you would simply formalize what is already a fact.

Possession of power often creates an appetite for more power, since power helps you achieve your own psychological advantage. Power plays soon consume your power, though.

It is seldom wise to invoke authority and to use compulsion, because it suggests that you are a weak leader. Using your ability to persuade is much better, since it builds organizational strengths.

One exception is probably when your authority is directly and openly challenged by a subordinate (typically in association with some kind of ultimatum). That may be the time to concentrate every ounce of authority you can on crushing the challenge.

Before you can manage others, you must manage yourself. Whenever – usually in times of urgency and stress – you are arbitrary, abrupt or less than considerate of the feelings of subordinates, of computer users or even of superiors, you are not managing yourself.

This does not mean a manager is timid or weak. He does indeed make the tough, difficult decisions, but he does so only after evaluating his own motives and feelings. Then he acts so as to achieve the installation's proper purposes and objectives, and not, say, to put a software programmer in his place.

Directing the activities of others is a complex part of the management function, combining leadership, motivation and guidance. It probably begins with the idea that you cannot direct others until you are willing to rely on them, to trust them.

(Frank Greenwood is director of the computer center at the University of Montana.)

Letters to the Editor

Giving Facts Clearly Or Grinding the Axe?

As a long-term reader of *Computerworld*, I have recognized a very strong bias against IBM in the news columns and editorials. The net value of the publication to me, however, is such that I have ignored this bias to a large degree.

I think it is obvious that Alan Taylor has had little or no experience as an IBM user. In fact, most of the criticism of IBM I detect comes from sources which certainly should be highly suspect.

I would like to make three very specific points. First, the Feb. 14 editorial urges IBM users who are dissatisfied with IBM performance to contact the Justice Department and inform them of instances where they have "been injured by illegal or pressure marketing tactics."

In all fairness it might be useful for CW to request users of all manufacturers to make an effort, since those of us who have used competitive equipment as well as IBM's know well the routine and comparative performances in the industry.

It is very probable that the Justice Department does not have the same insight. In addition, CW might urge IBM users who have been more impressed with IBM performance and can cite significant successes which were accomplished by IBM pressure.

In short, one would believe that CW is interested in presenting the facts clearly whether they favor IBM or not. Instead, it appears that CW clearly has an axe to grind, although the motive is not clear.

The article concerning the Telex-IBM suits on Page 29 of the Feb. 14 issue refers to sources that indicate what "may well be the IBM strategy."

Is it too much to ask of an objective reporter the general nature of that news source? I can understand reluctance to name names but one ought to know if the source is a Telex executive, a Justice Department attorney, an IBM competitor, etc.

The lead article of that issue on IBM maintenance markups indicates the same tendency to obscure the source of analysis and information which the reader has a right to know.

I believe an unbiased content analysis of CW would reveal that these two illustrations are not unusual in reporting on IBM.

My comments concerning CW are, of course, from the user's point of view and I have to recognize that CW may serve other interests.

If CW is not primarily focused on the EDP user, then I think we users have a right to know what interests are represented by CW.

Finally, I would like to add my voice to those who support a bundled IBM. For customer service, for sales effort, for maintenance support, non-competitive activity is reason for many to reject some of the data processing giants who like to make a profit at the user's expense while denying the users the opportunity to deal with the companies with whom we wish to do business.

No knowledgeable person believes that IBM "walks on water," and CW's articles, such as the article on maintenance, are very beneficial to the IBM customer. It would be more valuable if we could trust the source.

W.R. McCartin
Phoenix, Md.

Re: Point one, "IBM performance," is not accurate. The editorial states "illegal or anticompetitive marketing practices." Computerworld sincerely hopes that anyone with information beneficial to IBM will volunteer it to the large legal contingent defending IBM. Remember that the Justice Department has already decided what it wants – after all, it initiated the suit. It is now up to either the court or a consent decree type committee to settle the case.

Re: Point two . . . In this specific case, the source of the article is of little importance, as we explain the logic of the premise to the nth degree.

Re: Point three . . . Alan Taylor provided CW with copies of the depositions, IBM documents and other material he used to prepare his story. A bibliography is available to anyone on request. Ed.

How Deep Are DP's Problems?

Misforwarded Letter Sets Off Billing Controversy

The Taylor Report

By

Alan Taylor, CDP

Marilynn D. Evans moved from New York to Massachusetts four years ago. When she moved she gave the Post Office a forwarding address. Even so, she was surprised to receive a letter recently that had been forwarded from her old address.

She noted the letter was not for her, however, but for a Lewis Evans. It had been forwarded to her by mistake so she put it back into the mail.

That proved to be a mistake.

The letter was a bill and was apparently returned to the sender. In time it must have been received in the sender's data processing department. Someone there noted the new address, while ignoring the statement that the bill had been sent to the wrong person. A change of address card was then created and the computer files updated with the erroneous information that Lewis Evans now lived in Massachusetts.

In due time, the computer ran the monthly bills and dunning notices. One bill was addressed to the nonexistent L. Evans of Massachusetts. This was duly delivered by the Post Office to Marilynn Evans.

Although it was not addressed correctiy to anyone in the house, she opened the letter. She thought her son might be receiving unsuitable mail and she wanted to know about it. But the letter was not for her son.

It was a bill, claimed to be overdue, for a sewing machine. The sender was Singer Sewing Machines, in Long Island, N.Y.

Again, she returned the letter noting this had nothing to do with her and that there was no L. Evans at that address.

More Letters

But that was only the beginning. The monthly letters continued to arrive. The local Massachusetts Singer branch promised to look into the matter until it realized it was not a local account. The branch told her she would have to work with the New York people.

Already getting annoyed she phoned the Long Island office collect. It refused to accept the charges so no verbal contact was made between the parties involved.

Written contact continued.

One letter told her that Singer valued her so much it would be glad to extend her more credit for her needs! Needless to say, by this time the last firm she would go to for a sewing machine would be Singer.

Then she just started throwing the bills away.

This was how it stood in January 1973. Then came a new type of letter from another computer system – a debt collection agency.

A copy of the agency's bill is reproduced in Figure 1. The document:

- Unequivocally claims the addressee owes the specified amount.
- Talks about a "nationwide" service of the debt collection agency and by implication threatens the credit rating of Marilynn Evans, through the nationwide service.
- Demands that the payment itself be turned over to the agency, thus leaving the payee with no evidence of payment to any authorized person.

What Marilynn Evans will do now, I do not know. She will have to do something because the credit rating which is now being attacked belongs to her even though the bill never did. She does not think the fact that no L. Evans is at the address given will stop the credit-rating computers.

> *. . . "Our systems can be managed so easily by machines that human supervision of the actions taken on behalf of people has dwindled until, in many computerized systems, it is now nonexistent."*

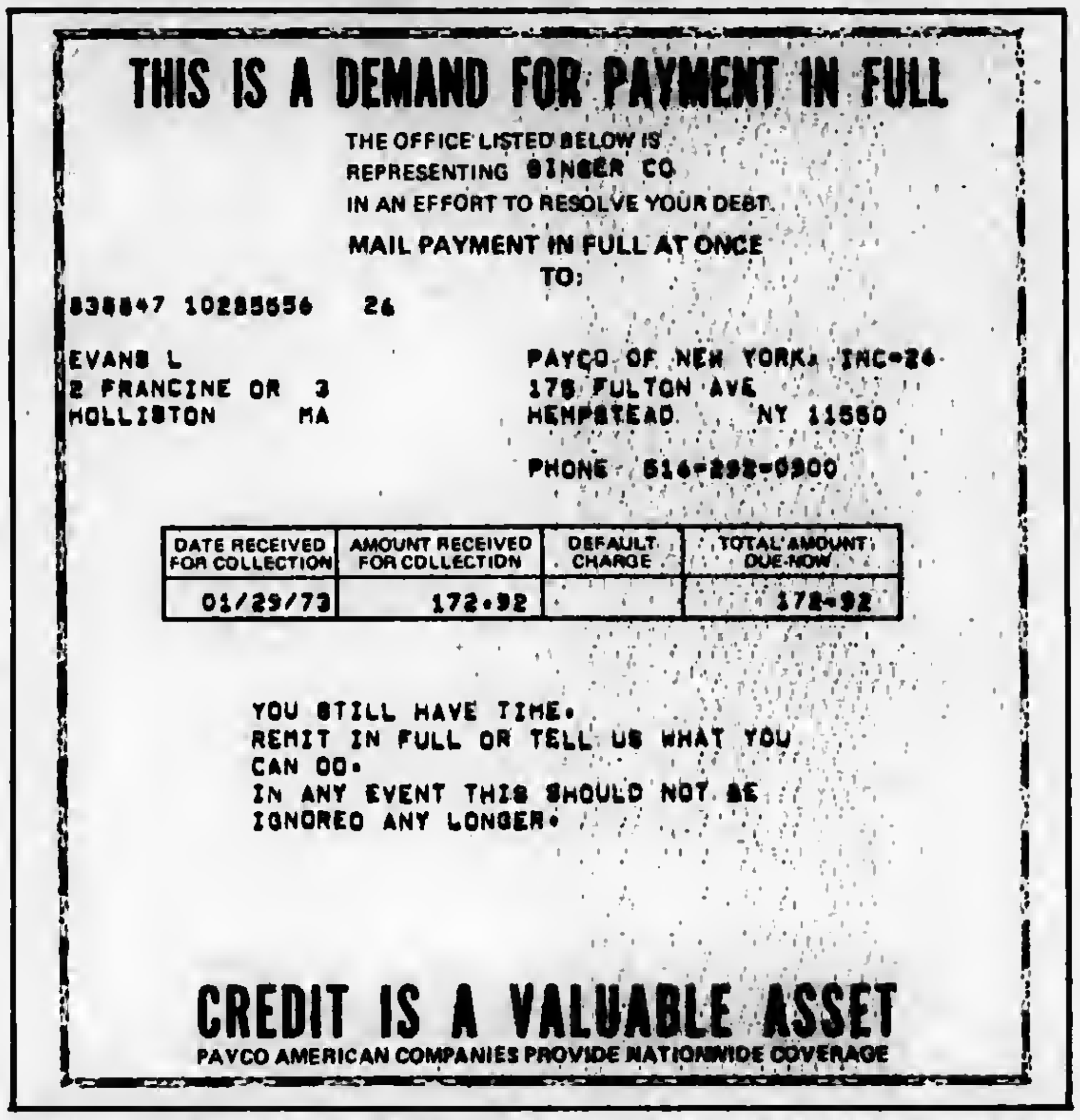
After the way her address was put into someone else's file she expects the credit-rating computers to blame any person who happens to live at that address.

And she doubts whether anyone at the debt collection agency will listen to her, anymore than Singer did. So she is a troubled woman.

And her trouble is our profession's trouble.

For it is our systems that make unverified updates. It is our computer systems that encourage the use of turnaround documents that deny evidence of demands made. It is our systems that are so easily abused by selectively ignoring some input or by pushing it onto some other office, etc. And it is our systems that can be managed so easily by machines that human supervision of the actions taken on behalf of people has dwindled until, in many computerized systems, it is now nonexistent.

And that is our professional responsibility. When we estimate the savings in manpower involved in computerizing applications – when we say that applications are suitable for computerization without requiring additional supervisory manpower – then we are making technical judgments.



THIS IS A DEMAND FOR PAYMENT IN FULL

THE OFFICE LISTED BELOW IS
REPRESENTING SINGER CO
IN AN EFFORT TO RESOLVE YOUR DEBT.

MAIL PAYMENT IN FULL AT ONCE
TO:

```
838847 10285656   26

EVANS L                   PAYCO OF NEW YORK, INC-26
2 FRANCINE DR  3          178 FULTON AVE
HOLLISTON     MA          HEMPSTEAD      NY 11550

                          PHONE  516-292-0900
```

DATE RECEIVED FOR COLLECTION	AMOUNT RECEIVED FOR COLLECTION	DEFAULT CHARGE	TOTAL AMOUNT DUE NOW
01/29/73	172.92		172.92

```
YOU STILL HAVE TIME.
REMIT IN FULL OR TELL US WHAT YOU
CAN DO.
IN ANY EVENT THIS SHOULD NOT BE
IGNORED ANY LONGER.
```

CREDIT IS A VALUABLE ASSET

PAYCO AMERICAN COMPANIES PROVIDE NATIONWIDE COVERAGE

Figure 1. Document sent to Marilynn Evans from debt collection agency demanding payment for bill she never incurred.

Yet, do we have the right to make these technical judgments? Do the observed facts, as opposed to the theoretical possibilities which we started out with some 20 years ago, support the thesis upon which these judgments rest? If the facts that surround us today do not support our contentions of past years, then our responsibility is grave indeed.

As far as I can see, the facts have not yet been determined. Each time I probe matters a little deeper I come up with more, rather than less problems.

We recently saw the second level of the mail-billing problem where the mails had been blamed for unnecessary finance charges [CW, Feb. 21]. But, instead of the mails, it turned out the delay in posting money received was the real culprit.

Similarly, dunning letters were always thought to be a problem of slow payers. The idea that an address file could be updated from an undelivered letter, and that claims of mistaken identity could be ignored was unthinkable. Yet it happened. And it did not happen in an innocent, unsophisticated company either, but in one of the computer companies (Singer Business Machines).

Supervisory weakness, probably due to inadequate appreciation of the need for supervision of data processing applications, appears to be the problem in the Evans case.

Whether it is the problem or not, I do not know. Perhaps when we turn over this problem we will find another one.

But I do know that each time new levels are reached in investigating problems, the data processing operation appears to be more involved. How deeply the problem really lies with data processing we have yet to discover.

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Vacation Costlier Than You Think

The Readers Respond

While the debate goes on about poor billing practices and other data processing ethical problems, some light has been shed on the situation of Melvin Tolhurst and his Bankamericard [CW, Dec. 6].

L. Brazinsky, manager of operations for BT Credit Co. Inc., which does the billing for Bankamericard, wrote Tolhurst:

"Your account (4250-132-002-723) is in billing cycle 3 which is produced on the 9th of each month. Our production schedule calls for statements to be collated with the applicable sales drafts and mailed to our cardholders within one week of the billing date. Our cardholders then have 25 days from the billing date to make payments without incurring a finance charge on the purchase balance . . ."

In other words, if payment is received at BT Credit by the 4th of the month (25 days from the 9th of the preceding month) there would be no finance charge assessed.

Tolhurst replied:

"The second paragraph of your letter . . . refers to 25 days your cardholders have to make payments without a finance charge. However, your production schedule claims seven of the cardholders 25 days, and the mails probably claim another two.

"This leaves the cardholder with 16 days in which to make payment, unless he chooses to pay by mail, in which case he has 14 days, assuming optimal mail delivery.

"If this poor cardholder chooses to take a two-week vacation, he is bound to pay for it in Bankamericard finance charges, unless his payment miraculously coincides with your payment schedule."

For variety of reasons, IBM has dominated the EDP systems industry in a way that is almost unheard of in American business, except for publicly granted monopolies. But there are alternatives to the big boy. And that's what our March 28th Supplement is all about: *The Non-IBM World.*

Edited by *Computerworld's* Mike Weinstein, this study will include a look at the state of the industry, and a report on seven of IBM's competitors.

Each of these companies – from Honeywell to Xerox Data Systems, has its own personality and its own place in the market. We'll be looking at their history, what they offer and where they stand. We'll also get opinions from their users, and try to create a picture of each one's strengths and weaknesses – to give you a clear idea of where It's at.

If you're a user who wants to look past IBM's looming frame, then our March 28th Supplement is the place to start. And if you're a marketer who wants to talk to the people who run this industry, your ad should be there when *The Non-IBM World* goes out. The supplement closes on March 9th. For details, just contact the nearest Computerworld Representative: *Boston,* Bob Ziegel, (617) 332-5606. *New York,* Don Fagan (212) 594-5644. *Los Angeles,* Bob Byrne (213) 477-4208. *San Francisco,* Bill Healey (415) 362-8547. Or write to: Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160.

The 1973
Computer Caravan
is coming

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March 5-7 – New York Hilton

ATLANTA
March 13-15 – Regency-Hyatt House

HOUSTON
March 20-22 – Hyatt-Regency Houston

ANAHEIM
March 27-29 – Disneyland Hotel

SAN FRANCISCO
April 3-5 – Civic Auditorium

KANSAS CITY, Mo.
April 11-13 – Municipal Auditorium

CHICAGO
April 17-19 – Conrad Hilton Hotel

CLEVELAND
April 24-26 – Convention Center

Forum Workshops*

Day 1:
9:00 a.m. . . . . Data Entry
2:30 p.m. . Data Communication Planning

Day 2:
9:00 a.m. . . . . Data Communications
2:30 p.m. . . . . Software Evaluation Panel

Day 3:
9:00 a.m. . . . . . Installation Management
2:30 p.m. . . . . Small Systems Panel

*Entry to morning sessions is $25 per day, which includes all workshop materials, lunch, and admission to the Exposition (see pre-registration form on page 22). Afternoon sessions are open to all – free of charge.

=====

Exposition Hall

10 a.m.– 6 p.m. daily. Tickets are $5 per person and should be purchased at the door.

Professional's Viewpoint

370/125, by Limiting Peripherals, Presents Step Backward for User

By Marshalt E. Maynes
Special to Computerworld

Many users like to have a small computer to back up a larger one. Sometimes the larger one is in the same installation, sometimes it is not – but the concept of having computer backup is as valuable in 1973 as it was in 1963.

> Data processing professionals or societies wishing to express views on professional matters in this column are requested to write the Professional Viewpoint Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

In 1963, indeed, the backup characteristics of computers were often the decisive point upon which sales were won or lost.

Since the introduction of the 360 series, backup capabilities have often come to be taken for granted. True, unless the appropriate core was present, one might not be able to use the actual programs. But at least a user would be able to connect the same type of devices to both of his systems, and so be able to move disks and tapes around as needed. This was a major advance in the state of the art.

With this ability to control their environments, moreover, more and more users now take advantage of it. They buy some of the equipment which they should be able to use for a number of years – tapes, disks, printers. Many 360 and 370 users now own their own 2314/2319 disk-type drives.

They expect to be able to attach them to their own new, smaller computer system, to back up the larger central system. This could be done with the 360 family. There is no technical problem in doing so.

But it cannot be so readily done with the new 370/125!

On the 370/125 there is a 3333 disk unit. It comes with two spindles for 3336 disk packs. IBM customers can add one or two more spindles for a total of four spindles, or 400M bytes. This may well be enough disk to handle all the user's I/O needs, including virtual memory paging.

But while the disk system has the capacity the user needs, it may not be the type he needs. Many users, for instance, will want to transfer 2316 packs between systems. This cannot be done on the 370/125.

The tape situation is similar. The 370/125 supports only 3411 and 3410 drives. The user with his own tapes is therefore being driven to make a new investment.

The most obvious reason for this move by IBM is that there are many independent peripheral manufacturers who can supply faster, more reliable and less expensive devices of the 2314/2319 type and tape equipment.

The independents have enhanced the 2314/2319 concept with engineering advances in order to attain this superiority. These include the use of dual density and voice coil.

The original concept of modularity offered by the IBM 360 and 370 systems was, and is, a sound concept which gave the users the ability to tailor their own systems to their own needs. They could change processors without changing peripherals.

IBM's current approach, if the 370/125 is indicative, is not only that the mainframe manufacturer shall be able to dictate how peripherals will be connected, and whose equipment will be used with its computers, but tBM wants to be able to tell the user just which type of peripheral he can have.

From the user's point of view, restricting the type of peripherals, and so downgrading the usefulness of the various computer systems being marketed, is not a fair or a reasonable restriction. It is certainly not an advance in the state of computers, and I see it as a retrogressive move.

Marshall Maynes is a systems specialist for Calcomp.

Where to Put the Firehouse?

WASHINGTON, D.C. – A computer will help this city determine the optimum locations for three prospective fire stations.

The computer will use information regarding local traffic patterns and "fire demand zones" and will also take into account future expansions in the city.

"Computer Leasing Company gives me as much flexibility as I ever got from IBM... and I'm saving $14,000 every month."

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True, the longer the term, the more you save. This suggests that you pause and think about the entire "flexibility mystique" that's so much encouraged by the computer manufacturers. Ask yourself how much flexibility you really need. And remember: If you are now renting from month to month, and if you can predict your computing requirements with even modest accuracy, you're probably wasting thousands of dollars on unnecessary flexibility. Dollars you could be spending on staff, a faster CPU, new software, more memory, or whatever else you really do need.

Let the CLC problem-solvers show you how to get the most for your computer dollar in flexibility *and* savings. Call or write:

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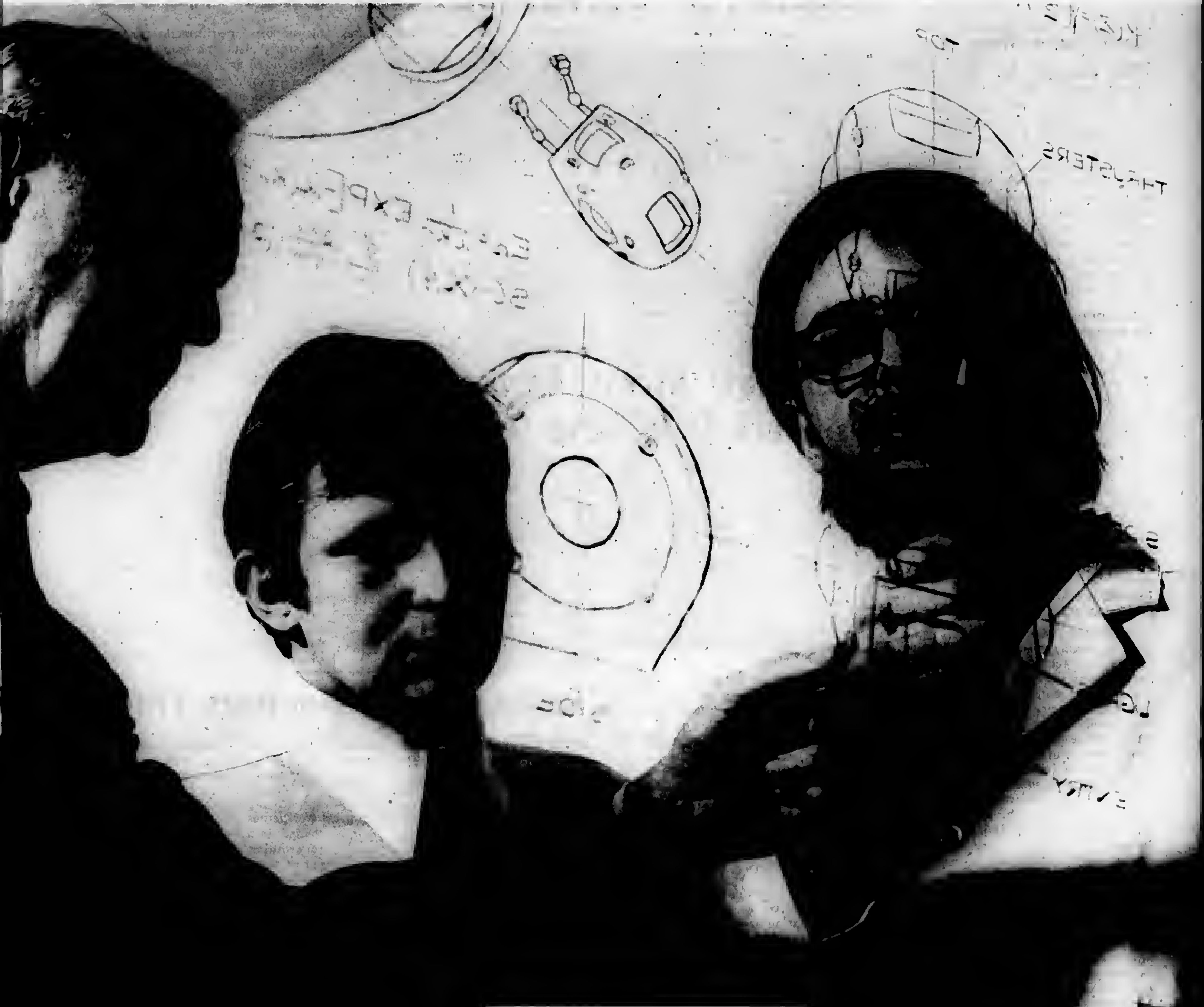

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Random Notes

Naval Center Giving Away GPSS Version for CDC 6600

WARMINSTER, Pa. – CDC 6600 users can run General Purpose Simulation System problems on their equipment with NGPSS/6000, a version of GPSS-V developed for the Navy by Norden division of United Aircraft. The new implementation runs under the Scope 3.3 operating system, Norden said.

A copy of the new simulation package, coded in Cobol and requiring 18K words to assemble and 14K words to execute, is available free to users who send their request and a magnetic tape to the Naval Air Development Center, here.

'Minicomm' Monitor Extended To Support Local, Remote CRTs

NEW YORK – The Minicomm communications monitor for DOS/360 users has been enhanced by Programming Methods to support CRT terminals, including IBM's 2260 and 3270 units, and all the GTE video terminals, as well as the IBM 2740 hard-copy device.

Remote support under the multiprogramming version of Minicomm takes 4.5K to 8K bytes. The non-multiprogramming version requires a 24K 360/22, 25 or 30 and costs $8,000. The MP version costs $10,000. Programming Methods division of GTE Information Systems is at 1301 Avenue of the Americas, 10019.

Interactive Adds Data Base Of Corporate Sales, Purchases

WALTHAM, Mass. – Corporate planners, marketing managers and financial analysts can access detailed information about dollar volumes of sales and purchases of U.S. companies, through a new time-sharing service offered by Interactive Data Corp.

The service also provides information about more than 500 products or services utilized by the companies at their various sites. In addition, users may interface the data from this new service with data from other databanks on the Interactive system. Interactive is at 486 Totten Pond Road, 02154.

Data-Tek Adds New Services

PHILADELPHIA – The Data-Tek time-sharing service has implemented two new capabilities for its subscribers: an APL compiler that can be accessed from a broad range of terminals and supports a workspace of 87K bytes; and an Xtran-to-Fortran IV conversion system.

The new APL interfaces with terminals having the extended APL character sets, but with conventional keyboards as well. Strikeovers to duplicate special APL characters are avoided through the use of mnemonic codes, Data-Tek explained, from 3401 Market St., 19104.

Interactive Store/Retrieve

'Basis-70' Solves Special User Needs

By Don Leavitt
Of the CW Staff

COLUMBUS, Ohio – Users with unique needs in interactive storage and retrieval of data in various forms may be able to get help through the Battelle Automated Search Information System (Basis-70) run by Battelle Memorial Institute.

Basis-70 was developed by Battelle to meet its in-house needs and has been operational since mid-1970. Its capabilities are impressive, growing and available to outside users, but only under very closely defined conditions.

Battelle is a non-profit organization interested, among other things, in learning more about data storage and retrieval. Therefore any new Basis-70 projects must add to the institute's knowledge and experience, rather than simply utilizing capabilities that already exist.

Currently there are almost 30 data bases loaded into Battelle's CDC 6400 under Basis-70, covering many areas. The largest base thus far is one of 200 million characters, which covers three years of abstracts from the National Technical Information Services (NTIS) operation in Springfield, Va.

Basis-70 itself is the nucleus of a system that is tailored for each user. The tailoring in one case provides the ability to scan a data base, or – more accurately – its index, for key word matches, near-matches or a Boolean combination of matches.

Output of the stored data is normally a printout on the user's CRT, teletypewriter or on a Battelle high-speed printer.

The initial capability of retrieving data (by field if the records are organized in that fashion) is being augmented, however, by support for arithmetic operations on the stored data, the results of which can be displayed or printed.

More exotic applications currently include an interface, through a CRT terminal, of a computerized data file, a related microfiche file and the user. With this integrated approach the user may retrieve and work on data from the computerized file, and update the microfiche data being presented by keyed-in entries.

As they are keyed-in, these corrections are shown on the CRT screen, overlaying the out-of-date data on the microfiche image, but they are also stored on a disk file and shown every time that microfiche record is called to the screen.

Ultimately, if the number of corrections grows large enough to slow the effective use of the existing microfiche records, the records themselves should be recreated in updated form and the computer-based correction file erased, a Battelle spokesman said.

For another Basis-70 project, Battelle has implemented a graphics operation linked to an accessible data file. This version of the system allows the user to extract data from the file and plot it on a hard-copy unit or create a magnetic tape for later projection on a Stromberg-Datagraphix device, which shows the graphic output on a CRT screen and copies it onto 35mm film.

Since Battelle has to tailor Basis-70 for the user, the institute also handles the indexing and conversion of the user's data base. The completed data base can be accessed at 10 or 450 char./sec over dial-up telephone lines.

Battelle is at 505 King Ave., 43201.

'DBD' Cuts Across Applications To Check Data Base Duplication

MIAMI – Installations which have built up multiple data set listings under Cincom System's Total and other data base or file management systems can now identify and therefore control data redundancy, through cross-referencing reports generated by the Data Base Directory (DBD) package from Eastern Airlines.

Total itself allows its users to list all of the data fields related to a specific application, or list a limited subset of the complete list for programmers and analysts working on a particular portion of the application.

But duplication of fields from application to application is not yet identifiable under the basic Total system, Cincom qualified. DBD, on the other hand, produces as many as 11 different reports which aid the user in clarifying the relationships of elements to like elements, elements to data sets, and data sets to programs.

Thus it provides a dictionary of data terms with cross-referencing to synonyms even across application lines.

Summarize Data Elements

DBD reports can summarize data from a variety of sources as well as from different application areas. Through DBD a Total user can list data sets related to operations controlled by Informatics' Mark IV or any other file management system, an Eastern spokesman explained.

Thus, he added, DBD is an enhancement package that removes data base documentation responsibility from the application programmer.

DBD is made up of two separate jobs. An update and edit program maintains the user's data base, and the report program extracts data from that base for the reports. The edit routines include the flagging of erroneously coded maintenance transactions, and the printout of both old and new conditions of any data record changed by a valid transaction.

Written in Cobol, DBD can be installed by the user, Eastern said. The one-time license fee is $3,000 for the source modules, JCL decks and samples of input documents and supporting documentation.

Eastern's DP Sales office is at Miami International Airport, 33148.

'Route/Guide' Monitors Trucks

CINCINNATI, Ohio – Distributors or others with large fleets of vehicles operating between a network of cities may be able to reduce their transportation costs and save time for their planning staffs with the Route/Guide package from Management Decisions Development Corp. (MDDC).

The program determines the best over-the-road routes between cities and prepares a guide, complete for each pair of cities with total distance and/or travel time. It can also provide mileage breakdowns by state, and detailed routing in terms of either connecting highways or intermediate cities.

Route/Guide operates in either on-line interactive or a batch processing mode. It is designed to carry enough information to allow effective judgments on travel time, distance and cost tradeoffs. The user can, for example, explicitly include in the optimization the time or cost incurred in passing through enroute cities.

The software permits users to classify roads independently within each state by speed, cost or other factors for the trade-off studies.

New cities and road links as well as changes in travel times, costs and mandatory routings are accommodated. The output of the system, useful for planning of the routes themselves, is intended to interface directly with related applications including driver payroll and state mileage reporting.

Route/Guide is written in Cobol and except in the optional on-line module, it operates under DOS/360 in a minimum of 32K bytes.

Since the system is modular, the user purchases only those elements he needs. The base module costs $7,500. The on-line function adds $1,500 to the price.

MDDC is at 680 Northland Road, 45240.

For MMS General Ledger Users 1973 Will Be A Happy Year.

Since January, 10 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the $800 million class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

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NCSS Has Big Plans for T/S Net

By Don Leavitt
Of the CW Staff

NORWALK, Conn. – National CSS (NCSS) is acquiring more 360/67s, but is moving up to 370 gear as well. It is beginning to implement an Arpa-like communications network and is actively studying the possibility of adding a Multics system from Honeywell to its facilities.

The result of all this activity, according to NCSS Vice-President Richard Bayles, should be a remote-computing service that is more reliable and more flexible than the present one.

File Sharing Extended

The company has upgraded its Sunnyvale, Calif., data center to a dual 360/67 and will be adding two more dual 67 systems to its Stamford, Conn., location in the next three months. The dual configurations, he explained, allow file sharing by concurrent users and provide system resource redundancy in case of hardware failure.

The new communications facilities, utilizing programmed minicomputers rather than conventional multiplexers and CPU front ends, will aid in balancing line loads and in finding alternate paths between terminal and CPU, all without user intervention or knowledge, Bayles said.

NCSS has signed a development agreement with Honeywell in connection with the recently announced Multics time-sharing system. But Multics will actually be installed "only if Honeywell lives up to its commitments to make it a commercially viable system," Bayles said.

Developed over seven years at MIT, Multics is a virtual memory system that includes hardwired "rings" or layers of accessibility that should prevent unauthorized disclosure of programs or data better than more conventional password systems.

System of Rings

Multics also has an operating system spread across several rings. The central core is essentially untouchable but users may modify or create system commands to suit their purposes, without imposing the new commands on any other user.

Implementation of a good level of Cobol is one of the key commitments faced by Honeywell, according to Bayles. True compatibility with the GCOS operating system – used by the Honeywell 600/6000 series CPUs from which Multics was developed – is another area of concern, he said.

There are "chinks" in Multics' ability to provide real uninterrupted service in the event of a system failure, he added.

The new network is expected to provide a common set of protocols between varied CPUs that NCSS may install, but it will not be extended to allow users to attach their own CPUs directly to the network, as they may now do on Tymshare Inc.'s Tymnet network, also based on Arpa principles.

NCSS will be using modified DEC PDP-11s as its Interface Message Processors (IMP). Arpa itself utilizes Honeywell 316s and 516s; Tymshare uses modified Varian 620s. With minis at both ends of the communications link users will be able to transmit at 9,600 bit/sec over voice-grade lines, and will not be required to use broadband circuits as Arpa users now do, Bayles said.

The prototype equipment is now being tested with "very local traffic" within the Stamford data center.

A 370/145 will be going into Stamford in June, primarily to test some of the peripherals and software support planned for the 370/168, scheduled for delivery in October. When fully operational, the 168 is expected to replace one of the dual 67s. The 145 may be used to support remote-batch work, once it has finished its role as a test bed for 168 options, Bayles said.

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Cross-Assemblers Improve PDS Runs

NASHUA, N.H. – Sanders Data Systems, Inc. (SDS) has new assembler programs for the Series 800 programmable terminal systems.

The programs execute approximately 20 times faster than the company's original DOS/360 PDS Assembler, and 10 times faster than the Sanders original OS/360 Assembler, the firm's spokesman said.

Both the new OS/360 PDS and DOS/360 PDS assemblers, designed to run on IBM 360s or 370s, enable the PDS programmer to convert assembler language source programs into machine language code compatible with the Sanders PDS terminal.

Both assemblers are free with the Sanders 804 terminals – which cost $6,980, with a lease price of $202 to $245/mo – and with the 810 cluster of terminals, priced at $3,387 per terminal and a lease range of $94 to $115/mo per terminal.

Sanders is at Daniel Webster Hwy., 03060.

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Data Briefs

IEEE Group to Investigate Man-Machine Interface Facts

SILVER SPRING, Md. – The IEEE Standards Committee has announced the formation of a man-machine interface subcommittee.

Designated Project P353, the IEEE Computer Society subcommittee will draft display data terminal standards for characteristics such as character size, resolution, brightness, colors, flicker rate and cursor representation.

Users interested in participating as members should contact Gerald C. Schutz, subcommittee chairman, c/o IEEE executive secretary, Box 639, 20901.

Datran Plans Switched Service

VIENNA, Va. – Datran plans to provide its first switched data services to eight cities in its projected nationwide network by early 1974.

Initial service will be provided between St. Louis and Houston with intermediate stops at Kansas City, Tulsa, Oklahoma City, Fort Worth, Dallas and Austin, Texas.

The customer terminal interface unit, which will be required to link all Datran customers to its network, will be supplied by Burroughs.

FCC Carrier Decision Appealed

SAN FRANCISCO – The FCC decision that paved the way for MCI and the other specialized carriers was challenged in the U.S. Court of Appeals here recently.

The National Association of Regulatory Utility Commissioners and the Washington Utilities and Transportation Commission told the court the FCC decision allowing the new carriers to provide service should be overturned.

In addition to the two regulatory bodies, MCI, Datran, Southern Pacific Communications Corp., the FCC, the Justice Department and other interested parties were present. A decision on the appeal is not expected for several months.

Ann Arbor Adds Keyboards

ANN ARBOR, Mich. – Ann Arbor Terminals, Inc. has announced its Series KB200 free-standing keyboards.

The Model KB200A provides a 53-key ASR33-compatible alphanumeric keyboard arrangement and generates 7-bit parallel Ascii output at TTL logic levels.

The Model KB200B is identical, except that separate cursor, numeric, and function keys are also provided.

An optional configuration, the Model KB200B-1, is intended for external synchronous applications.

Prices for the series are $250 for the KB200A, $300 for the KB200B and $350 for the KB200B-1. Ann Arbor Terminals is at 6107 Jackson Road, 48103.

IBM TP Additions

Vtam Should Aid 370 User

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – IBM's introduction of the 3704 programmable front-end processor and the Virtual Telecommunications Access Method (Vtam) [CW, Feb. 7] has added new capabilities primarily for users of 370s.

One of the major changes allows either the 3704 or 3705 to operate remotely from the mainframe site. In these configurations a second front end must also be installed at the central site. Another capability, previously introduced by several independent front-end suppliers, lets a user operate in both emulation (270X) mode and native mode to develop applications programs. Both of these developments are available only to 370 users.

The concurrent emulation and NCP mode is achieved with the partitioned emulation programming extension of NCP/VS.

Vtam contains two major elements to direct the 3704 or 3705 processors through the Network Control Program (NCP). The first is the teleprocessing manager which logically connects and disconnects terminals from application programs. The teleprocessing manager also informs the console operator of network status, logs net data and initiates restarts.

Good Connections

The Vtam program interface connects the application programs with the teleprocessing manager. The interface executes macro instructions to direct the acquisition, reading, writing and checking of data from connected terminals. This interface also provides asynchronous processing so an application program can continue while it waits for a request to be completed.

The Telecommunications Access Method (Tcam) message control and message-processing interfaces offer queued access to Vtam for OS/VS users. This capability for applications where direct transaction-oriented processing is not required allows the program to proceed as if the entire TP network were a data set, according to IBM.

Current Tcam application programs are said to be able to utilize the Vtam/Tcam interfaces "with minimal or no coding changes."

Vtam allows the user to interface new applications into an existing network. When a user at a terminal requests a connection to an application program, Vtam indicates the log-on request, and the connection is made if the program has been conditioned to accept it. Terminals can be dynamically connected and disconnected from applications during program execution.

OS/Tcam or OS/VS Tcam are available for local 3704 or 3705 use with the NCP but remote features can be supported only with Vtam, according to IBM.

The NCP edits messages and controls their flow between the mainframe and the terminals. The 3704 and 3705 can operate with a wide variety of terminals including the 2740, 3735 and the 3270 CRT. Both the front ends will continue network handling of terminals during "short-term shutdowns" of the mainframe.

By the Numbers

Among the added features of NCP/VS are manual dial operation when automatic calling is not available, and two-channel support for multiprocessor (MP) configurations of the 158 and 168.

In an MP system, a single 3705 with two Type 2 channel adapters is attached to the two CPUs when operating under OS/VS. Another feature allows switched network backup. When a private line is down, the console operator at the front-end processor can manually call a terminal attached to an IBM 3872 or 3975 modem.

HIS Upgrades 58

WELLESLEY HILLS, Mass. – Honeywell has added multiple communications capabilities to its small Model 58.

The Multiworkstation system allows the use of up to four terminals for remote or local information retrieval, inquiry and data entry.

The system combines an asynchronous multiline controller with Honeywell's DOS II to allow multistation routings and batch processing.

The multiline communications controller is designated the MLC050 and uses 8-bit Ascii code at speeds up to 1,200 bit/sec. Manual or auto answer can be used and the system is compatible with standard RS 232C interface modems.

To support a multiworkstation configuration, the user must have a Model 58 with 10K of storage, a DSS 058 disk subsystem with 5.76M bytes, a 100 card/min reader, 100 line/min printer, terminals and the MLC050 controller.

The controller will be available in the second quarter of 1973 for $12,000 or $285/mo.

Specialized Carrier Provides 100 kBit/Sec Data Channels

DENVER – Western Telecommunications Inc. (WTCI), one of the specialized common carriers, is providing the U.S. Navy with 100 kbit/sec data channels to train its pilots in air combat techniques.

The system was developed for the Navy by Cubic Corp. and uses software simulation to indicate a hit or miss by particular weaponry.

Data of 100 kbit/sec and other circuits is furnished by WTCI to the van-type structures housing the CPUs (Control and Computation Subsystem [CCS] and the display console located at Yuma, Ariz., Marine Corps Air Station. Three Xerox Sigma 5 computers perform the major computational processing of telemetry and tracking information.

A 50 kbit/sec cable data link connects the CCS van to the Display and Debriefing Subsystem (DDS) van. One DDS visual display presents a quasi three-dimensional view of aircraft maneuvering. A second real-time video display provides timing and status information including air speeds, "G" forces, weapon selection, aircraft type and similar data. Data processing "hit" or "miss" decisions are presented to the viewing instructors.

A remote DDS console is located at the aircraft's home base, Miramar Naval Air Station in California. The 50 kbit/sec data circuits from Yuma to Miramar are transmitted on the WTCI high-capacity long-haul trunk recently authorized by the Federal Communications Commission.

The 100 kbit/sec circuit was chosen as the most effective information transfer rate. The guaranteed bit error rate is one in 10^6, although the expected rate is better than one in 10^7, WTCI said.

The data link between the CCS and the DDS vans furnished by WTCI is a short cable running at 50 kbit/sec. The data sets on the cable and the microwave are also part of the WTCI service. GE 521 modems are used for 100 kbit/sec transmissions and 401/421 modems for 50 kbit/sec speed.

ICA Finalizes Plans For Boston Meeting

BOSTON – The 26th annual conference and exposition of the International Communications Association (ICA) will be held at the Sheraton-Boston, May 14-17.

Dr. Jerome B. Wiesner, of the Massachusetts Institute of Technology, will deliver a speech titled "Human Communications" and Sebastian A. Lasher of the Office of Telecommunications Policy will speak on "The Functions and Policies of OTP."

Other scheduled speakers and topics include D.E. Gourley, vice-president of marketing, Datran, on "Data Communications" and R.A. Kuehn, president of RAK Associates, on "Communication Management – Is It Possible?"

An international carriers panel and a panel on domestic satellites are also scheduled.

Information is available from J.D. Martin Jr., National Steel Corp., 700 Chatham Center, Pittsburgh, Pa. 15219.

For variety of reasons, IBM has dominated the EDP systems industry in a way that is almost unheard of in American business, except for publicly granted monopolies. But there are alternatives to the big boy. And that's what our March 28th Supplement is all about: *The Non-IBM World.*

Edited by *Computerworld's* Mike Weinstein, this study will include a look at the state of the industry, and a report on seven of IBM's competitors. Each of these companies – from Honeywell to Xerox Data Systems, has its own personality and its own place in the market. We'll be looking at their history, what they offer and where they stand. We'll also get opinions from their users, and try to create a picture of each one's strengths and weaknesses – to give you a clear idea of where it's at.

If you're a user who wants to look past IBM's looming frame, then our March 28th Supplement is the place to start. And if you're a marketer who wants to talk to the people who run this industry, your ad should be there when *The Non-IBM World* goes out. The supplement closes on March 9th. For details, just contact the nearest Computerworld Representative: *Boston,* Bob Ziegel, (617) 332-5606. *New York,* Don Fagan (212) 594-5644. *Los Angeles,* Bob Byrne (213) 477-4208. *San Francisco,* Bill Healey (415) 362-8547. Or write to: Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160.

COMPUTERWORLD

Certification Said to Hurt Users

DETROIT – A certification program that would allow direct connection of approved non-carrier equipment to the phone network would benefit a few users only, according to AT&T board chairman John D. DeButts.

Speaking before the Detroit Economic Club, DeButts described AT&T's "deep concern about the long term consequences" that would result from a certification program.

The average customer will "sooner or later" have to pick up the "revenue requirements" no longer met by customers who install their own terminal gear, DeButts said.

Important questions still remain to be answered about certification, the AT&T chief said. One of these is whether the maintenance of customer-owned equipment can be effectively certified.

In the area of interstate private line competition, AT&T will soon announce details of its two-level rates that will allow it to take "advantage of the economies of scale" of high-capacity routes, DeButts said.

The dual rates will be the first departure from Bell's traditional nationwide average pricing, and will provide proof of AT&T's "intention to compete and compete hard."

Competition in the private line area by the specialized carriers will bring some advantages to "particular users" but this will be done at the expense of the general body of telephone users.

The widest availability of high quality communications at lowest over-all cost will be impaired "in some measure" by the duplication of facilities and division of responsibility that will result from competition, DeButts said.

AT&T is concerned about the recent FCC decision that restricts Bell from using satellites for private line services for three years, the AT&T chairman said.

'Boss' Links Sanders 800, 360s

NASHUA, N.H. – Sanders Data Systems Inc. has added the Boss software packages to its 800 series programmable display packages.

The Boss packages provide the Sanders displays with more hardware and editing features than the comparable IBM 2260 and 2265 systems and at lower cost, the company said.

The software allows the Sanders 804 stand alone and 810 cluster systems to communicate with IBM 360/370 systems in local or remote mode. It provides printing speeds of 30 or 165 char./sec and 110 or 200 line/min; transmission speeds to 9,600 bit/sec; and more editing capabilities with "little or no impact" on the 2260 software.

The Boss software supports optional features of upper and lower case characters, 1,920-char. screen capacity, insert/delete line or character, blink field, back tab and erase to end of field, line or screen.

With the Sanders 731 remote communications controller, Boss allows either synchronous or asynchronous transmission from 1,200 to 9,600 bit/sec. When directly attached to the IBM byte multiplexer channel via the Sanders local channel adapter, transmission speeds up to 50 kbit/sec are possible, the firm said.

Extended Boss employs Ascii line discipline and IBM 2265 system commands in providing the Sanders 804 terminal with many of the editing and validation features offered on the Sanders 620 and 720, as well as the IBM 3270, Sanders claimed.

Both Boss and Extended Boss are free with the 804 stand alone terminal which costs $6,980 or a lease range of $202 to $245/mo.

Boss and Boss Local are free with the 810 cluster of eight terminals, with prices starting at $3,387/terminal or a lease range of $94 to $115/mo/terminal. Sanders Data Systems is at Daniel Webster Highway, 03060.

Australian Bank Installs Honeywell On-Line Data Net

SYDNEY, Australia – The Commercial Banking Company of Sydney Limited (CBC) has installed a Honeywell 6040 computer here as the first phase of its on-line banking system. The computer will be linked to three Honeywell 316 minicomputer satellite systems. Initially these will handle communications to terminals in 104 of the bank's 500 branches.

CBC is using Honeywell's Integrated Data Store data base management system (IDS) to develop a banking system employing customer numbers, rather than separate account numbers, as the basis for all its customer accounting procedures.

"Under this system each customer has only one number, even if he has five or more different accounts with the bank," explained D.J. Smith, administrative officer for automation at CBC.

"The customer number gives the bank a profile of all dealings it has with the customer. This has advantages from the systems angle in that it avoids repetition of information – in marked contrast with account number systems, where a customer's name and address, for example, has to be repeated in the records for each account."

Bank officials can access and immediately update customer accounts through terminals at each bank branch. The computer also will process current accounts, savings accounts, installment loans, savings bank housing loans and master general ledger applications.

The 6040 computer has a 96K-word main memory, a 304M disk storage subsystem, eight magnetic tape units, a card reader and line printer. The three minicomputers in the system, in addition to handling communications, will control the transfer of check data from two Honeywell document reader/sorters and data from visual information projection units.

Delta Data APL Terminal Has 3,000-Char. Memory

WASHINGTON, D.C. – A new APL terminal was added to the Delta Data Systems 5000 family of computer terminals at the Computer Caravan/73 here last week.

The Model 5260 is an Ascii-oriented APL terminal featuring a 96-character set which includes all APL characters and an overstrike capability.

The CRT terminal can display 27 80-character lines at one time and has the ability to store more lines in a "paging memory." Up to 3,000 characters of information can be stored in the buffer at the terminal site.

The average terminal costs $4,500 and leases for $205/mo on a one-year plan or $170/mo on a three-year plan including maintenance.

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Bits & Pieces

Terminal Works in On– And Off-Line Modes

SUNNYVALE, Calif. – The Dicom'345 Cassette Magnetic Tape Terminal is designed for both on-line and off-line applications.

In its on-line mode, the CMTT ties in directly with most major minicomputers; as an off-line device, it permits serial modem-to-modem communications at transfer rates of 110 bit/sec and 300 bit/sec (10- and 30 char./sec).

On-line use of the CMTT with computers manufactured by Hewlett-Packard, Varian, Data General and Digital Equipment Corp. is supported by a library of cassette operating system software and "off-the-shelf" interfaces.

Single unit price is $3,300 from 715 N. Pastoria Ave., 94086.

. . . Building a Calculator System

CAMBRIDGE, Mass. – The IW-770 is a fully automated punched card reader that plugs into the I/O connector of Wang 600 and 700 Series programmable calculators, according to the developer, Digital Laboratories.

The reader handles up to 200 card/min and allows stacks of up to 500 cards to be processed without operator intervention.

Any field in the card may be addressed directly, eliminating the need of bringing unnecessary data into the calculator, a spokesman said.

Price of the card reader is $3,850 from 377 Putnam Ave., 02139.

WCS With ID-70 Equals Real-Time

HAWTHORNE, Calif. – The ID-70 Omnirom from Memory Systems, Inc. is a plug-compatible Writable Control Store (WCS) designed for Interdata Model 70 minicomputers.

Using the ID-70, the sophisticated user can, under keyboard and software control, modify all or part of the command structure of his Model 70, including real-time applications, the firm said.

Omnirom is priced at $4,298 for the 1K unit and $5,500 for the 2K version from 3341 W. El Segundo Blvd., 90250.

Unit Takes 'Drawl' out of TI 980A

PORTLAND, Ore. – Users of the Texas Instruments 980A computer can attach a floating-point auxiliary processor for "faster than normal" execution of Fortran and Assembly Language programs, according to a spokesman for Floating Point Systems, Inc.

The add-on processor – utilizing the 980A's auxiliary processor port – operates as though it were a part of the main central processor, performing floating-point add, subtract, divide, multiply, fix and float.

Cost of the companion processor is $16,000 from 3160 S.W. 87th Ave., 97225.

Recording--Part I

Physical Process Employs Flux Change

By John C. Scott

Special to Computerworld

Despite the fact that most users are constantly worrying about potential disk problems, few adequately understand disk operation to determine a positive course of equipment evaluation or areas of potential trouble.

As for their architecture, disks are made of aluminum substrates approximately 14 inches in diameter onto which is bonded a magnetic medium with recording characteristics similar to those on magnetic tape.

> Many users lack knowledge of how the hardware within their computer systems operates. A basic understanding of the principles of operation of central processors and peripherals can enable improved selection, troubleshooting and utilization.
>
> This first part of a series on magnetic disks deals with recording and explains how information is written onto and read from disk surfaces.

Electromagnetic transducers known as "heads" are used to write data onto and read data from the disk surfaces.

In operation, disks rotate at typical speeds of 2,400 rpm and 3,600 rpm, and the heads aerodynamically fly over each surface making no direct contact. The flying height of heads above the disk is in the 50 μin. to 150 μin. range.

Each head contains a core of magnetic material separated by an air gap directly over the disk surface.

When a current is passed through the coils wrapped around the core, the induced magnetic field magnetizes the local disk surface area.

Thus data is recorded on the surface by controlling the flow of current applied to the head coils.

Recording and Reading Information

Binary information from the CPU arrives at the drive controller in a variety of forms, usually parallel by bit. However, it is recorded on the disk pack in bit serial form.

Thus, the binary information (e.g. 101100) must be encoded or translated into a form suitable for disk storage.

Since the physical mechanism employed in data recording is flux change with respect to time, there must be two information channels: one which is sensitive to flux change timing variations – i.e., a clock; and the channel containing the binary information which has been encoded into variable-length magnetic flux changes.

In the normal process of recording, the encoded binary information controls a write current driver causing current to pass through the head coils.

This, in turn, creates a flux path in the core whose magnitude and direction depend on the current amplitude and polarity. If the magnetic flux is strong enough, saturated magnetic recording takes place.

If the disk is then removed, it contains a series of magnetic transitions recorded on concentric tracks.

These transitions in themselves are meaningless from an information point of view. They require a second information channel, the clock, to have any real meaning.

On readback, the magnetic transitions pass beneath the head and induce a voltage pulse proportional to the speed and the magnetic pattern on the disk.

Disks: Nothing But the Truth

Since disk packs are designed for volume production, reasonable tolerances must be allowed on all parts. Therefore, through design and cost constraints it is unreasonable to require that the clock and magnetic transitions always occur precisely on time.

Consequently, systems have a window or capture range on either side of nominal clock position. If a magnetic transition falls within this window, it is interpreted and decoded as a "1."

If an error occurs, there probably has been a peak shift from the expected position on the disk, or the amplitude of the playback signal is too low to permit detection.

Basically, errors are caused by nonuniformity in the coating which causes local variation in magnetic field strength and subsequent distortion of recorded transitions.

John C. Scott is director of technical development for Computest Corp. in Cherry Hill, N.J., specializing in computer test equipment.

Advice to Users Shopping Around: 'Don't Buy DP by Committee'

By Michael Weinstein

Of the CW Staff

BOSTON – "Make one person responsible and have him follow some basic steps" is Dave Tierney's advice on computer hardware selection.

Tierney, who advises State Street Bank of Boston on equipment, is against choosing equipment by committee.

"Unless one person is responsible, no one is responsible," he stated, "either for collecting the proper data or for committing to choices."

Once a person is designated as responsible, Tierney suggested some basic steps to follow – from defining the operational needs to recommending and accepting the chosen equipment.

"In defining the type of equipment needed, the primary source is the people who must use it. Ask what is the work objective that the equipment is to aid," he stated.

If users would determine their needs from internal objectives, they would avoid the major pitfall of equipment procurement: the salesman telling users what they need.

After deciding what the equipment must do, Tierney advised, "users should investigate vendors who have potentially suitable equipment."

From this investigation users should choose all vendors who possibly could fit their needs and submit a proposal to each.

Use a grid system to evaluate returning proposals, he suggested – across the top, list the characteristics the user needs for his working objective, down the side, list the names of the responding bidders.

In this matrix, users should evaluate how each piece of equipment appears to fill the original objective by giving it a value from one to five.

From the evaluation, Tierney recommended that users pick two – the primary choice and a backup.

Check the financial status of each of these and ask each for a current user list.

"Beware of vendors who will not give you this list," he cautioned, "as in almost all cases it means they have something to hide."

In calling the users of the prospective vendors' equipment ask for the date of delivery, whether there were any delays in installation; why the previous system was replaced; what is the new end result in throughput and cost; what are reliability and service like; and if they had to do it over, whether they would choose the same vendor.

Satisfied with the vendors' general equipment and service, users should have them perform benchmarks on the actual task they want the equipment to perform. For example, "if they say that their terminal is compatible with your configuration, ask them to plug it in and test your operations before you buy," he advised.

Finally, after users have determined their choices, they should document their steps in selection for presentation to management.

This final step is many times crucial since it stops vendors from going over the DP selector's head and trying to make a mangement sale, he advised.

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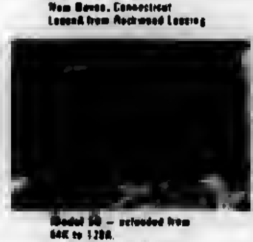
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New OEM Products

Analyzer Allows 5-Second Testing

CONCORD, Calif. – Data Test Corp. has a new version of its Datatester 4000 semiautomatic digital circuit analyzer to test and troubleshoot digital logic boards.

The Datatester 4000A-60 digitally registers the number of logic transitions through a circuit under test at each output by introducing a series of nonsynchronous (Grey Code) square waves to all its inputs.

The maximum time required per test is five seconds, the firm said. No programming is needed to verify every combination of the I/O logic or truth tables for complex logic circuits.

Consisting of two modules, the unit costs $4,340 from 822 Challenge Drive, 94520.

System Can Test Semiconductor Memories

NEWPORT BEACH, Calif. – Western Digital Corp. is offering the Spartan 770 "Bit Rider" LSI Test System for testing semiconductor memories.

The "Bit Rider" includes 32 memory channels, 15 drivers and a high-speed, 10 μA resolution comparator. The unit offers 1 nsec timing resolution. A microprogrammable RAM memory allows for test-pattern storage and pattern generation at 5 MHz to test efficiently both recursive and random logic circuits, the firm noted. The built-in controller eliminates the necessity of a computer for basic testing although a PDP-11 option allows data logging; characterization and multiple programs to be run with the Spartalk software packages.

The price of the "Bit Rider" is $59,770. The firm is at 19242 Red Hill Ave., 92663.

Keyswitch Allows Manual Entry of Commands

HERKIMER, N.Y. – A "pancake" fast-make/fast-break keyswitch has been introduced by Mohawk Data Sciences Corp.

The Type S Signal Keyswitch, which provides manual entry of commands into systems using DTL, TTL or MOS circuit logic is available only as mounted arrays on a common printed-circuit board.

Typical per-key cost ranges from 21 cents to 29 cents mounted on the customer's board; push-pull alternate-action is an additional 10 cents to 12 cents/keystation. Delivery is 10 to 12 weeks.

Paper Tape Handler Used With Any Reader

HACKENSACK, N.J. – The Model 3300 paper tape handler from Data Peripheral Inc., operates bidirectionally at speeds up to 600 char./sec (60 in./sec) with any reader.

Photoelectric (LED) solid-state switches sense tape requirements and triac control spooling motors.

End of tape and broken tape will shut off the spooler. Two 7-1/2 in. diameter spools are supplied.

Unit price is $350. OEM sales in 100 quantity lots are $280 each from 14 Porter St., 07601.

9K Bit ROM Offers 120 Nsec Access Time

SUNNYVALE, Calif. – Monolithic Memories, Inc. has added the MM5260/6260 9,216 bit ROM to its line of read-only memories.

The device is organized as 1,024 by 9, offers 120-nsec access time and may be ordered as a 7 by 9 font character generator.

The 9K ROM is packaged in a 24-pin ceramic DIP and is priced at $65 in 100 lots from 1165 E. Arques Ave., 94086.

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Together, the two computers can pump out 10 times or more the throughput of an IBM 1130 that costs as much. Or give you the same performance as an IBM 360/44 costing at least twice as much.

And that's probably why you'll buy it.

But if you'd like to think about something more than raw cost/performance, consider what else the PDP-15/76 gives you.

You get PDP-15. A powerful computer system already hard at work in over 600 installations. An enormous library of software. A strong graphics capability. And easy conversions, particularly for FORTRAN.

Add on PDP-11 and you get a whole rash of low-cost, state-of-the-art Unibus peripherals. Which makes it one heck of a lot easier (and cheaper) to put together multi-task, multi-terminal systems.

15/76 comes with a load of proven software that makes the system easy to use. Including a choice of three operating systems… DOS-15, a disk operating system; BOS-15, a Batch Operating System; and RSX-PLUS, a Resource Sharing Executive—$3,000,000 worth of proven software ready for your application.

The basic PDP-15/76 comes with a PDP-15 central processor and 16K words of core, 1.2M word cartridge disk pack, industry-compatible magtape unit, paper tape reader/punch, and a PDP-11 central processor with 4K of core.

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digital

Societies/ User Groups

Atlanta Workshop

Bankers to Examine Trust Automation

ATLANTA – Trust department and data processing personnel will put their heads together here on the problems of trust automation at an American Bankers Association (ABA) Trust Operations and Automation workshop March 18-21.

The workshop is jointly sponsored by the Trust Division and the Operations and Automation Division of the ABA. Topics range from trust information systems and automated methods of tax accounting, to computer output microfilm systems.

Alternative Approaches

O.W. Chapman, vice-president of the American Security and Trust Co., Washington, D.C., will moderate a panel discussion covering alternative approaches to securities handling problems.

A panel on the last day of the meeting will deal with current legislation issues. Robert L. Bevan, assistant federal legislation counsel of the ABA, will moderate. Other panelists include members of the Securities and Exchange Commission, the Office of the Comptroller of Currency and the Senate Committee on Banking.

During the two-and-a-half day workshop registrants will have an opportunity to meet with suppliers of software packages and services relating to trust automation.

Fees for the workshop are $125 for banking personnel and $150 for nonbankers. More information is available from Fred Tippett, associate director, Operations and Automation, American Bankers Association, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

Martin Interim SCDP President

HUDSON, Mass. – Jerry Martin has assumed the presidency of the Society of Certified Data Processors, upon Alan Taylor's resignation from that position. Martin will hold this office until elections for a new president are completed.

Taylor plans to continue work for the society on the Computer Foundation project and for other society research and development projects.

In the announcement, Taylor pointed out that he was elected for a one-year term last February, and received instructions to create a voice for the society last June.

"That mandate has been fulfilled," he said. "With the SCDP having now taken its place as a member of Codasyl, a member of the Computer Foundation Organizing Committee, and a member of the American National Standards Institute, our members certainly have a voice. In addition, our membership in Ansi Committee X3 is currently being processed."

The society has developed four draft standards which are currently being processed for adoption as Ansi standards, Taylor said.

Taylor attributed the success of the SCDP in achieving its goals to the active grass-roots membership. "We simply were not able to use all the help that was offered," he said.

Sigspac Needs Help

NEW YORK – ACM members of the Special Interest Group on Urban Data Systems, Planning, Architecture and Civil Engineering (Sigspac) interested in keeping their association alive must submit a petition to the SIG/SIC Board before April 30, 1973.

Unless a petition of 50 signatures is received by that date, the SIG/SIC Board will initiate dissolution proceedings.

Concerned Sigspac members should contact Gerald M. Sturman, chairman, Sigspac; Parsons, Brinckerhoff, Quade & Douglas, 111 John St., N.Y., 10038.

Mini Group Proposed

LODI, N.J. – An Association for Computing Machinery special interest committee on minicomputers – to facilitate sharing of user experiences with minis and provide a central information source – has been proposed here.

At least 50 signatures are needed from ACM members to form the committee.

The committee would serve as a central source where users and other interested parties could obtain information, and where manufacturers and other related companies could inform interested parties of new products and services, according to Jon R. David, who proposed the formation of the committee.

We, the undersigned members of ACM, wish to petition the ACM Council for formation of a Special Interest Committee on Minicomputers (Sicmini).

____
Member Name (Print)

ACM Member # ____________

____
Member Signature

Address ________________

____

Please mail to Jon R. David, 256 Garabaldi Ave., Lodi, N.J. 07644.

Calendar

March 12-14, Greenbelt, Md. – APL (A Programming Language) User's Conference. Contact: Cyrus J. Creveling, Code 560, Goddard Space Flight Center, Greenbelt, Md. 20771.

March 12-14, New York – 19th Annual Systems Management Conference. Contact: American Management Association, Inc., The American Management Association Building, 135 W. 50th St., New York, N.Y. 10020.

March 16, San Francisco – Association for Systems Management, San Francisco Chapter 22nd Annual Spring Conference. Contact: Jack France, The Bank of California, Systems and Procedures Department, P.O. Box 45000, San Francisco, Calif. 94145.

March 20-23, Monterey, Calif. – CPEUG (Computer Performance Evaluation Users Group) Meeting. Contact: John A. Blue, Chairman, CPEUG, Department of the Navy, Automatic Data Processing Equipment Selection Office, Washington, D.C. 20390.

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We've learned a lot in the last 5 years. Mostly from the biggies who used to delight in kicking a little sand in our face once in a while.

We learned that when you introduce a new family of processors, for example, you'd better have a bona-fide new family of processors. And not made out of cardboard, either. So we waited until we'd built the Interdata New Series before we introduced it. People believed us. And we're not about to forget that.

When it came to pricing, we learned just like everybody else – the hard way. By getting our pants taken off in the marketplace a few times. That's something you just don't forget. Same about making promises you can't keep. We can't afford to forget that.

We even learned a lot about OEMs. Very smart. Won't pay for a lot of bells and whistles they don't really need. So we designed a special mini just for OEMs. The Model 74. Good but cheap and upward compatible with our other minis – just like the man wanted. If we ever forget that, we can kiss our OEM business goodbye.

And we learned a lot more along that hard road up.

Flexibility Puts Key-Disk Ahead

WASHINGTON, D.C. – The major advantage of today's key-to-disk systems over keypunch equipment is the flexibility the user gains, Geoffrey Thomas of the Cost of Living Council believes.

For example, he noted, the Cost of Living Council has one form with 16 different formats on it. "Could you imagine the time it would take a keypunch operator to change the drum card to new formats every time just to punch one sheet?" he queried attendees at a Caravan/73 workshop.

With the Computer Machinery key-to-disk system used by the council each of the formats can be kept on disk and called up by the local operator as needed.

He noted, however, that the Council was not the typical user since production work took a low priority in its data entry shop and a user who could batch all his work, so an operator could only be punching one format all day, might not need as much flexibility.

"But if we had had to have each operator write each format, we would have been in real trouble," he said, "and might just as well have stayed with keypunch."

In choosing equipment, he said, a vendor with local training should get a real plus, since it is often not possible to wait for a vendor to schedule a class for operators and it is expensive to send operators out for training.

At the same time, he added, it was usually a slow learning process to get operators to work effectively on the new systems, since most operators viewed the key-to-disk system as a prestige assignment and wanted to learn how to use it.

One user in the audience, however, said his installation had had a hard time converting the operators over 50 years old to using the new systems. "But once we got them used to it," he added, "they were the best workers in the shop."

Maintenance of Mixed-Vendor Systems 'Overrated' Problem

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. – The maintenance problems that can arise from mixed-vendor systems may be vastly exaggerated in order to frighten computer users from going to independently made equipment, panelists at the recent Computer Caravan/73 here indicated.

"We generally don't have problems with different equipment suppliers," according to Dr. Pat Hagerty of the University of Maryland in a talk on the selection of terminals and modems for communications systems.

Scare Tactics

"The problem," he stated, "is definitely overrated by the suppliers who want to scare you out of going to an independent vendor for equipment to attach to the Bell network."

Generally, he said, the service people from Bell and the non-Bell suppliers "get along well and try to be helpful" in solving user problems, whether the problem is in their particular piece of equipment or in the equipment of another vendor.

At the same time, he noted, if there is any problem it is usually generated at the management level of the various firms.

But if the user is having a particular problem with a customer engineer from one company or another, Hagerty noted, the user could have him replaced if he screamed loud enough to the salesman on the account or to the management of that company.

Even though one audience member of the panel that delved into purchasing and use of independent peripherals said he had heard maintenance problems increased "as a square of the vendors involved in the shop," panelist Dave Whitestone of Potomac Electric Power Co. (Pepco) disagreed.

He said that so far – and Pepco has been using independent equipment since 1969 – "all vendors have been extremely cooperative," when it comes to maintenance problems.

If there were any problems, however, they would probably arise right at the start of the use of the new equipment, he said.

"It's going to take some time for you to get all of the vendor's service people to work together," he noted, "but once they get used to the mixed-vendor shop the problems are really minimal."

Users Differ on How To Pick, Train Staff

WASHINGTON, D.C. – Even though users spend the largest part of their budgets on personnel, there seem to be no clearcut guidelines on how to select and train them.

Most of the users at a Caravan/73 session here related different ways of dealing with the same problems, with little common threads in their management approaches to the subject, except for the desire to improve their personnel management techniques.

At the same time, few of the users indicated they currently had any formal in-house training programs for either new or old personnel – but once again they indicated a desire to improve this process.

In the selection and training areas, workshop leader G.D. Springer gave users a multipoint program to use for recruiting people and then training them after they were hired.

But, he warned, any guidelines for personnel handling have to be made to fit the particular installation's needs and the personnel involved and cannot be applied across the board to all installations or to all personnel within an installation.

The first priority when considering adding personnel or replacing people who have left is to discover whether there is a real need for the position, he noted.

Secondly, a firm should take a hard look at the job description and set the requirements in writing.

Next, the firm should establish the salary range for the position and set a maximum starting level. In too many cases, he said, a firm will go over what it really wanted to pay as a starting salary because it is desperate to get someone in the job, but, he said, this only causes problems later with present employees or with the new employee at review time.

A computer installation should also carefully develop its screening and interview techniques and should establish a method to test prospective employees at levels beyond the general aptitude tests.

After hiring a new employee, the manager should set an evaluation period or several evaluation periods to make sure he is performing the job expected.

What the industry taught us about minicomputer pricing.

We've learned the hard way.

Step right up, fans. Here's the greatest little dollar-saver to ever come down the pike. Cycle times too fast to measure. Memory 'til it won't quit. All for a price so amazingly low that it defies the laws of economics.

Terrific. Until you realize they're talking about a processor so stripped down it won't even hum by itself. Its assembly may be your next do-it-yourself project. Except for the tic-tac-toe game, the software won't work without 16 KB more memory and enough peripheral gear to triple your costs. And the discount they used was based on a 1000 unit-per-month schedule.

No question about it. When it comes to minicomputers, some guys really know how to play price. And there's a big difference in how they price their basic processors and how they price everything else.

We ought to know. We've lost our knickers in the trick-pricing game often enough to be experts.

Promise them anything.

We've learned that you can make a lot of promises.

About delivery, for example: "For a customer as important as you, we'll cut our 9-month shipping schedule in half." About documentation: "We don't have all the manuals yet, but we'll work that out together." And about customer engineering: "Of course we'll assign a full time man to the Isle of Wight."

But what we've really learned is we don't have to make promises we can't keep. We don't do business that way. We just don't have the stomach.

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What you get from Interdata when it comes to pricing is something extra. Extra value.

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All for no charge. With other manufacturers, these facilities either cost you extra or are not even available.

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Like our Universal Clock Module. And our teletypewriter controller built into our basic processor.

What all these add up to is extra price/performance.

*OEM price – [illegible] quantity of 15

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We're ready to demonstrate for you now. Not 9 months from now. We'll even run a benchmark for you.

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Some of our lessons were painful. Maybe that's why they stick. Maybe it's because we know if we hadn't learned, we never would have made it.

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La Caravane arrive

Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, Zero-*Un Informatique*. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures		$1.48 billion
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May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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☐ French Market Caravan (May 2-June 7).
☐ English Market Caravan (Sept. 4-Oct. 18, 7 cities)
☐ German Market Caravan (Oct. 30-Nov. 30, 5 cities)

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COMPUTER INDUSTRY

CI Notes

DP May Rank Number 2

STAMFORD, Conn. – New sectors of the telecommunications industry may be on their way toward displacing the computer industry from its role as the "most dynamic, influential industry of the decade," according to a report by the Business Communications Co.

While still much smaller than the $2 billion/year voice service business, known as Plain Old Telephone Service, the combined new sectors are growing four to five times as fast as the older one, and sales should reach $5.6 billion/year by 1977, the report stated.

The fastest growing sector is new services, including new common carriers, domestic satellites and CATV, at a 39% annual rate, while digital equipment is second, with a 28% rate. The report projects in 1977 installed equipment for this field will be valued at $6.1 billion. The other categories include voice-independent "interconnection," and other equipment, such as facsimile units. BCC is at 471 Glenbrook Road, 06906.

Siemens to Buy Computest

CHERRY HILL, N.J. – Siemens Corp. has agreed in principle to acquire Computest Corp. for cash. Computest management and operation will remain unchanged.

This marks the second DP-oriented acquisition by a German firm since November, when Nixdorf announced plans to acquire Victor Comptometer Corp.

Supershorts

An agreement between Decision Data Corp. and International Engineering Ltd. (IEL) is designed to provide Decision with European manufacturing capabilities this year. Decision has agreed to invest $600,000 in IEL, a Northern Ireland firm, and has an option to acquire up to a 50% interest.

– – –

The first Army installation in the World Wide Military Command and Control System (Wimmix) has accepted a dual Honeywell 6050 system. Fourteen systems were delivered in 1972.

– – –

Delta Data Systems has been added to the General Services Administration's approved list of company products for purchase by government agencies.

– – –

Univac has selected Intel Corp. to supply its 1103 semiconductor memory systems. The initial contract is valued at over $1 million, and contains options for the purchase of additional memory systems.

– – –

Computer Automation, Inc. has appointed Geveke Elektronika en Automatic N.V. as its distributor in the Benelux nations.

– – –

Time/Data Corp. has appointed Tokyo Electron Laboratories Inc. as its representative in Japan.

– – –

Microdata Corp. has assigned Teijin Advanced Products Corp. Japanese marketing rights for the Microdata 1600 and 400 product lines.

– – –

High Performance Technology, Inc. of Midland, Mich., has reopened its single crystal production facility. The company has undergone a complete reorganization of its management and capital structure since it was closed in October.

– – –

The Sperry Remington Division of Sperry Rand intends to take a license from Redactron Corp. to manufacture editing typewriters.

IBM-Telex Documents

CIA Would Make Suit Papers Public

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – The Computer Industry Association (CIA) has charged that IBM is attempting to keep documents secret that should be in the public record in IBM's current antitrust suit with Telex, which is slated to go to trial here April 16.

A week ago the association asked to see 25 documents that were filed as part of the case and which the association said concerned internal IBM projections of the effect of certain marketing moves on the competition and on IBM's future business.

Telex indicated it had no objection to the documents being released to the association, the press and the public. However, IBM objected to their release and said it would like to have time to inspect the papers before they were released.

After inspecting the documents over a weekend, IBM contended that all of them except three contained trade secret information and asked Judge Sherman A. Christensen that the documents not be released.

However, the Computer Industry Association last week filed a response to the IBM request, in which it asked Christensen to make the contested documents public immediately and to prevent further "subterfuge" in handling of documents in the antitrust case against IBM.

Competitive Dealings

The IBM request to Christensen cited the fact that the documents were submitted under protective rulings by two other judges, an IBM spokesman said. The documents "sought by the CIA contain confidential information concerning IBM's products and business that should not be made available to competitors, such as members of the CIA," he said.

"It's apparent that the primary purpose of the CIA is to generate prejudicial publicity concerning the antitrust cases pending IBM, and in light of the closeness of the Telex trial and the potential problem posed by such prejudicial publicity, IBM submits that it is not useful or desirable to facilitate the publicity seeking efforts of the CIA," the spokesman said.

The CIA has charged that the contested documents do not contain trade secret information but rather contain only information on IBM marketing projections and forecasts of the effect of certain moves upon the competition.

The moves considered in the documents are said to include the changes in memory and CPU prices outlined in an IBM memo attributed to T. Vincent Learson and the proposed effect of the longer-term lease plans that IBM was considering at the time.

"We want to make sure that these documents are not destroyed like the data base was in the Control Data-IBM case," according to CIA President Dan McGurk, "and that is why we have asked for them to be released publicly.

"Making them public is the only way to make sure they will not be lost to the industry and the public at large," he indicated.

In addition, McGurk said that from the titles of the documents it was impossible to see how they contained any trade secret information, and he indicated it was likely that IBM was only using the trade secret argument as an excuse to keep embarrassing information from public release.

How Secret?

The most important argument in the CIA request, sources said, is the charge of secrecy of documents in the case. The IBM move to keep documents secret – so closely on the heels of the criticized data base destruction in the Control Data-IBM settlement – seems to suggest, they said, that there is a great deal of information in the documents attached to the case that could be harmful to IBM's case or at least to its image.

Opposition Is Certain to Bell Plans To Restructure Private Line Rates

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T's plans to restructure its private line tariffs (Story on Page 1) will surely be contested by the specialized common carriers and the Federal Communications Commission.

To change its rates AT&T will have to justify that the proposed charges cover its costs or are "fully compensatory," as Bell claims.

In its request to file the proposed changes, AT&T has told the FCC that the total revenue it gets from private lines will be redistributed to more accurately reflect its costs. But there will undoubtedly be questions for Bell to answer.

For years Bell has provided private lines at $3/mile and now it says it can provide those same facilities in highly populated (high-density) areas for only 85 cent/mile. It will be important for AT&T to document how these changes are justified from an accounting standpoint.

Analysis

It is no coincidence that the lower rates duplicate the routes where MCI and the other specialized carriers plan to operate. An MCI spokesman said the FCC will have to be sure that AT&T is proposing to compete fairly.

Under its now-famous 18920 ruling in 1971, the FCC said existing carriers will be allowed to compete with the specialized carriers so long as they do so "equally and fairly."

If Bell's proposed changes are not allowed to take effect, long-distance telephone users will have to pay $100 million more annually by 1976 because of the private line revenue that will be lost, according to Richard R. Hough, president of AT&T's Long Lines Department.

Under the existing private line rates Hough estimated AT&T will lose $200 million to specialized common carrier competition by 1976.

AT&T figures for 1971 show private line revenues of $185 million. So Hough's estimates indicate Bell would lose more than the value of its current revenues if the present rates were to remain.

When asked why it would take only $100 million in added revenue to make up an estimated loss of twice that amount, Hough said the difference of $100 million was the value of AT&T's facilities allocated to private line services.

Based on these estimates, it appears that AT&T is dedicating $100 million in network resources to generate $185 million in revenues. It would then follow that the bulk of AT&T's subscribers is doing without $100 million of network facilities so that 19,400 private line users can enjoy lower rates than dial-up customers.

AT&T has told the FCC the proposed rates "more closely reflect the cost of providing the [private line] service." Before any FCC approval is given to restructure the interstate voice-grade private line rates, the costs of that service will come under very close scrutiny.

Caravan/73: a Sales 'Happening'

By a CW Staff Writer

WASHINGTON, D.C. – Now that the Computer Caravan/73 has visited two cities on its 10-city tour, exhibitors are ready to talk about the results of the show so far.

"We've seen one and a half to two times the number of people we saw in each city last year," according to Paul Lobel, marketing manager for Penril Data Communications.

"And," he added, "the quality has been twice as good as last year. In fact in Boston we sold enough equipment right off the floor to pay for the expense of being in that city – something we never did last year."

Small World

Lobel said two of the Boston sales came from people whom Penril had not been courting before the show.

"We didn't know they existed, but they came to the show and signed orders that were worth $10,000," he said.

The first sale of the show was made by Iomec representative Bob Martel, who just 45 minutes after the show opened in Boston closed an order he had been pursuing.

"We were working on this order," he said, "but the show atmosphere really helped to put it over the top. The customer could come in here and see the equipment working along with the rest of our line. He was impressed, and the show atmosphere helped impress him."

In addition, Martel said contacts gained at the Boston show "will have me tied up solidly for the next two weeks – and these aren't guys just shopping around, they want to talk turkey and are ready to sign contracts."

But direct sales aren't the only reason given by some exhibitors for being in the Caravan.

Increase Presence

"This show is helping us increase our presence in the various cities and regions around the country," according to Dallas Talley, marketing vice-president at General Computer Systems, a key-to-disk maker.

"Some users," he admitted, "have not really heard of us before. But if the results of Boston hold up – and I think they will – a lot more of them will be aware we are around when they look for data entry equipment."

In fact, Talley indicated his firm had talked to several users who were presently using or planning to get someone else's equipment. "We may have changed a few minds," he noted.

It is difficult, if not impossible, to put a dollar figure on the sales made so far this year as a direct result of the Caravan, but all exhibitors interviewed said they were seeing more good contacts this year than last – most indicating the number had doubled so far.

And last year, several firms sold over $1 million as a result of the Caravan, with one reporting sales of $2.5 million. This year might see those figures broken, exhibitors agreed.

Computer Users' Forum Registration

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Title____

Company____

Address____

City____

State____________________Zip_______________________

1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

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01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
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12 Communications/Printing/Publ.
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02 Data Processing & Other Operational Management
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04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:______________________

2. Please check the appropriate city:

_____ Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
_____ New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
_____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
_____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
_____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
_____ San Francisco	April 3-5 (Tues, Wed, Thur).	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
_____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
_____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
_____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

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Day 2 – Communications

Four panelists will discuss two top issues:
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b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management

Panel discussion on management aspects and workshops on specific techniques in the following areas:
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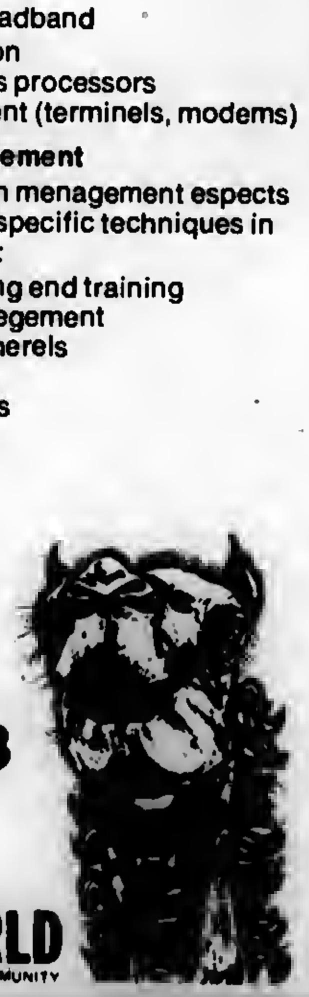
Programming management
Independent Peripherals
a) memories
b) other peripherals



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Day 1 – Data Communications Planning
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Day 3 – Small Systems Panel

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Changing User Needs Expected to Govern Future of Data Entry System Business

By E. Drake Lundell Jr.
Of the CW Staff

SANTA MONICA, Calif. – User needs and not technology should govern the future of the data entry business, according to Peter Zinsli, vice-president of Computer Machinery Corp. here.

Because of this, he said, the present "mixed-media" data entry systems do not have a lot of validity since they don't meet the present user's needs efficiently.

At the same time, he indicated there will be a market for such systems in the future since user needs will be changing over the next few years – but "it's not the time now."

OCR will have to be used more in the future, because the amount of data to be entered in computer systems will grow by four times by 1980 and not all of this growth can be met by key entry systems such as the ones produced at CMC, he said.

"When the user meets these problems of increased input requirements, then he will need the new systems." CMC will probably offer some type of "mixed-media" system in the future, he said, when users reach a point where they need such devices.

Users will move to such devices or to OCR not as a group, he said, but rather by industry or application area as they are forced to by their growing workloads for data entry.

About the Market

Zinsli does not expect the market for key entry equipment to level out in 1974 or 1975, as some industry researchers have predicted.

"There is a big unknown in their equations," he said, "and that is on what IBM plans to do. But I don't see much reason for the growth to level out."

By the end of 1971, he indicated, the key-to-disk makers had only penetrated 1.7% of the potential market and IBM was still shipping 5,000 129 keypunches monthly. Even with half of these being netted out – replacing existing installations – that still meant 2,500 new keypunch installations each month by IBM alone, he noted, which in turn indicates a growing market for the key-to-disk makers, not a stationary or shrinking one.

He also reported that CMC had gained the lead in the key-to-disk marketplace both in terms of the value of equipment installed and the number of units in the field over its closest competitor, Inforex.

At the end of 1972, CMC had 13,000 keystations installed, he said, compared to 12,000 for Inforex; 2,500 for Honeywell and 3,500 for the rest of the industry.

On an if-sold basis, the CMC equipment installed was valued at around $92 million, he said, compared with Inforex with $50 million to $60 million in installed equipment.

Presently CMC is producing 600 keystations monthly, he said, and the average size of a system being installed is around 10 keystations.

CMC 5 systems average 10 keystations, CMC 9s average 15 keystations and the first deliveries of the CMC 18 are averaging 22 to 24 keystations, which will raise the average system size when volume deliveries begin, Zinsli added.

The CMC business is divided about equally between its U.S. business and foreign operations.

The European market is highly fragmented by country, he indicated, with some of the nations tending to have highly centralized data entry operations and others having decentralized operations.

For example, Zinsli stated that in France only 20% of the shops operate with one to eight keystations, while in Germany, which is highly decentralized, 40% of the shops have between one to eight keystations. In the U.S., by contrast, 30% of the installations have one to eight keystations, and in the UK the number is 38%.

Surprisingly, even though key-to-disk systems are primarily sold on the idea tht they can reduce people costs in the U.S., the systems are also becoming popular in Japan with its lower labor rates, Zinsli related.

He also noted that the Japanese bought larger configurations for more centralized operations with 32 more keystation systems being sold overseas than here.

The Japanese are interested in productivity," he said, "so they buy this type of system for the increased productivity, even if it might not save them a great deal over their keypunching costs."

Itel Unit to Lease 370s

SAN FRANCISCO – Itel Corp. has set up a subsidiary, Itel Investment Management Corp., for purchasing for lease about $40 million of IBM 370 central processors and peripheral equipment manufactured by Itel and others.

The subsidiary has filed with the Securities and Exchange Commission to offer Limited Partnership Units, $10 million of which will be offered to the public. The remaining funds have been tentatively arranged with commercial banks.

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360 Add-Ons 'Strong,' But 370s Cast Long Shadow

By Molly Upton
Of the CW Staff

BOSTON – The 360 add-on memory market, although admittedly "strong," according to a recent survey of manufacturers, is being overshadowed by the glamor of the 370 market.

Some makers are finding their production facilities hardpressed to keep up with the 370 demand, and marketing forces may be overlooking some areas in the 360 market in efforts to place well in the 370 race.

The 360 market, described as "getting more competitive every day," by Chris Gordon, New England district manager of Computer Investors Group, is "stronger than our optimistic forecasts had predicted," according to Bob Hengen, marketing vice-president of Cambridge Memories.

Refusing Orders

The 360 demand is so great that Gordon said CIG has had to turn down some orders, as Data Recall, the manufacturer, is concentrating exclusively on making 370 boxes now. Gordon explained that in short-term rentals it is difficult to recover costs, and the firm prefers to handle depreciated boxes coming off-rent.

Current inventory is sufficient to handle demand; he added.

Ampex, Electronic Memories and Magnetics and Cambridge Memories are all making new boxes for the 360 series.

CW Photos by M. Upton
Gordon

CW Inquiring Photographer

Although there was some difference of opinion as to which 360 models are more susceptible to inroads from the 370s, there was general agreement that "we'll pick up the customer when he gets to the 370."

To Larry Bellman of Ampex, the 360 add-on market looks concrete, although he feels the Model 30 user is likely to go to the 370/125, with the majority of the volume existing in the 40, 50 and 65 range.

John Reardon of EM&M noted the demand for 40 add-ons had slowed down some, which he attributed to upgrading to the 370/145.

'Spooky' Business

Bellman

The 360 business is "spooky," according to Hengen, as it runs serially by model rather than in a parallel fashion. "We get runs of orders by models that defy reasoning. For instance, demand can be great for 65s and 22s, and then alternate to 40s or big 30s," Hengen said.

Cambridge is receiving orders for larger amounts of memory, but the volume is roughly the same as it has been, he said.

Possibly this is because Cambridge isn't touching as many bases as it might in the 360 market due to booming 370 business, Hengen admitted.

The market for the Model 30 "looks very good," noted Hengen, who called the 30 "still the best doggone machine put together."

Reardon

The argument over whether IBM would maintain CPUs with extended memory did cause some cancelled and delayed orders, the men conceded, but they said the volume returned as soon as the issue was settled.

CIG offers 2M bytes for the 155 and will have 4M bytes for it, according to Gordon. This, with a DAT box, he suggested, could give the user the equivalent of a 370/158.

EM&M is beginning initial deliveries of up to 3M bytes for the 155 and 165, Reardon said.

The 370 market is taking "every bit we can produce," observed Hengen of Cambridge, who noted his firm is shipping units for the 155 and 165, and expects to begin shipping units for the 145 in June.

Some Disagreement

The effect of the recent IBM announcement on the expansion of the 145 memory was also interpreted differently [CW, Feb. 7].

Reardon said EM&M is "not concentrating" on the 145 market, as IBM just "bundled" up to 1M byte of core in the unit, which previously was available with 512K.

But Hengen said he thought this move by IBM probably broadened the market, although it left the add-on memory makers in a "less unique position." "We don't have to engineer the extension," he added.

IBM also stabilized the market, in Hengen's view, since he felt the users had not "bought the idea that 'the real 370' had stood up."

Hengen expects an accelerated move to the 370 now.

Although more companies are entering the memory arena, Hengen sees the market "holding up very nicely," with room for four or five good size memory companies. Probably the secret to success is to become more in tune with the systems companies and operate their businesses less like a semiconductor outfit and more like a computer company, he concluded.

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Japan Business Leaders Unite to Seek Liberalization of Computer Imports

Special to Computerworld
From *Shukan Computer*

TOKYO – Japanese business and industrial leaders have called upon the government to take drastic measures – including liberalizing computer and integrated circuit imports – "in several months in order to reduce the nation's huge trade surplus."

The decision was made at an emergency meeting of leaders of the Federation of Economic Organizations (Keidanren).

This is the first time that Keidanren, the nation's most influential economic organization, has formally called for the liberalization of such items as computers and some farm products.

Japanese computer makers were shocked at the Keidanren leaders' decision.

According to industry sources, the makers had just decided earlier last week there was no reason for decontrol of imports of computers at present because foreign-made machines already hold a 50% share in the nation's market.

Further, they asked the Japanese Government last week not to liberalize computer imports until their five-year plan to develop new machines ends in 1976, the sources said.

The main points of the Keidanren plan are:

- The government should keep the yen floating so it may find an appropriate margin for revaluation through interactions of actual market forces.
- The government should liberalize imports of such "items of international interest" as computers and farm products, by taking measures to mitigate imports upon domestic industries. Imports of goods which are still placed under restraints should also be expanded.
- Tariffs on industrial products should be largely reduced even before new international negotiations on across-the-board tariff cuts is launched.
- Japan should strive for complete liberalization of international capital transactions. Concerning domestic industries which cannot yet afford to meet complete liberalization, the government should set a specific date for the 100% liberalization of foreign investment.
- A new law should be enacted to enable the government to respond to rapid changes in economic situations.

Why you should go to the Computer Caravan.

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The new iomates. See all 13 in New York, Mar. 5-7.

Microprogramming Coming Into Vogue, Costs Seen Dropping

SAN FRANCISCO – Microprogramming has become a highly practical reality through the use of advanced semiconductor technology in control memory design, Microdata President Donald W. Fuller told a group of security analysts recently.

But the full force of the technique, recognized as a theory with great potential 20 years ago, is only beginning to be felt.

On the Bandwagon

Almost every computer maker has incorporated microprogrammable computers in the product line, he noted.

"No wonder, when you realize what microprogramming can do for the user as well as the manufacturer. The cost of developing new computer architectures is the lowest ever," he said.

The manufacturing cost for a family of related models has dropped dramatically as have costs for training and servicing. And with microprogramming, software can be fully protected from theft by the competition," Fuller said.

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Nickels & Dimes

Good Riddance Department: RCA expects to report record sales and earnings of over $2 a share in its first full year since disposing of its computer entity. "The results validated the correctness of that decision," Chairman Robert W. Sarnoff said. "Our managerial and technological resources, freed of the computer drain, were mustered in support of our continuing operations, with priorities going to the most vigorous growth segments . . ."

$$$

United Telecommunications will pay its first dividend of 25 cents per common share on March 28 to stockholders of record Feb. 28.

$$$

The sale of forms continues to increase in importance for **Data Documents**, which indicated in the first quarter standard cards represent less than 60% of sales while forms now account for about 25%.

$$$

Sales of Applications Software's ASI-ST data management system exceeded $2 million earlier than had been anticipated, because of sharp acceleration in recent months.

$$$

Wiltek, communications equipment maker, has completed a private placement of convertible subordinated notes in the amount of $2 million with three institutional investors.

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Computer Consoles has signed a one-year loan agreement with Marine Midland Bank-Rochester for up to $2 million to finance construction and leasing of its Data Management Systems.

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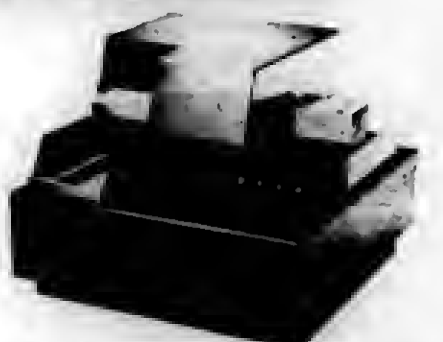

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$70 Million Write-Off

NCR Reveals $59.6 Million Loss for '72

DAYTON, Ohio – A $70.1 million write-off, added to the poor first quarter resulting from a strike the previous year, has caused National Cash Register Co. to record a loss of $59.6 million for the year.

Earnings for 1971 totaled $2.1 million or 8 cents a share. Revenue in 1972 rose to $1.56 billion, up 6% from $1.47 billion in 1971.

Operating earnings prior to the charge were improved, totaling $10.5 million, and revenue from computer rental and sales rose 17% to $250.8 million. Computer shipments were up 17% from 1971, the firm said.

Transition

The company has changed its method of depreciating plant, manufacturing and rental equipment to the straight-line method for additions beginning in 1972.

It is also cutting the estimated useful life of rental equipment to five years from six. NCR has changed to the "first in, first out" method of inventory evaluation.

NCR expects a profitable year in 1973, with improved results from the computer business due to a growing customer base.

The charge reflects a write-off of previously deferred marketing costs, a restatement of parts inventories, costs of realigning and equipping manufacturing facilities in connection with a transition from mechanical cash registers to new electronic products, according to NCR.

The fourth quarter contributed $10.1 million of the operating profit, in contrast with a $15.7 million loss in 1971.

Suit Questions REI Earnings Reports

DALLAS – A suit has been filed in the U.S. District Court for the Southern District of New York charging Recognition Equipment Inc. with overstating its sales, profits and net assets in financial statements and other reports issued between October 31, 1969, and July 1, 1971.

Plaintiff Michael Rifkin, allegedly a purchaser of REI stock, charged the firm with violations of Section 10(b) of the Securities Exchange Act of 1934.

REI said the reports in question "reflected accepted accounting practices and made full and proper disclosure," and that the claims will be "vigorously resisted."

Interdata Earnings Jump in Year As Revenues Show Rise of 46%

OCEANPORT, N.J. – Quantity sales of Interdata Corp.'s New Series minicomputers were credited with the substantial rise in earnings and revenues for the year ended Dec. 31.

Earnings, including a $349,700 special credit, rose to $894,900 or 45 cents a share compared with $45,200 or 3 cents a share last year. Revenues reached $12.8 million, a 46% jump from $8.8 million in 1971.

"Of major significance was the move by major corporations to begin purchasing our products in large quantities, thus permitting us to realize increased production efficiencies," President Daniel Sinnott said.

Backlog reached $4.7 million in the fourth quarter compared with $3.2 million at the end of 1971.

Sinnott noted that the earnings growth occurred despite an $85,000 charge as a result of reducing previously capitalized research and development.

"Furthermore, we are targeting a substantial improvement in 1973 net income despite the fact that the company will charge the remaining $460,000 of previously capitalized R&D to operations during the year. The company does not plan to capitalize any 1973 R&D expenditures," he said.

In the fourth quarter, earnings totaled $200,200 or 9 cents a share compared with $158,100 or 9 cents a share in the comparable year ago period.

Revenues rose to $3.5 million from $2.5 million.

Ampex Posts Profitable 3d Quarter

REDWOOD CITY, Calif. – Ampex has completed its second consecutive profitable quarter and cut its long-term debt by $71 million in the 15 months since a management change.

In the third quarter ended Jan. 27, operating earnings totaled $1 million or 10 cents a share before a special gain of $2.8 million, for a total of $3.8 million or 35 cents a share. Revenues totaled $74.4 million.

The special gain was derived from the sale of a subsidiary, Mandrel Industries Inc.

Comparable year-earlier results are unavailable, since auditors said the 1972 results couldn't be delineated from 1971 results. Ampex had a total loss of $101.7 million in the two years.

Ampex showed a $1.8 million deficit for the nine months, before the special credit produced earnings of $904,000 or 8 cents a share. Revenues for the period totaled $221.2 million.

Acquisitions

United Data Centers, Inc. has acquired Centralized Accounting, Inc., a Madison, Wis., based data center, for 50,000 shares of

Valley Computer has agreed in principle to merge into a wholly owned subsidiary of Tymshare,

Inc. Tymshare will issue up to 50,000 shares of its common stock.

United Data Centers stock, plus an additional number of shares to be determined in the future.

Halliburton Co. has acquired Ebasco Services Inc. and Vernon Graphics, Inc. from Boise Cascade Corp. for $65 million cash.

Vermont Research Corp. has acquired OMI Memories, Inc. of Los Angeles, which has been merged into VRC California, a wholly owned subsidiary of Vermont. Vermont issued 61,621 shares of its common stock in return for all of the stock of OMI.

U.S. National Bank (San Diego) has acquired about 80% of the equity securities of Data Automation Co., Inc. of Dallas, after the firm's plan for reorganization under Chapter 11 was approved.

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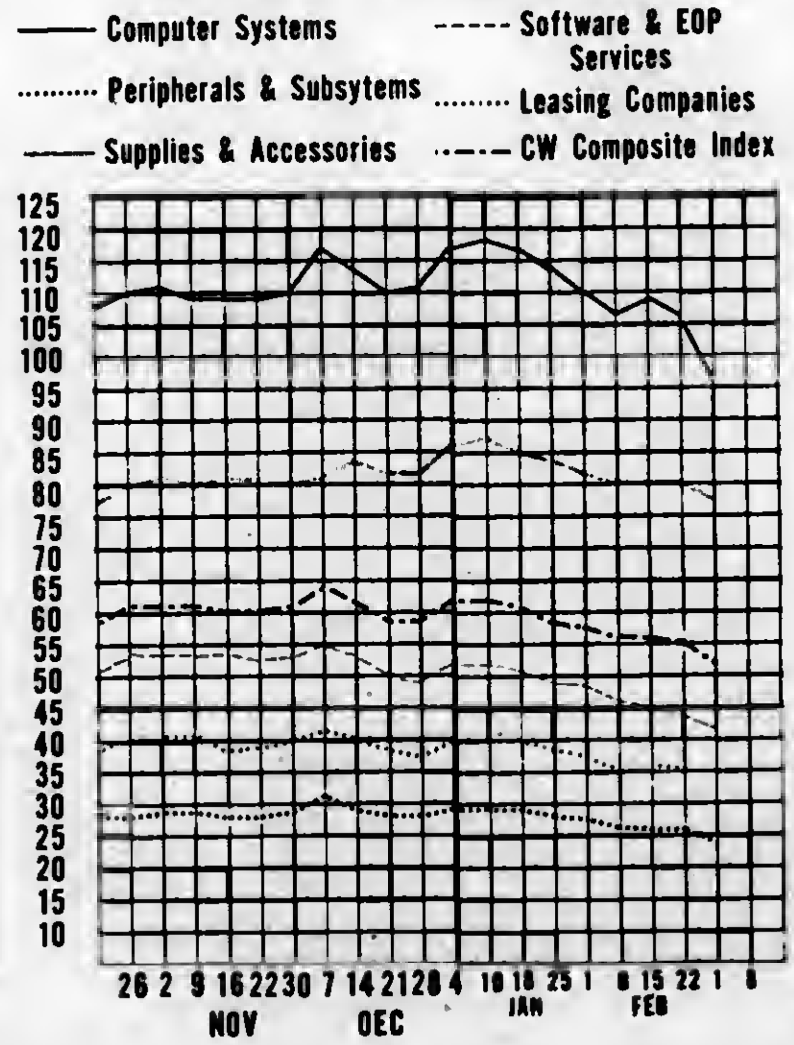
CLOSING PRICES THURSDAY, MARCH 1, 1973

EXCH		PRICE			
		1972-73 RANGE (1)	CLOSE MAR 1 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 1/2	- 1/8	-7.6
A	APPLIED DATA RES.	3- 7	3 1/8	- 1/2	-13.7
O	APPLIED LOGIC	1- 4	2 5/8	- 1/8	-4.5
N	AUTOMATIC DATA PROC	70- 99	73 5/8	-2 7/8	-3.7
D	BRANDON APPLIED SYST	1- 2	3/4	+ 1/8	+20.0
O	COMPUTER DIMENSIONS	3- 14	3 3/8	- 1/8	-3.5
D	COMPUTER DYNAMICS	1- 4	1	+ 1/8	+14.2
O	COMPUTER NETWORK	2- 7	2 1/4	0	0.0
N	COMPUTER SCIENCES	4- 10	4 1/8	- 1/8	-2.9
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	2- 8	2 3/4	+ 3/8	+15.7
O	COMPUTER USAGE	6- 14	6 1/4	-1	-13.7
N	COMPUTING & SOFTWARE	10- 28	9 7/8	- 5/8	-5.9
O	COMRESS	1- 3	3/4	- 1/8	-14.2
O	COMSHARE	5- 10	7 1/8	- 3/8	-5.0
O	DATATAB	4- 9	3 1/2	0	0.0
O	EDP RESOURCES	1- 8	1 1/2	0	0.0
A	ELECT COMP PROG	1- 5	1 1/2	+ 1/8	+9.0
N	ELECTRONIC DATA SYS.	43- 65	48 5/8	-1 1/4	-2.5
O	INFORMATICS	3- 11	3 3/4	+ 1/8	+3.4
O	I.D.A. DATA CORP	1- 3	5/8	- 1/8	-16.6
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	8 1/2	-1	-10.5
O	LOGICON	4- 9	5 1/8	-1 1/8	-18.0
A	MANAGEMENT DATA	3- 10	3 1/4	0	0.0
O	NATIONAL CSS INC	8- 37	32 7/8	-2 3/4	-7.7
O	NATIONAL INFO SRVCS	1- 5	1 7/8	+ 1/8	+7.1
P	ON LINE SYSTEMS INC	8- 28	21	-1 3/4	-7.6
N	PLANNING RESEARCH	4- 17	4 1/8	- 1/8	-2.9
O	PROGRAMMING METHODS	20- 25	22 1/4	- 1/4	-1.1
O	PROGRAMMING & SYS	1- 2	3/4	- 1/8	-14.2
O	RAPIDATA INC	5- 27	21 1/4	0	0.0
O	SCIENTIFIC COMPUTERS	1- 4	1 1/4	- 1/8	-9.0
O	SIMPLICITY COMPUTER	1- 5	2 7/8	- 1/8	-4.1
O	TBS COMPUTER CENTERS	3- 6	3 1/4	0	0.0
O	TCC INC	1- 3	3/8	- 1/8	-25.0
O	TYMSHARE INC	7- 17	7 5/8	- 1/4	-3.1
O	UNITED DATA CENTER	5- 8	5 1/4	- 1/4	-4.5
N	UNIVERSITY COMPUTING	7- 26	9 1/8	-2 1/4	-19.7
A	URS SYSTEMS	6- 10	5 5/8	- 1/4	-4.2
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	23- 49	22 3/4	+ 1/8	+0.5
O	ADVANCED MEMORY SYS	12- 23	16 5/8	-1 3/4	-9.5
N	AMPEX CORP	5- 15	6 1/4	- 1/4	-3.8
O	ANDERSON JACOBSON	4- 8	5 3/4	- 1/8	-2.1
O	BEEHIVE MEDICAL ELEC	1- 8	6 3/4	+ 5/8	+10.2
A	BOLT,BERANEK & NEW	5- 21	8 3/4	- 1/4	-2.7
N	BUNKER-RAMO	7- 14	7 1/2	- 1/4	-3.2
A	CALCOMP	9- 25	11 1/2	- 1/2	-4.1
O	CAMBRIDGE MEMORIES	9- 15	10 5/8	+ 1/8	+1.1
O	CENTRONICS DATA COMP	6- 28	21 1/2	+2 1/4	+11.6
O	CODEX CORP	6- 25	13	-1 1/4	-8.7
O	COGNITRONICS	2- 5	1 1/2	- 1/8	-7.6
O	COMPUTER COMMUN.	1- 7	2 1/2	- 1/4	-9.0
A	COMPUTER EQUIPMENT	2- 4	2	- 1/4	-11.1
O	COMPUTER MACHINERY	7- 13	10 1/8	- 7/8	-7.9
O	COMPUTER TRANSCEIVER	2- 9	2 3/4	- 3/4	-21.4
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	23 1/2	- 1/4	-1.0
A	DATA PRODUCTS CORP	3- 7	3 3/8	- 3/8	-10.0
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 7/8	0	0.0
O	DI/AN CONTROLS	3- 8	3 3/8	- 3/8	-10.0
N	ELECTRONIC M & M	3- 8	4 1/8	0	0.0
O	FABRI-TEK	2- 5	3 1/2	- 3/8	-9.6
O	GENERAL COMPUTER SYS	6- 16	8 1/4	- 1/4	-2.9
N	GENERAL ELECTRIC	59- 74	66 1/4	-1 5/8	-2.3
N	HAZELTINE CORP	7- 13	6 1/2	- 3/4	-10.3
O	INFOREX INC	14- 36	13 5/8	- 1/2	-3.5
O	INFORMATION DISPLAYS	1- 5	5/8	- 1/8	-16.6
O	INFORMATION INTL INC	8- 25	11 1/2	- 3/4	-6.1
A	LUNDY ELECTRONICS	6- 14	6 7/8	+ 1/4	+3.7
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	20 1/4	-2	-8.9
N	MOHAWK DATA SCI	8- 27	7 5/8	-1	-11.5
O	ODEC COMPUTER SYST.	3- 12	3	- 1/4	-7.6
O	OPTICAL SCANNING	2- 16	3 1/4	0	0.0
O	PERTEC CORP	5- 17	5 1/4	-1 5/8	-23.6
O	PHOTON	3- 15	4	- 3/4	-15.7
A	POTTER INSTRUMENT	6- 21	6 1/4	- 3/4	-10.7
O	PRECISION INST.	2- 13	4 1/4	-1	-19.0
O	RECOGNITION EQUIP	5- 15	5 1/2	- 3/4	-12.0
N	SANDERS ASSOCIATES	11- 21	11 3/8	+ 1/8	+1.1
O	SCAN DATA	3- 13	2 7/8	- 3/8	-11.5
O	STORAGE TECHNOLOGY	17- 39	20	- 7/8	-4.1
O	SYCOR INC	7- 11	8 1/2	-1	-10.5
O	TALLY CORP.	8- 15	10	-2 1/8	-17.5
N	TEKTRONIX INC	34- 64	40 7/8	+ 7/8	+2.1
N	TELEX	4- 15	4	- 1/8	-3.0
O	WILTEK INC	10- 26	15 1/4	- 1/2	-3.1
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	6 3/4	0	0.0
A	BARRY WRIGHT	9- 14	8 5/8	- 5/8	-6.7
A	DATA DOCUMENTS	17- 26	18 3/4	-1 1/8	-5.6
O	DUPLEX PRODUCTS INC	8- 16	8 3/4	- 1/4	-2.7
N	ENNIS BUS. FORMS	6- 10	6 3/8	- 1/8	-1.9
O	GRAHAM MAGNETICS	15- 27	16 1/2	- 1/4	-1.4
O	GRAPHIC CONTROLS	11- 15	11 3/8	- 7/8	-7.1
N	3M COMPANY	76- 88	79 3/4	-2 3/4	-3.3
O	MOORE CORP LTD	42- 57	55	- 1/8	-0.2
N	NASHUA CORP	48- 62	52 3/4	-1 3/8	-2.5
O	REYNOLDS & REYNOLD	37- 77	47 5/8	+ 1/2	+1.0
O	STANDARD REGISTER	14- 20	17 3/4	-2	-10.1
O	TAB PRODUCTS CO	14- 23	18 1/2	-1	-5.1
N	UARCO	20- 28	20 1/4	-1	-4.7
A	WABASH MAGNETICS	6- 11	6 1/8	+ 1/8	+2.0
N	WALLACE BUS FORMS	21- 26	23 3/8	-1 1/8	-4.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-240	226 1/2	-3 1/4	-1.4
N	COLLINS RADIO	14- 27	22 3/8	+ 1/2	+2.2
N	CONTROL DATA CORP	43- 78	46 1/2	-2 1/2	-5.1
U	DATA GENERAL CORP	39-131	39 1/2	-84	-68.0
O	DIGITAL COMP CONTROL	3- 25	3 1/4	- 1/4	-7.1
N	DIGITAL EQUIPMENT	72-105	89 3/4	-7 7/8	-8.0
N	ELECTRONIC ASSOC.	6- 13	6 5/8	- 1/2	-7.0
A	ELECTRONIC ENGINEER.	6- 14	8 1/4	-1 1/2	-15.3
N	FOXBORO	23- 41	27	-1 1/2	-5.2
O	GENERAL AUTOMATION	13- 55	41	-8 1/4	-16.7
O	GRI COMPUTER CORP	2- 5	2	- 1/8	-5.8
N	HEWLETT-PACKARD CO	44- 94	86 7/8	- 5/8	-0.7
N	HONEYWELL INC	104-170	107 3/4	+ 1/2	+0.4
N	IBM	333-451	427	-17	-3.8
O	INTERDATA INC	8- 16	9 3/8	- 1/2	-5.0
N	MEMOREX	10- 38	10 1/8	-2 1/2	-19.8
O	MICRODATA CORP	5- 10	8 1/4	- 5/8	-7.0
N	NCR	27- 38	26 3/4	-1 5/8	-5.7
N	RAYTHEON CO	27- 47	29	-1 1/4	-4.1
N	SPERRY RAND	30- 50	42 5/8	-2 3/8	-5.2
A	SYSTEMS ENG. LABS	5- 16	4 1/2	-1	-18.1
N	VARIAN ASSOCIATES	14- 22	14	-1	-6.6
N	WANG LABS.	22- 61	23	-1 1/4	-5.1
N	XEROX CORP	121-172	157 1/8	-7 7/8	-4.7
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3 5/8	+ 1/8	+3.5
O	BRESNAHAN COMP.	1- 3	1 1/4	- 1/8	-9.0
O	COMDISCO INC	3- 18	11 3/4	-1 7/8	-13.7
O	COMMERCE GROUP CORP	5- 11	4 3/4	+ 1/8	+2.7
O	COMPUTER EXCHANGE	1- 3	5/8	- 1/8	-16.6
A	COMPUTER INVSTRS GRP	4- 14	4 1/4	- 1/8	-2.8
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	8	+ 1/8	+1.5
M	DATRONIC RENTAL	2- 4	2 1/8	0	0.0
A	DCL INC	2- 10	2 1/4	0	0.0
A	DEARBORN-STORM	14- 26	19 3/4	- 1/2	-2.4
A	DPA, INC.	5- 8	6 3/4	+ 1/4	+3.8
A	GRANITE MGT	5- 11	5	0	0.0
A	GREYHOUND COMPUTER	5- 11	4 3/4	- 1/4	-5.0
A	ITEL	7- 12	8 1/2	- 1/4	-2.8
N	LEASCO CORP	12- 24	13 1/8	- 3/8	-2.7
O	LEASPAC CORP	6- 15	6	0	0.0
O	LECTRO MGT INC	1- 4	1 3/8	0	0.0
A	ROCKWOOD COMPUTER	2- 7	1 7/8	- 1/8	-6.2
O	SYSTEMS CAPITAL	3- 20	9	+ 1/8	+1.4
N	U.S. LEASING	19- 35	26 1/2	-2 1/2	-8.6

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

WANGO
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.61	.....
Revenue	4,599,278	$1,597,697
Disc Op	(25,828)	(43,381)
Spec Cred	a205,000	.....
Earnings	510,673	(84,457)

a-Tax credit less loss related to discontinuance of subsidiary.

GRAHAM MAGNETICS
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.60	$.87
Revenue	5,366,655	4,431,087
Spec Cred	.....	a186,400
Earnings	548,376	488,400

a-Tax loss carryforward.

WANG LABORATORIES
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.21	$.14
Revenue	12,069,939	8,505,654
Earnings	835,381	555,721
6 Mo Shr	.16	.28
Revenue	20,074,340	16,358,808
Earnings	718,755	1,113,716

COMPUTER SCIENCES
Three Months Ended Dec. 29

	1972	a1971
Shr Ernd	.....	$.09
Revenue	$35,611,000	30,566,000
Earnings	(277,000)	1,154,000
9 Mo Shr	.....	.26
Revenue	101,376,000	b96,510,000
Earnings	(2,080,000)	3,489,000

a-Restated to reflect the effect of equity accounting for affiliates. b-Includes $7.2 million from sale of the company's remaining 38% interest in Computax Services Inc.

BRANDON APPLIED SYSTEMS
Six Months Ended Aug. 31

	a1972	a1971
Shr Ernd	$.03	$.01
Revenue	1,275,179	877,095
Earnings	183,692	39,149

a-Includes results of Rand Teleprocessing Inc.

PERTEC
Three Months Ended Dec. 29

	1972	1971
Shr Ernd	$.08	$.16
Revenue	5,976,000	8,113,000
Spec Chg	a80,000	.....
Earnings	193,000	570,000
6 Mo Shr	.21	.38
Revenue	11,921,000	11,714,000
Spec Chg	a80,000	.....
Earnings	647,000	1,174,000

a-Expenses in connection with proxy contest.

DIGITAL EQUIPMENT
Three Months Ended Dec. 30

	1972	1971
Shr Ernd	$.42	$.35
Revenue	60,032,000	44,936,000
Earnings	4,601,000	3,648,000
6 Mo Shr	.75	.64
Revenue	111,773,000	83,348,000
Earnings	8,026,000	6,586,000

BOLT BERANEK & NEWMAN
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.22	$.16
Revenue	5,398,400	4,936,500
Spec Cred	a19,500	.....
Earnings	271,800	189,800
6 Mo Shr	.40	.30
Revenue	10,514,600	9,125,100
Spec Cred	a19,500	.....
Earnings	502,400	360,800

a-Gain from sale of minority interest in consulting company.

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CW Photo by V.J. Farmer

Win 'Tool' — Help School

Modular Computer Systems, whose booth is shown here at the New York Caravan, will give away a $10,000 Modcomp II/20 computer at the end of the Computerworld Caravan. The contest is based on the best estimate of trading volume on the New York Stock Exchange on a given day and the winner picks a college to receive the computer. More coverage of the New York Caravan on Pages 5 and 6.

6,250 Byte/In. Density

IBM 3420 Storage More Than Tripled

By a CW Staff Writer

WHITE PLAINS, N.Y. – IBM added three new models to its 3420 magnetic tape system that can record data at the "densest recording capability yet offered," according to the company.

Using a new method called Group Coded Recording (GCR), the IBM drives can handle tapes containing a data density of 6,250 byte/in. compared with 1,600 byte/in. on earlier models of the 3420. The drives can be used with 370s ranging from the 135 to the 195.

An upgraded control unit was also announced – the 3803 Model 2 – which operates with both the earlier and latest 3420 tape units. The Model 2 includes the capability of correcting errors in one or two tracks "simultaneously while the tape is in motion," IBM said.

Data can be transferred to the CPU at speeds up to 1.25 Mbyte/sec compared with 320 kbyte/sec on earlier models of the 3420. Read/write access time on the new drives is about 1 msec, which is described as twice the speed of earlier models.

Data Segmented

The GCR method segments data written on tape into groups of characters to which a special coding character is added, And the higher density is based on a combination of a modified coding scheme, a smaller interrecord gap (called an interblock gap) and modified electronics and electromechanical components, IBM said.

Installed 3803/3420 tape systems can be converted to the higher densities in the field. The higher-speed systems can be equipped to handle both existing and higher densities so users can convert their

(Continued on Page 2)

Wise User Looks Before He Leases

By Ronald A. Frank
Of the CW Staff

NEW YORK – Recent developments affecting the leasing of 360 and 370 systems can benefit the user who plans ahead. Both the IBM announcement of a four-year 370 lease, without overtime, and the accounting changes recommended by auditors to write-off 360s by 1978 [CW, March 7] contain potential advantages for the wise user.

The IBM plan to sign up users for 48 months at the same rate as its regular monthly CPU rental also contains an interesting clause concerning future credits toward the purchase of the mainframe.

On the surface, the IBM long-term CPU lease eliminates the advantage used by leasing companies – i.e., no overtime charge for the user. But by requiring the user to sign at the same rates as the straight monthly rental, IBM is not really providing a cash discount except on the monthly bill for multishift sites.

News Analysis

Stiff Penalties

In return for signing up with IBM for the 48-month lease, the user is subject to stiff cancellation penalties. The charge for terminating a CPU lease is six-months' rental or 25% of the remaining costs of the lease, whichever is lower. And the penalty applies to "the removal of features, model downgrades and machine discontinuances," an IBM spokesman said.

The user who replaces 512K of IBM core with an independent memory would have to pay the penalty based on the incremental cost of the IBM core. A user who upgrades from a small 370 to a larger system from IBM would also pay the penalty, IBM said.

The user who upgrades within the same 370 model, by adding a feature during

(Continued on Page 4)

Court Faults IBM on Index, But Rejects Reconstruction

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – IBM and its lawyers were sharply reprimanded by a federal district court judge here last week for their role in the destruction of the index or computerized data base compiled in the IBM/Control Data antitrust case.

Chief Judge David N. Edelstein, who is hearing the government's antitrust suit against IBM, ruled that IBM had violated a pretrial order he had issued March 16, 1972, "in that it procured the destruction of a data base created by attorneys for Control Data Corp."

Furthermore, Edelstein, who is the chief judge of the U.S. District Court for the Southern District of New York, ordered IBM "to provide promptly to the court copies of any or all materials in its possession or control needed or useful in the reconstruction or restoration of such a data base."

He further ordered IBM to "produce immediately to the court any elements of the CDC data base in its possession or control that it did not cause to be destroyed."

The judge, however, rejected "at this time" the Justice Department request that IBM be forced to either reconstruct the data base or pay Justice to reconstruct the files.

He did, however, dismiss this part of the Justice request "without prejudice" which means that it can be brought up again at a later date by the Justice Department.

The Justice Department charge that under the settlement IBM had procured the data base destruction had been characterized by IBM attorneys as "inflammatory."

Edelstein noted that pretrial order num-

(Continued on Page 2)

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One Society Expelled

Foundation Ills Continue

By Alan Taylor
Special to Computerworld

CHICAGO – The Computer Foundation, scheduled to take over the certification of data processors in July, was thrust further toward an open power struggle in which the Data Processing Management Association and the Association for Computing Machinery squared off against other participating societies, as the two controlling organizations moved to consolidate the powers of their self-appointed cochairmanships.

At a meeting here, DPMA's John Swearingen, acting cochairman, first reversed one of the decisions of the organizing committee, then he expelled one organization, Quality Data Processing (QDP), from committee membership.

QDP cofounder R.C. Stewart told *Computerworld* he was protesting the attempt to expel QDP, being quite certain that Swearingen did not have this power.

ACM later moved to drop the original idea of equal control of the foundation by the various societies.

Originally Accepted

QDP had attended the first meeting of the organizing committee, and had been accepted by the committee for eventual membership, after affirming it understood it might not be eligible for membership in the actual foundation.

"We believe," QDP's representative, Robert Sennet, said at the time, "that the importance of the work on the committee makes it worth all our efforts to help now, even if we might not later be qualified for full membership." QDP was then voted as a full member.

Sennet, after telling the committee how

(Continued on Page 4)

DP Science Fair Coming to NCC

NEW YORK A High School Computer Science Fair will be part of the 1973 National Computer Conference & Exposition, June 4-8, in the New York Coliseum.

A grand prize will be awarded for the most significant project displayed. Prizes will also be awarded in four specific areas – new applications of computers; design and construction of computers or components; programming; and mathematics of computation.

All projects must be suitable for display, according to officials. Both hardware and software projects are solicited and any programming language or computing equipment may be used.

In the case of software projects, graphical or poster displays highlighting key ideas should be used.

All entry forms must be submitted by April 1 to Professor Frank S. Beckman, chairman of the fair. The submission form includes details of the proposed project and must be signed by a teacher familiar with the student's work.

Completed project displays must be delivered to the conference by 12 noon on June 4. Prizes will be presented during the 1973 NCC. All high school students, including June 1973 graduates, are eligible to submit projects.

Additional information is available from Professor F.S. Beckman, Chairman, Department of Information Science, Brooklyn College, CUNY, Brooklyn, N.Y. 11210.

Requests Related Material

Court Rebukes IBM on Index, Rejects Reconstruction

(Continued from Page 1)

ber one, which required IBM and the Justice Department to keep all documents relating to electronic data processing, was entered into the court at the urging of IBM and that the IBM attorneys had actually written the order that they are now accused of violating.

On signing that order, he said, he had told IBM and the Justice Department, "I expect this order to be implemented precisely and in every possible way . . . "I don't want a single document destroyed under any circumstances without the consent of this court."

He also noted he had told the attorneys that he would hold hearings any time they felt the order was too restrictive with regard to documents in the case.

And finally, Edelstein stated that the order had applied to any documents "directly or indirectly" in the possession of either of them.

But, he added, with IBM lawyers present the data base in the Control Data base had been destroyed over the weekend of Jan. 13-14.

Even though IBM argued that the documents were in another case, Edelstein found that "if IBM, directly or indirectly, procured the destruction of the documents and other material in question, IBM can be held responsible for that destruction."

The documents filed in the government case "convice (sic) the court that IBM procured the destruction of CDC's data base. It was destroyed at the request of IBM, pursuant to an agreement between IBM and CDC, and, therefore, IBM can be held responsible for its destruction."

The IBM claim that the data base was the work product of the CDC laywers is "without merit," Edelstein ruled.

A Big 'If'

If the documents had not been destoryed, he said, IBM could have asked him to rule on whether or not the Justice Department could use them and he could have determined if they really were the work product of CDC attorneys and therefore not admissible.

But, he said, "as matters now stand, the court can never know whether the materials destroyed were, in fact, work product."

Even though he did not grant the Justice Department request to make IBM pay for reconstruction of the index, Edelstein said: "By refusing to grant all the relief requested by the government, the court does not mean to suggest that it view's (sic) IBM's violation of this court's order lightly.

"Indeed, such unseemly behavior coming as it does from respected members of the bar of this court is particularly distressing. There appears to be no sound reason why counsel needed to act in this hasty manner. Prudence would have dictated a different course."

At the very least, the court should have been informed that IBM was getting the data base destroyed by Control Data, he said, noting that in the future he expects to be informed of any similar plans.

While the Justice Department refused to comment on the ruling last week, IBM said it was "disappointed in the judge's ruling relative the pretrial order number one and naturally we will comply with what he has asked us to do."

However, the firm would not estimate how many documents it will have to turn over to the judge under the ruling.

After inspecting those documents, he will decide which ones should be passed along to the Justice Department to help it in reconstructing the data base in the case.

3420 Storage More Than Tripled

(Continued from Page 1)

tape libraries, an IBM spokesman said.

Three models of the 3420 have the higher density capability. Model 4 has a tape speed of 75 in./sec; Model 6 operates at 125 in./sec; and the Model 8 handles 200 in./sec. Access times are 2.3 msec, 1.6 msec and 1.1 msec respectively.

Extended Plan

The faster models are available under the extended term plan at prices ranging from $580/mo to $752/mo. Under the regular monthly rental plan prices range from $690/mo to $895/mo.

Customers who convert their tape systems to the faster models will not have to pay an installation charge. But it may take "seven to ten hours" to make the change, a spokesman estimated.

For users who now have 3420 systems on fixed term lease plans, the tape systems can be converted and the extended lease plan instituted without paying early termination charges. For these users, the 24-month extended term plan begins with the first monthly payment, and the fixed term plan requirements are cancelled.

Conversion Charge

For users who own 3420 systems a one-time conversion charge is applied. A typical field conversion of a purchased Model 3 drive to a Model 6 will cost $14,500, IBM said. Maintenance prices on faster drives for purchase systems could also be proportionately higher.

Purchase prices range from $43,000 to $65,970. First deliveries are scheduled for the fourth quarter of 1973, while field conversions will begin in the first quarter of 1974.

Arts-III Complete, Data Transfer Seen

WASHINGTON, D.C. – The production of all 64 computerized automated radar terminal systems (Arts-III) ordered by the Federal Aviation Administration has been completed.

Arts-III "unquestionably has been one of the most successful technical programs ever undertaken by the FAA," FAA administrator John H. Shaffer said in announcing completion of the project by Univac.

With the completion of the Arts-III program, most of the nation's air traffic system is now computerized, with Arts-III serving airports and local air traffic while the air route traffic control system serves long distance flights.

With the Arts-III units, aircraft near airports are automatically tagged with alphanumerics displayed on a CRT. This helps the air traffic controller sort out the flights on his screen.

In time, the FAA plans to link all of the Arts-III installations with the computerized air route traffic control centers for automatic data transfer between the facilities. In addition, the agency is developing a lower capacity Arts-III system for use in smaller airports across the country.

Mini Helps Lab Solve Bomb, Fire Crimes

WASHINGTON, D.C. – Two mini systems in the U.S. Treasury Department's Bureau of Alcohol, Tobacco and Firearms Crime Laboratory are helping solve crimes involving bomb fragments, firearms and other materials found at the scene of a crime.

The minis perform pulse height analysis on the materials under test, a system developed for the ATF Laboratory by Monitor Labs, Inc., San Diego, Calif.

One of the systems played a major role in helping solve a bombing of the Bank of America building in Santa Barbara, Calif. A ceiling tile from the building, with fragments of the bomb and traces of unburned explosives imbedded in it, was sent to the ATF Laboratory along with a pipe found in the suspect's garage and soil from his shoes.

The material was chemically treated and irradiated in a nuclear reactor. A pulse height analysis proved the fragments in the ceiling tile were made up of the same material as the pipe from the suspect's garage, and that the soil from the shoes matched soil from around the bank.

On this evidence the suspect was later indicted.

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- ☐ **Needs more and faster tape drives in less space.**
- ☐ **Fights for more and faster disk drives.**
- ☐ **Can't get service people fast enough.**
- ☐ **Never has a big enough budget.**

370 Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement for IBM 370 models 135, 145, 155, 165, 158 and 168.

The ARM-3360 is the Ampex memory enhancement for IBM models 155 and 165. It will expand a 155 to 2 megabytes and a 165 to 3 megabytes of total Ampex memory without any CPU or software modifications. This can save IBM 370/155 users as much as $140,000 (depending on the computer model). Operating speed and size of this proven dependable main memory are the same as the IBM 3360.

ARM-158 or 168 semiconductor memories will be available for users of either IBM 370 model 158 or 168 virtually upon delivery of the CPU.

The Ampex ARM-135 is a semiconductor memory enhancement that equals IBM-135 enhancement limits of 240K bytes in a compact 30" x 30" x 60" module. Equally important, Ampex also offers 48K and 96K byte modules for those who need some, but not maximum, memory capacity. Other significant features: The ARM-135 has the same transient power protection as IBM, its own test panel (unlike IBM) so you can test off-line, and is designed to take maximum advantage of IBM diagnostic routines. And you save up to 40% without sacrificing any performance.

The Ampex ARM-145 also is a semiconductor memory offering expansion to 512K bytes of memory. A real space saver, the ARM-145 stores up to 352K bytes in a single 24" x 60" x 60" cabinet. The ARM-145 has the same transient power protection, the same error-correction circuitry as the IBM 3345, its own test panel, and will take maximum advantage of IBM diagnostic routines . . . all at significant dollar savings.

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And, of course, the TM-34 is also available as a stand-alone unit with data rates up to 320 KB.

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360 Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement. For IBM models 22, 30, 40, 50, 65, and 67. ARM-22 expands the 360/22 to 64K; ARM-30 can expand the 360/30 to 128K; and ARM-40 can expand the 360/40 to 448K. The ARM-50 works to 1½ megabytes, and the ARM-2365 is designed for use with IBM models 360/65 and 67.

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Univac Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement. The ARM-1108 operates at the same speed and is completely compatible to 1108, 1106 and 494 systems operating with Exec 2, Exec 8 or OMEGA. Furthermore, this memory enhancement has a built in MMA to facilitate use in multi-processor environments. No minimum Univac memory is required.

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Prospective Lessee Looks Carefully Before He Leases

(Continued from Page 1)

the four-year lease, has two choices. He can pay the regular monthly fee plus 15% extra each month, or he can pay the monthly rate without the 15% and extend the life of the lease according to a complicated IBM formula.

Purchase Credits

Under the new lease plan, the customer can accumulate credits of up to 50% of the purchase price at the end of four years. Previously IBM provided a more limited credit to monthly rental users, allowing them a total of 12-months' rental to be applied toward a purchase.

The real value of the 50% purchase option four years from now is open to question. Some leasing sources see the IBM credit as a kind of market support. They say IBM is affirming that the 370 will be worth at least 50% despite any new announcements made to obsolete the equipment. Others see the 50% as being below the value that would normally be expected.

But most residual lease values are based on a 10% or 11% depreciation each year, on a typical eight-year lease. So the 50% purchase guarantee is probably below the value that would have been carried by independent leasing firms. The third-party firm would probably have shown a value of 57% or 58% and the user might have to pay the difference as a termination fee.

News Analysis

For the user this can mean that the residual value projected by the third-party lessor is greater than the market value "for a considerable portion" of the term of the lease, according to one industry spokesman. It is more likely the leasing firms will adjust their residual values to match IBM's.

Third-Party Savings

But the user who chooses a third-party lease can also save on his rentals. On a five-year package lease plan from Itel, a 370/158 user would save as much as $500,000 compared to the four-year IBM plan, according to Dan Elliston, director of financial leasing at Itel.

The user who signs with a third-party firm can probably save an additional 30% over IBM 48-month lease rates. He can, in effect, "save up" the purchase price of the system. And if he decides to purchase after four years, the third-party leasing company will probably allow him to convert at the projected market value of 50% set by IBM. In the interim, the third-party lease customer can sublease his system, an option not available to IBM CPU lessees.

The user who plans ahead has to save "only" 12.5% per year (anything additional is gravy) with the third-party leasing company in order to make his projected purchase pay for itself.

Most leasing companies give the user a larger discount but also require their customers to sign up for periods ranging from five to eight years.

360 Benefits

The accounting write-off of 360s by 1978 can provide users with computing power that costs them almost nothing to operate. Purchase users have to depreciate their equipment by a certain percentage each year. And this depreciation offsets potential profits.

So a machine carried on the user's books at zero value costs only the amount of money required to run it. These items include electricity, maintenance and similar fixed charges.

In this environment, the user is free to add enhancements to his "obsolete" system at relatively low cost. Such features as the CHCS Accelerator [CW, Feb. 28] and a virtual capability such as the DAT box [CW, Jan. 31] could be financially justifiable to these users.

Most users realize the functional utility of a 360 will not cease simply because of an accounting procedure. And the 360s will probably be very favorably priced beginning in 1979, for the user who is willing to "make do."

If this approach seems far-fetched, then today's users who are still running 1401s and 7094s must be all wrong. The fact remains that functional utility, or the ability of a CPU to do the job, rests in the eyes of the user.

By continuing to strive for technical obsolescence with continued new products and systems, IBM may be grooming a whole new class of users.

DP Foundation Ills Continue to Increase

(Continued from Page 1)

QDP was going to hold public meetings to keep the profession aware of what was happening, was nominated for the chairmanship of the public information subcommittee. Instead, as Sennet told QDP's first public meeting early this month, his group was expelled by Swearingen.

According to Sennet, Swearingen never gave any authority for the expulsion of QDP nor for his own authority to make such an expulsion. "It is just the same replay that we have heard at each meeting," Sennet said.

"We currently are a local organization," Sennet continued, "and we would be in a very effective position to be able to monitor the operations of the foundation, and the influence of DPMA on foundation affairs on behalf of the ordinary practitioners. Perhaps that is what they are afraid of. I do not know, but they are certainly afraid of something."

At the foundation meeting ACM's John Harris asked the organizing subcommittee, of which he was recently appointed chairman, to drop the recommended "equal votes for each society ruling," a provision which had been specifically included in the recommendations of the ACM/DPMA committee.

Harris called for a weighted set of criteria with the largest society getting the most votes.

Also, the Society of Certified Data Processors' representative, Marc Greenberg, who had been nominated by the organizing committee for chairmanship of the legal subcommittee, found that although the committee had been approved in the minutes, it had been abolished by the foundation cochairmen acting jointly. Its functions had been transferred to the organizing committee headed by John Harris, Greenberg said.

DP Up Down Under

CANBERRA, Australia – The number of digital computers in use in Australia increased by 363, or about 30%, during the year ended June 30, 1972, according to the Federal Department of Labor and National Service.

In June there were 1,594 computers in operation in Australia and another 339 were on order.

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Users Say Bell Attitude, Service Ring a Sour Note

By Michael Weinstein
Of the CW Staff

Caravan/73: New York

NEW YORK – One of the biggest problems voiced by attendees at a Caravan/73 panel on data communications here concerned the "indifferent" attitude of AT&T toward user problems.

AT&T salesmen have no incentive to reduce the cost of users' communications services, the users complained.

"The salesman is paid in relation to the amount of equipment used," Grant Morris of Johnson & Huggins stated. "Many times he is not personalty involved in the account and thus has little interest other than increased revenues for AT&T."

Another user expounded on this problem hy noting that AT&T does not lease equipment on any term basis.

"It is possible to order something, have it installed on Monday, call them back and have it ripped out on Friday. In this environment, how do you expect the salesman to develop any loyalties to the user?" he asked.

Another user said he called in an AT&T engineer to add IBM 3735 terminals in series.

(CW Photo by V.J. Farmer)

Talking shop and "kicking the tires" was a big part of the New York Caravan. Caravan officials estimated the three-day attendance at over 4,300, bringing the three Caravan total so far to 10,300. Computer Caravan/73 moves on to Atlanta March 13-15.

The engineer told him this was impossible under AT&T policy and he would have to use a switch, the user related.

This manual switch would enable either of the 3735s to be used on-line but not at the same time.

However, another user told him the switch was not needed and recommended an outside vendor who could align the IBM units on one modem in series

He took the user's advice and has had no operational troubles ever since, nor has he heard from the AT&T engineer, he explained.

AT&T's phone services also came under attack and Louisville, Ky., had the questionable distinction of being chosen by users of nationwide communications networks as having the worst phone service in the nation.

One user claimed that telephone service out of Louisville was so bad, his company had to move its data processing center out of Kentucky.

Mainframers' Software Lacking

NEW YORK – Hardware vendors are generally a poor source of software, simply because they are in business to manufacture and sell hardware, Joseph T. Rigo told a Computer Caravan/73 panel on software evaluation.

They have nothing against making a little extra on the side from selling software. But Rigo, assistant vice-president at Bankers Trust Co., ranked this source of income on the same level as "the Coke machines" in the employee lounge.

Most of the software from the manufacturers is in the area of direct support for their hardware, he contended.

Rigo related experiences with his former employer, IBM, detailing documents that were put together by anyone proposing a new program product.

"The first thing they had to do was indicate briefly what they wanted to develop. Next, they had to specify, in detail, what hardware products it would help to sell.

"After that, they could go on to such miscellaneous subjects as cost and schedules," he remembered.

But even IBM had limits on the number of development projects it could support, Rigo related.

"It was understood that priority would go to utility programs, operating systems, compilers and on-line terminal operations that are close to the heart of the equipment operations.

"The important thing," he said, "is that we, as buyers, must be able to take care of ourselves. We must be able to evaluate the competing products – just as we do for any other purchase," Rigo cautioned.

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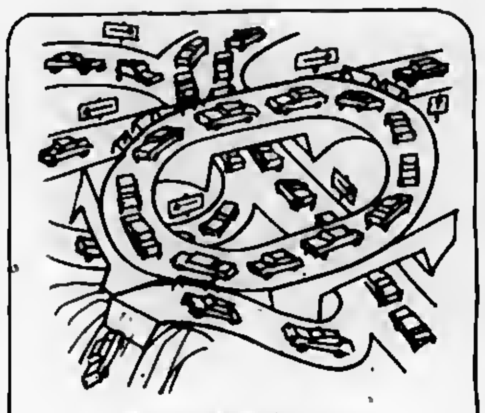

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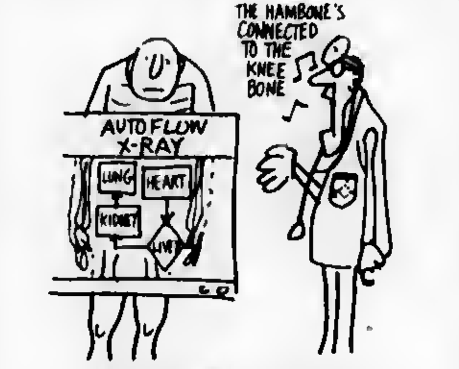
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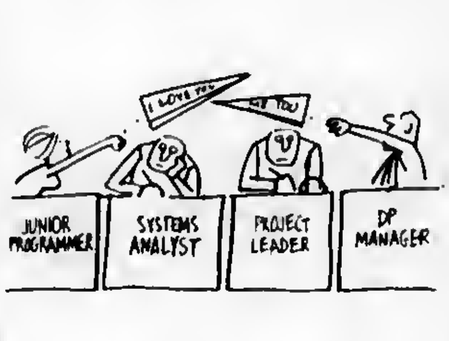

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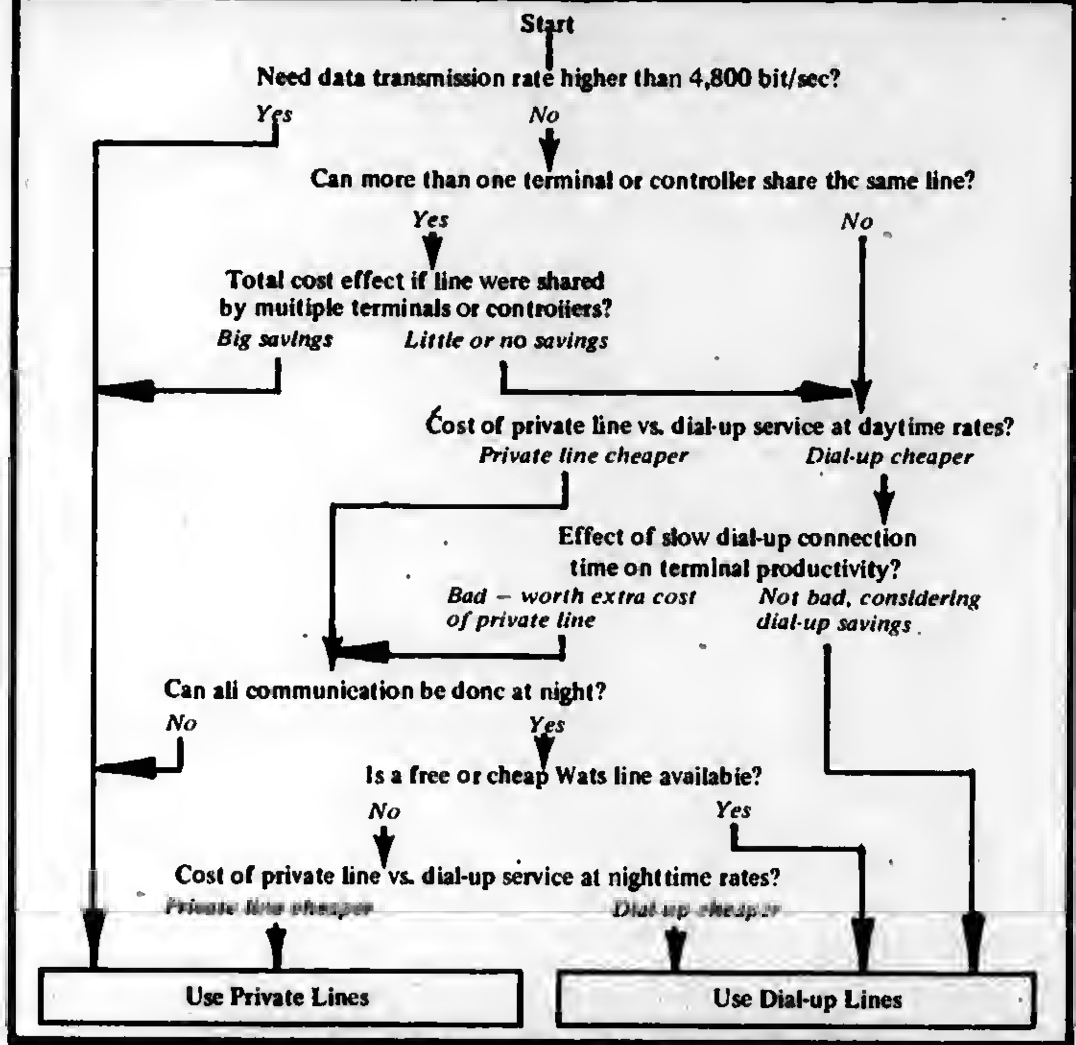
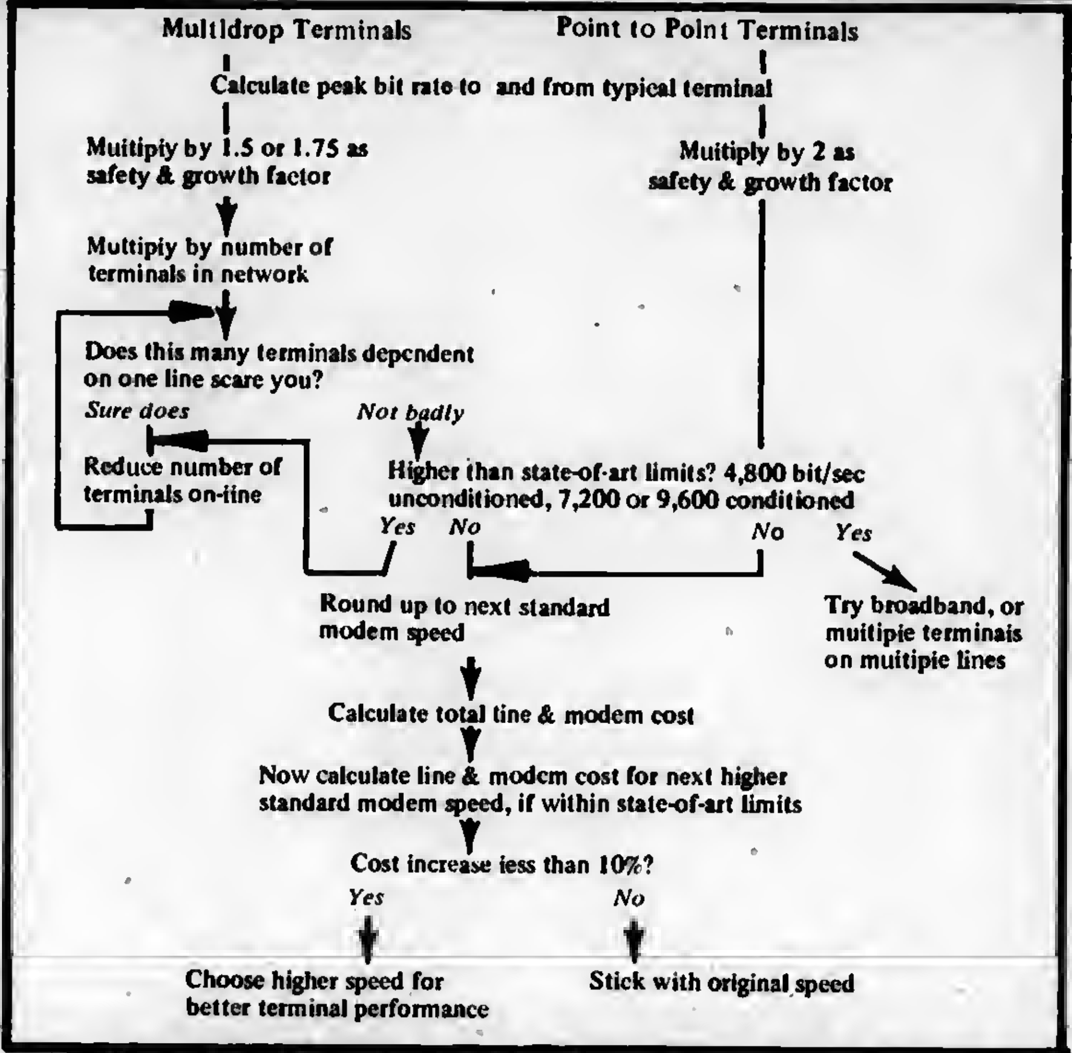

Start
Need data transmission rate higher than 4,800 bit/sec?
Yes
No
Can more than one terminal or controller share the same line?
Yes
No
Total cost effect if line were shared by multiple terminals or controllers?
Big savings
Little or no savings
Cost of private line vs. dial-up service at daytime rates?
Private line cheaper
Dial-up cheaper
Effect of slow dial-up connection time on terminal productivity?
Bad – worth extra cost of private line
Not bad, considering dial-up savings
Can all communication be done at night?
No
Yes
Is a free or cheap Wats line available?
No
Yes
Cost of private line vs. dial-up service at nighttime rates?
Private line cheaper
Dial-up cheaper
Use Private Lines
Use Dial-up Lines

Choosing Private or Dial-Up Lines


Multidrop Terminals
Point to Point Terminals
Calculate peak bit rate to and from typical terminal
Multiply by 1.5 or 1.75 as safety & growth factor
Multiply by 2 as safety & growth factor
Multiply by number of terminals in network
Does this many terminals dependent on one line scare you?
Sure does
Not badly
Reduce number of terminals on-line
Higher than state-of-art limits? 4,800 bit/sec unconditioned, 7,200 or 9,600 conditioned
Yes
No
No
Yes
Try broadband, or multiple terminals on multiple lines
Round up to next standard modem speed
Calculate total line & modem cost
Now calculate line & modem cost for next higher standard modem speed, if within state-of-art limits
Cost increase less than 10%?
Yes
No
Choose higher speed for better terminal performance
Stick with original speed

Choosing Speeds for Private Voice-Grade Lines

Selecting Communications Lines? Flowchart Needs

By Michael Weinstein
Of the CW Staff

NEW YORK – Flowcharting communications needs can help users choose between dial-up or private lines and choose speeds for private voice-grade lines.

This message with two sample charts was presented by Jim Beck of American Standard, Inc. at a Caravan/73 panel on data communication.

The first chart deals with choosing between private or dial-up lines.

Following this chart down, if the user needs transmission rates higher than 4,800 bit/sec, he is compelled to use private lines as present dial-up service will not support rates higher than 4,800 bit/sec.

Assuming the user needs a rate of 4,800 bit/sec or less, the next step is to determine the use of the line.

If more than one terminal or controller share the line, the user should then analyze potential savings. If the savings are large, this may justify a private line. If the savings are not large, the user should establish the costs of private lines vs. dial-up service using peak time hours.

Caravan/73: New York

If dial-up is cheaper, the user must then take into account the effect of slow dial-up connection time on terminal productivity.

If terminal response time will not be adversely affected, dial-up services are probably best.

Night Work

However, if terminal response is too slow under dial-up or it is decided that private lines are cheaper, the next question is whether communication can be done during the night.

If the answer is no, the user is again forced back to choosing a private line.

If the answer is yes, the question then arises as to whether the user has access to a free or cheap Wats line.

If no Wats line is available, the final consideration is whether the amount of data to be transmitted makes a dial-up arrangement more expensive than a private line.

Choosing Line Speeds

The second user flowchart presented by Beck concerned choosing speeds for private voice-grade lines.

Starting with the type of terminal the user is operating, calculate the peak bit rate to and from a typical terminal.

Multiply this by the appropriate growth and safety factor because users will find, as their communications become more stable, usage will generally increase above initial projections, Beck asserted.

If using multidrop terminals, the user must determine for himself whether the number of terminals dependent on one line is too risky.

If the user is afraid of a line failure and cannot afford to have the large number of terminals dropped, he must reduce the number of terminals.

This reduction must continue until the user is reasonably satisfied that a line drop will not cause extreme difficulties.

From this point users will be able to calculate the cost of increasing modem speed. If the cost increase is less than 10%, the user is advised to choose the higher speed for better performance. Otherwise he should remain with the original speed.

Search Covers Food Data

CHICAGO – An expansion of computer literature searches to include the *Food Science and Technology Abstracts* data base was announced by the Computer Search Center of IIT Research Institute.

This data base is generated by the International Food Information Service in Germany and covers journals and patents dealing with all aspects of food science and technology.

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April 3-5 – Civic Auditorium
KANSAS CITY, Mo.
April 11-13 – Municipal Auditorium
CHICAGO
April 17-19 – Conrad Hilton Hotel
CLEVELAND
April 24-26 – Convention Center

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2:30 p.m. . Data Communcation Planning
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9:00 a.m. . . . . . . Data Communications
2:30 p.m. . . . . Software Evaluation Panel
Day 3:
9:00 a.m. . . . . Installation Management
2:30 p.m. . . . . Small Systems Panel

*Entry to the morning sessions is $25 per day, which includes all workshop materials, luncheon, and admission to the Exposition Hall (see pre-registration form on page 22). Afternoon sessions are open to all – free of charge.

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Upgrade Saves L.A. Service Bureau $35,000/Mo; 43 Agencies Benefit

By Marvin Smalheiser
CW Correspondent

LOS ANGELES – An equipment upgrade tied to a massive relocation has yielded savings of at least $35,000/mo for the Los Angeles Data Service Bureau (DSB), one of the nation's largest municipal centralized computer centers.

A move from widely scattered facilities in City Hall to a 30,000-square-ft computer facility made possible a switch from two IBM 360/50s and a 360/40 to two 370/155s with a savings of $20,000/mo.

Another $15,000 was saved because the increased capacity of the new machines permitted reduction of overflow that was being farmed out.

Tug Tamaru, general manager of DSB, also said "considerable" savings are anticipated with a switch from 24 IBM tape drives to 24 Storage Technology Corp. (STC) tape drives.

Other benefits of the upgrade have been increased turnaround and a significantly larger capacity for the city's big law enforcement system, he said.

Tamaru said the 155s are fully duplexed, as are the I/O units. "It gives us a lot more flexibility. We can do almost anything at almost any time."

DSB also gets added versatility with six IBM 2314 disk drive spindles which are switchable between two Systems Engineering Laboratories (SEL) 810Bs and the 155s through a channel selector adapter.

The SEL 810Bs are being set up for a Fire Command and Control System and it was preferable to link them with the 2314s rather than with DSB's IBM 3330s, Tamaru said.

The biggest problem of the upgrade was getting all 7,000 programs running under OS and DOS converted to 370 OS in the time available, according to William D. Porter, deputy general manager of DSB. But the move was made in time and at a cost under the $50,000 which had been budgeted for the move.

Programmer Rob Wilson tests out administrative programs.

The bureau services 43 of the city's 45 departments with a staff of 375.

Its biggest customer is the police department which has the top partition, or 30%, of one of the 155s dedicated to it.

Much of that capacity is for the regional on-line Automated Want and Warrant System (AWWS), a city-county system enabling any police officer in the region to inquire from the field on the criminal status of any vehicle or individual.

The move and the switch to larger equipment permitted the bureau to add three cities to the 55 cities on the system, which now has over one million AWWS records on-line and processes one million transaction/mo.

The expansion also reduced the system's response time from 10 to 12 seconds to five to six seconds.

Tamaru and Porter said the customers have been extremely pleased with the changes because now they can add systems and applications that have been waiting in the wings for several years.

The users are involved in work ranging from planning and community analysis with the aid of computer data to earthquake studies and computerized inventories of the animals in the city zoo.

Many of the systems developed for the users are innovative; AWWS was one of the earliest to use a front-end communications concentrator for message switching, instead of trying to do it all with a 360, Tamaru claimed.

Tamaru said the enormous library system is "one of the most sophisticated library support systems in the world."

It will be completed in about two years but there are now one million records on file and three to four million records in the catalog file.

A computerized book order and purchase system uses teleprocessing to order books every morning

A system to keep track of millions of dollars of overdue and stolen books is waiting on development of an economical transaction device which can be installed at the 67 library branches.

CW Photos by M. Smalheiser

The Data Service Bureau uses 24 tape drives.

Porter said the city is currently using microfiche on a service bureau basis for library, personnel and police work and would like to expand it to other departments. If the expansion takes place, "we'll probably have our own hardware because we're at the break-even point now," he added.

In the city's financial department, daily information is available to the city controller on two CRTs from a financial file of every city account and fund. It is updated every night and ready for interrogation at 7 a.m.

Another project in the works calls for installation of remote terminals at outlying city administrative offices so they can access the centralized data banks.

This will be accomplished with two types of data communications networks – one for administrative and financial uses and the other for public safety functions.

As envisioned, the plan will use satellite computers or front-end computers and minis. Small satellites may be dedicated to certain functions but will be interfaced with large general-purpose machines.

Pourquoi est-ce que je dois changer de langue?
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(Why should I switch languages? It's taken ten years to learn this one.)

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(Why is EDP getting more and more expensive?)

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Calif. Checkless Society Checked

By Marvin Smalheiser
CW Correspondent

LOS ANGELES – The effort in California to initiate the cashless, checkless society has met with a temporary problem: insufficient business.

The Automatic Payments and Deposits System, a statewide, computerized plan for handling payrolls and billpaying, has plenty of funds to operate but has attracted few "customers" since it started looking for them in mid-October.

The system is designed to eliminate payroll checks and route authorized deposits and payments through automated clearinghouses in Los Angeles and San Francisco.

Bank customers can also authorize payment of certain monthly bills, like mortgages and utility bills, under the system.

Although 90% of the over 1,000 banking offices in California have signed up, the system has only four twice-monthly payrolls, one once-a-week payroll and a file of monthly mortgage payments.

Bank officials who helped set up the system are not dismayed, however, and said they expected a slow start-up, particularly because of the paperwork.

"The paperwork is killing us," said Gene Thurman, vice-president of the City National Bank, Beverly Hills, and vice-president of the California Automated Clearinghouse.

Thurman said a major achievement has been getting the first debits on the system.

Beginning last month automatic deductions from bank accounts for mortgage payments started. The system began with about 200 but is expected to have 800.

Thurman said no bank has had automatic debits for mortgage payments before.

Lack of User Enthusiasm Blamed For Lag in Automated Pay Systems

By a CW Staff Writer

ATLANTA, Ga. – Little customer demand and lack of enthusiasm – not technology – have been the major factors retarding the acceptance of electronic or computerized payment systems in banks, according to Federal Reserve Board member George W. Mitchell.

Speaking at a symposium on "The Development of an Electronic Funds Transfer System" here recently, Mitchell said: "While there have been ups and downs in adapting technology to money transfer, such setbacks have not been the major barrier to greater progress.

"Customer enthusiasm for electronic payment has been lacking. Convenience, the major advantage to individuals, has generated little spontaneous enthusiasm thus far," he said.

But, he added, some of this lack of enthusiasm might be the fault of the banking industry and other supporters of the computerized transfer of funds that will be extremely important if the nation is to move closer to the goal of a "cashless, checkless" society.

"Financial benefits" possible with such systems "to individuals have not been offered and probably depend on competitive pressures," he stated.

Heat's On

At the same time, Mitchell said pressure might be mounting for banks to offer better and newer services to their customers to get them used to the automatic transfer of funds.

For example, he noted that savings and loan institutions were showing a great deal of interest in using such systems in new ways and offering new services. He noted, as an example, a Massachusetts experiment where several institutions are offering customers interest on accounts that can be used much like checking accounts.

But other factors are also holding back the acceptance of the computerized transfer of funds, he indicated.

"To some degree acceptance is held back by custom – money mores change slowly," he noted.

"Also, many individuals do not identify with the ephemeral character of an electronic 'byte,' and would prefer 'real' money or evidence thereof – coin, currency, or even a bank statement," he said.

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Hospital Bill Letter Humanizes Machine —With Side Benefit

CHARLESTON, W. Va. – Persons with past due bills to the Charleston General Hospital receive the following personal letter from the hospital's computer suggesting payment of bills before the human staff finds out:

"Hello, there, I am the hospital's computer. As yet no one but me knows that you have not been making regular payments on this account. However, if I have not processed a payment from you within 10 days I will tell a human who will resort to other means of collection . . . "

Big Brother Is Watching

While he admits the letter may cause some feeling of "big brotherism," Herb Johnson, vice-president for finance, said "there is no easy way to tell people they owe you money.

"We are hoping that by using a humorous approach people will not get mad and will take advantage of the 10-day grace period to get their account in order," he said.

In some cases this approach may be working too well as the computer is now in contact with a typewriter trying to unravel one account.

The typewriter's initial correspondence states:

"Dear Mr. or Ms. Computer: I am a typewriter at the office of M and M. Recently our mailbox received your notice in regard to a balance owed your masters by my master's client. The Xerox machine and I are sincerely grateful for your not informing those awful humans as to this bill, and if they punch your buttons the way they punch mine, I can see why you tend to be a little hesitant to do their bidding.

"I am told by my humans that their client is now in the process of suing some other human for the injuries he received and I will forward the billing to the particular humans for your remittance.

Sincerely, Royal Typewriter

P.S. – Our telephone would like your number for purposes of computer dating."

Introducing QUADRONIX I

We've taken the edge off computer tape

The hand holding the scalpel is that of Mrs. Samuel Johnson, who used to work at one of our certifiers. Her function was to repair tape errors that our certifier detected by scraping the tape, using this instrument. Mrs. Johnson has just been promoted.

Until now, tape manufacturers like Wabash have used similar methods in repairing their tape to pass the rigid certification test to achieve, "error free tape at the time of certification".

With the introduction of Quadronix I, repairing tape has been eliminated, like Mrs. Johnson's job. You see, we've known for some time that repaired tape, like a repaired road, could lead you into trouble, so we've been working on the problem. We've solved it and would like to tell you all about it. So fill out the coupon and we'll send you our new 12 page brochure on Quadronix I, the industry's first certified computer tape unscarred by traditional manufacturing techniques.

We'd like to hear from you, even if it's only to congratulate Mrs. Johnson.

Wabash Tape Corporation
Huntley, Illinois 60142

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Editorials

An End to Secrecy

The secrecy surrounding many of tha documents in the various antitrust suits egainst IBM must be anded both for tha good of the computer user, the computer industry and the generel public.

The latest instance of what seems to be part of an ongoing affort to keep knowledga of the cases from public view occurred when IBM blocked the relaase of 25 documents requested by tha Computer Industry Association — documents that had been filed as part of the Telax-IBM casa and which therafore should hava been entered in the public record.

IBM claims the documents contained trade secret information that would be harmful to it if relaased publicly. But tha CIA has charged the information in the documants concerns only marketing projections indicating how IBM viewed the effects of some price and configuration changes.

If the CIA view is correct, then the documents could show users — in IBM's own words — how IBM juggled prices in order to keep competition down while still extracting tha maximum profit from user expenditures.

The information could reveal the extent to which IBM tries to maintain price control in tha computer marketplace and how the firm makes configuration decisions based solely on maximizing profits.

But that information is not available.

It is tima for IBM to start following the protestations often made by its lawyers in court that it wants all of tha facts of tha cases out in the open for public scrutiny.

If this is reelly so, why not open up all of the documents in the casa for public scrutiny? If IBM really has nothing to hide, if its hands are as clean as it proclaims, then it will release all of the documents in the case.

Back to the Original Plan

Originally the joint DPMA/ACM plan for a Computer Foundation was an attractiva one. It was approved by both societies' executive boards. It was approved by the DPMA Certification Council and it attracted tha support of a broad base of organizations and individuals in the industry.

In fact, tha plan, as laid down by the special Certification and Testing Advisory Committee, damonstrated that a broad-based certification program would be acceptable — just as it said it would.

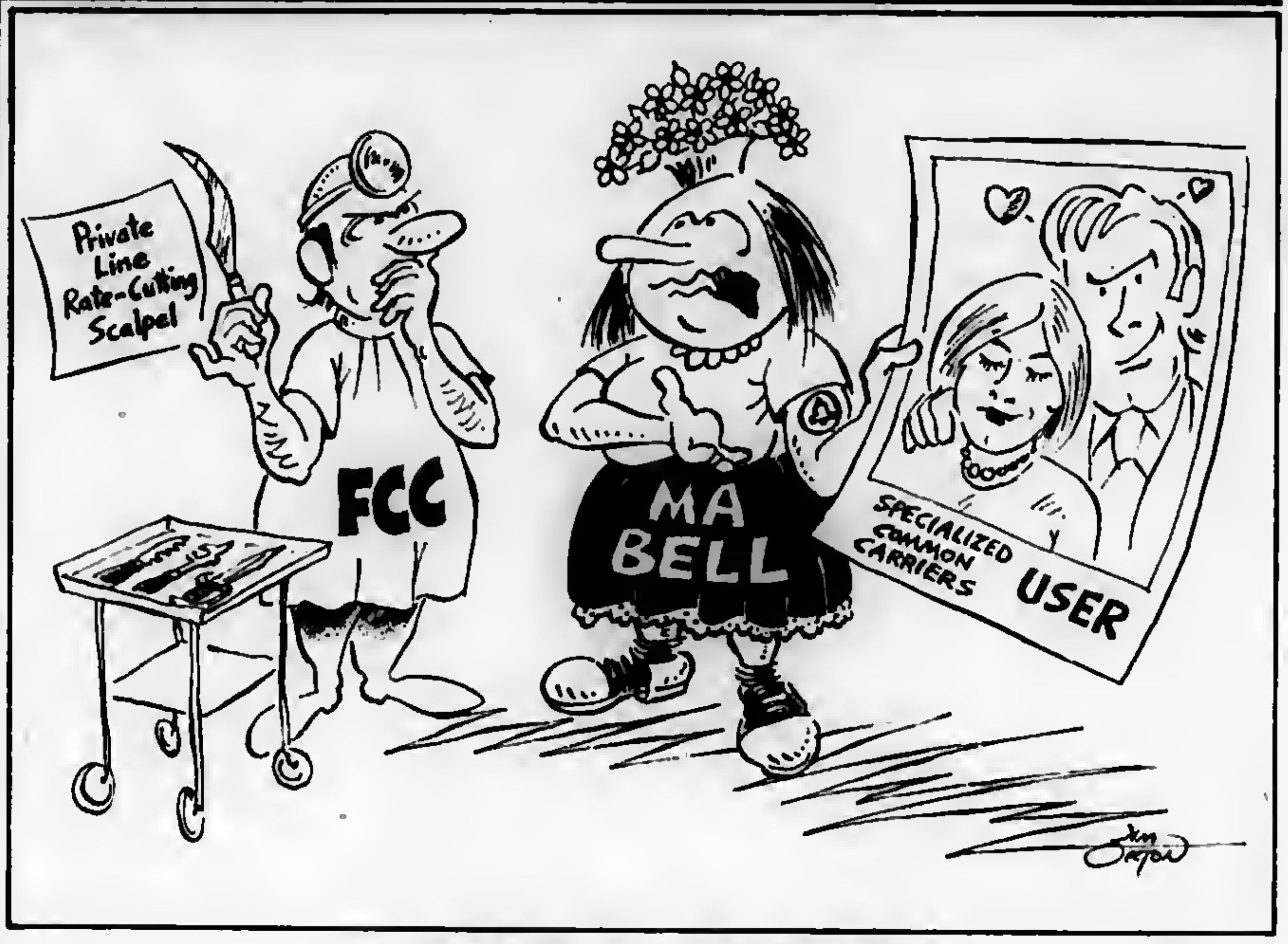
Currently, however, the original plan is not being implemented. The draft constitution and bylaws created by DPMA's and ACM's representatives in many ways are a travesty of tha plan.

For instance, instead of joint, equal control they substituted a meaningless, powerless axpensive board of directors — with effective control vested in an executiva director and the president.

Moreover, the actions since the draft consititution was unvailed effectively destroyed the idea that the ACM and DPMA representetivas were interested in implementing the original plan.

Thera are problems. But, thara is also an opportunity. No one has attacked tha original plen. So why not stop arguing about what plan to adopt, and simply work at implementing the plan thet has everyone's epprovel?

Computerworld believes this is the most constructive path possible under the circumstances. Tha profession deserves the chence that the original plan gave it, end will not look kindly upon enyone who denies it this opportunity.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'A Facelift, Doc — on the Double!'

Letters to the Editor

Beware RPG II Perils — Nothing Hard Is Easy

I have been reading the recent odes to RPG II with a mixture of amusement, horror and awe for those more gifted than I who have been able to make the language work for them on a cost-effective basis.

I have seven years of experience in the field, with a long hitch of reentrant 360 BAL for communications. A year ago, I took a job here in New Mexico as the manager of a service bureau for the rural electric co-ops. The board had already ordered a System/3 Model 10 with a full "Rural Electric Accounting" FDP (price, $3,000). This work was written in RPG II.

After a full year's work by three seasoned programmers, the package has been debugged and runs in a reasonable amount of time. When first implemented, a manual system would have run rings around it.

With the above as an introduction, I would like to make a few remarks on this "language of the future." There was one key sentence in the viewpoint article which stated that a detailed knowledge of the RPG cycle was necessary to attain any of the benefits described [CW, Feb. 27]. I would concur with all my heart. But where does one get this detailed knowledge of the cycle?

Alas, not from IBM. Not from its courses or manuals. Not even, it seems, from its PLMs.

My staff has acquired some of this wisdom over the year from solving specific problems and assiduous study, but we have yet to find one source (even a tailor-made course at $23/hr) that would get us to the point of being able to debug a simple matching-records application in an acceptable amount of time.

My warning to the potential RPG user is: Nothing difficult is easy — *Computerworld* headlines about learning programming in half an hour and reducing inventory by $500,000 notwithstanding.

RPG II is a sophisticated language in that it embodies generalized logic for normal DP events. That logic is often more generalized and clever than one would guess, and will cause havoc once the novice ventures away from his 30-minute print specials. Some of these RPG encomia sound like they were written in Armonk.

R.D. Mallery
Manager
Cooperative Services, Inc.
Sante Fe, New Mexico

How Much Should Newspaper Educate?

I wish to take issue with the policy of *Computerworld*. The newspaper is not written "for the computer community." Within the pages each week CW talks about today in the field and in the profession. Each week comments are made on the changes that new equipment and new knowledge are causing.

How do humans change? Only by education.

I feel that CW is the major means of communication in the data processing profession, and has an obligation and a responsibility to assist in the education of the profession by providing continuing items that would teach languages, systems, principles of operations, etc.

CW seems to feel we all know all we need to know. This is far from true. Most of us are interested in learning more and don't have time to read a book; or go back to school. Why not have short items in the paper written to teach us about a subject, not just inform?

We all want the people we hire to be better trained. The educational institutions are trying but not hard enough, and the manufacturers are just starting to try. Why can't CW try also?

Education is the only true path to professional improvement. If CW is to be of service, it must change its policy and help in problems of education, or, if you wish, the problem of updating the community.

R.E. Sennet, C.D.E.
Bartlett, Ill.

By definition a newspaper is "(1) a paper that is printed and distributed usually daily or weekly and contains news, articles of opinion, features, and advertising" — Webster's Seventh New Collegiate Dictionary.

Computerworld's editors believe our main purpose is to keep our readers up to date on current events in the DP community. We hope many of our interview or informative-type stories will also serve to educate readers by illustrating the experiences of other users. Many of our feature-type stories — such as the articles on disk recording and testing in the Systems & Peripherals sections of the March 7 and 14 issues — do fit a straight education need. Ed.

Markup Rates Missing

Again Alan Taylor's distaste for IBM is quite evident ["IBM Maintenance Markup Revealed," CW, Feb. 14]. I am not an IBMer nor even an ex-IBMer, as a matter of fact. I do not like their methods but I will not attack them with half truths.

There is one item missing from the charts and is very possibly only known to IBM, which is overhead rate. Without this knowledge the 300% and 440% markups become very unreal. With the support system IBM has, I would venture to guess its overhead is in excess of 150%.

The Time Service Contract chart shows there are 36 hours of indirect labor (140 productive hours vs. 176 available hours). Or does Taylor suggest the engineer doesn't get paid for these 36 hours?

Travel time was considered in the Time Service Contract but not in the Maintenance Service Contract. Does one assume that with a Maintenance Service Contract the engineer does not have to travel?

I know that with the term "gross markup" the overhead is being considered, but this is not evident in the chart or the article.

In the two above-mentioned areas, Taylor would find other concerns such as CDC, Honeywell, Xerox, Burroughs and Digital Equipment with quite comparable "gross markups."

Charles A. Cline
Burlington, Mass.

Specific Areas of Interest

Four Journals Hope to Stimulate Cobol Development

The Taylor Report
By
Alan Taylor, CDP

Six months ago the readers of this column responded to an open survey, saying they wanted to know a lot more about Cobol and how it was governed. They wanted to insure that their interests were being watched during the development of the language; they wanted to know why a language which was supposed to be hardware independent was turning out not to be transferable from one machine to another; they wanted to know how whole areas like the Report Writer could be threatened without involving the community. In general, they had a lot of questions.

Since then I have been trying to get the answers. Perhaps the most enlightening moment came when the Cobol Coordinating Committee sat down for a couple of hours with Robert Kearney, chairman of Ansi Committee X3J4, the operation which puts a stamp of approval on the Cobol standard, as produced by the Programming Languages Committee (PLC). PLC is one of the five autonomous committees of the Conference on Data Systems Languages (Codasyl).

In our meeting with Kearney, we asked many questions. But the key answer that came out of that meeting was that answers are not available from Ansi X3J4.

Questions Not Avoided

It was not that Kearney was avoiding our questions. One of the major functions of the American National Standards Institute is to see that the public does get answers.

But Kearney gave the committee the Ansi answers. On the point of transferability, for instance, he said it was not directly relevant to the question of the Cobol standard. The Cobol standard just deals with interpreting the language.

On the point of compile time, or object time, and error messages, he pointed out that these also were not relevant to the standard. Indeed, we found the great majority of questions were simply not being answered – if answering means more than saying "not relevant."

We also discovered that this situation was not just a recent development. Even back in 1968, when questions such as ours came in, they were put off for later consideration. Kearney admitted he did not believe these had ever been further considered by his committee or its predecessors. He felt if they had not been picked up by one of the sponsors in Codasyl, and put into the appropriate form, then nothing would have happened.

Facts Hard to Find

At the same time, I found it extremely difficult to determine how matters concerning Cobol were proceeding. The current vice-chairman of PLC told me the process of getting a proposal accepted by PLC was akin to getting a case accepted by the Supreme Court. He was not exaggerating.

I found the operations of the executive council of Codasyl equally mysterious. In desperation I traveled from Washington to Atlanta with Jack Jones, chairman of the executive committee. I spent several hours with him but he himself was unable to find the minutes of the recent Executive Council Committee meeting. (Later he did send a couple of copies to me.)

A visit to the PLC archives produced similar results. The archives are kept in a single four-drawer filing cabinet in Washington, held by William Rinehuls of the U.S. Air Force. They were not complete and it appears much of the material is being kept secret.

To find answers in this area an ordinary Cobol practitioner would have to have the patience of Job, and the investigation capabilities of Sherlock Holmes.

Something clearly had to be done. The question was what.

False Starts

We made a few false starts. First we took much of the old documentation going back to 1962 and microfilmed it. This was sent out to centers across the country, but so far has not had effective results.

The fault may well be ours because of a lack of administrative capability to coordinate the operation. However, it showed that centers were available, that documents could be made available, and it gave us an idea of what the costs would be. (They were high.)

This experiment also showed, however, that merely having the documents did not fulfill our needs. Moreover, when we later tried taking a question and answering it by discussing the whole Cobol situation and suggesting where possibly useful documents might be, the readers' eyes began to glaze.

Situation Too Complex

Again this was not surprising. The Cobol situation is anything but a simple one. It soon became clear that most practicing programmers would rather let things go on as they are, or simply abandon Cobol altogether, rather than try to fight their way through the thickets of Ansi, Codasyl, X3J4, etc.

In addition, in talking to some of the people who are expert in one or more Cobol areas, we found them unwilling to consider the type of questions the Cobol programmers were asking. The experts were concentrating on specific areas and they wanted us to concentrate there also.

They finally concluded that there were at least two different audiences to be addressed, and both audiences got turned off if we gave them too much of the material appropriate to the other.

Segmented Information

This was the clue we needed. It seemed not so much a question of providing full information, as of providing relevant information. It seems we must segment information into specific interest areas. The answer then seems to be to develop ways of answering questions publicly, but in the context of particular interests.

So the Cobol Coordinating Committee is introducing a series of periodicals to keep up with users' interests in Cobol. To start with we are publishing the *3Cs Question and Answer Journal.*

Questions that come in are answered at length – generally one or two pages each – and are not discussed simply within the confines of a particular standard. Instead the answers deal with the situation as it exists.

They take into account the problems of maintaining the Cobol advantages – all of them – and the lack of resources available in Codasyl. And they deal with questions like "Why shouldn't Cobol be stopped now?", as well as others. What the *Question and Answer Journal* doesn't do is expect the questioner to start attending PLC meetings, or become a protocol expert.

The *Question and Answer Journal* started in January, and is now coming out monthly. But the *Question and Answer Journal* does not handle everything. It does not, for instance, handle the specific proposals that are made either by the readers or by the Cobol Coordinating Committee itself. These proposals are considered in a different journal – the *3Cs Proposal Journal* which began last month.

In the case of the proposals made to the Cobol Coordinating Committee, the journal includes a review and recommendation to the committee for action. The review is done by the 3C Research Department which calls on whatever knowledge is available.

Subscription Form for 3Cs Journals

To: The 3Cs Research Department
16 Bradford Road
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Please supply subscriptions as follows:

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After completion please return to Alan Taylor, Taylor Reports, Computerworld, 797 Washington St., Newton, Mass. 02160.

The reviews are sent back to the person who submits the proposal for his comments before the coordinating committee itself takes action, so that the proposals can be handled as quickly as possible at a later date.

Technical Considerations

A third area of sufficient importance to merit a separate journal deals with technical considerations. For instance, we have received considerable details on a decision-table compiler insert into Cobol from Norway.

Other technical considerations came from the Cobol Compiler Symposium that Codasyl sponsored last year. These include the details and problems involved in the debugging area, etc.

It is not known how many of these technical developments there actually are. They should be fairly specialized detailed suggestions which could later be worked up into proposals. The first issue of the *Technical Journal* will come out this month.

Then the Rag-Bag

The fourth (and last) of the 3C journals is a bit of a rag-bag. It is somewhat similar to the Share secretary's distribution that many readers are familiar with, and the last pages in the Codasyl PLC publications.

The journal simply consists of statements made by various people which are of reasonable interest to the community, with additional background statements.

It includes, for instance, the statement by the chairman of the Programming Languages Committee, that PLC, for financial reasons, can only supply a single copy of its mimeographed minutes. It includes the formal IBM claim that Ansi has delegated authority over Cobol to PLC.

It includes the statements of ACM President Anthony Ralston, that ACM as a matter of policy, will not pay royalties on the printing of Cobol documents, even where it is making a substantial profit from it.

All these items shed a certain amount of light on the background of Codasyl, and we think some people may be interested in them. And so the fourth and last journal is the *3Cs Correspondence Journal.*

Year's Trial

The present plan is to run these four journals for about a year, producing them and distributing them to anyone who wants them. The members of the Cobol Coordinating Committee will act on ideas in the appropriate areas.

Between them they hold membership on most of the relevant industry groups, including Ansi, Ansi Committee X3, Codasyl, etc. If worthwhile proposals should appear that should be incorporated into the language we will certainly deal with them. Frankly, that is one of the main functions of the committee.

Now the matter is up to you. If you are interested in the development of Cobol and in safeguarding the interests of current Cobol users, please consider subscribing to one or more of the journals with the order forms above.

We would also like your opinions on whether each journal is a worthwhile operation before beginning the second year of publication.

So far, this seems to be the best way in which we can assist the Cobol operation and the Cobol user. It certainly is a new way. So let's give it a try.

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Letters to the Editor

Degree or Experience Needed For Membership in ACM

In the Feb. 14 issue, Alan Taylor listed the professional groups which support the Computer Foundation. In the table, the requirements for membership in the Association for Computing Machinery (ACM) were shown incorrectly.

Any person who subscribes to the purposes of ACM may join as an associate member. A person who has either a bachelors degree *or* the academic equivalent *or* four years' full-time experience in information processing may join as a full member.

The annual dues are $35 for both and the only difference is that associate members do not vote in elections or on other ACM matters. There is also a student membership available to full-time students at $8 dues.

In addition, while there are no mandatory local dues, there are over 200 regular and student chapters which charge nominal dues. There are also subunits of ACM organized along specialized technical lines which issue their own publications and generally charge nominal dues.

Jean E. Sammet
ACM Vice-President

New York, N.Y.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

(Other letters on Page 12.)

Hammering Home a Point

Why Don't Salesmen Talk of the Application?

By Jerrold Asher

Special to Computerworld

Viewpoint

My 88 cent bargain hammer broke. I set out to buy a quality hammer – one like the professionals use. My local builder's supply company had a dozen different models which I narrowed down to two: one for $2.39 and another for $7.89. Both were the same size, looked equivalent, and had about the same heft and balance, yet the price tags were quite different.

So I approached the department manager, an elderly gentleman who looked like he really knew his onions – uh, hardware – showed him the two hammers and asked the difference.

"This one is made in Japan. (So are some of the finest cameras, almost all our transistor radios, at least 50% of our hand calculators, some excellent compact automobiles . . .)

"The other hammer is made by Old Time Hardware. It's guaranteed."

"For how long?" I asked, in my caveat emptorial tone.

"It's guaranteed. If it ever breaks, Old Time will replace it."

"Forever? Where is the guarantee?"

"Read the guarantee on that label on the handle."

The "guarantee" on the handle was an admonition to wear safety glasses when using the hammer.

"That's not a guarantee; it's a safety warning."

"Well, the other hammer is made in Japan. Everyone knows Old Time tools are the best."

Further conversation was obviously pointless. I deposited both on the counter and left – hammerless.

Before you conclude hardware salesmen are a totally different lot, consider this: our current breed of business machine salesmen is little better equipped to sell complex data processing equipment than the gentleman described above.

Business machine salesmen speak with great authority of the mechanical features of their various equipment but with a shameless lack of knowledge of how these features would be applied to the prospect's business.

The sales contest becomes a numbers game: this disk is bigger than that disk; or our magnetic stripe contains more characters than their magnetic stripe. We have a core memory inside our terminals, and the cheaper ones do not.

Is it asking too much to expect the salesman of $10,000 plus equipment to show how the machine will process the data in the client's business more effectively? What became of the "buyer benefits" on which we used to be drilled in sales manuals and sales training lectures?

The client is not an engineer. How can he tell which of three different disk sizes or cassette tapes will be useful in his application?

Maybe business machines are so simple or good salesmen are so hard to find that the major manufacturers don't bother teaching how to apply the equipment to the application.

Perhaps it's simply assumed that data processing is so well understood, that hearing the capabilities of any equipment is enough to appreciate its usefulness. I would like to relax and take refuge in that oversimplification. Unfortunately, I find the purveyors of even more complex terminal equipment suffer the same malady.

Our company regularly purchases CRT terminals of which there are at least six excellent manufacturers. Yet each of the salesmen of our potential sources only speaks glowingly of the technical features of his device.

When we define our applications to these men and request definitions as to why their particular unit is best suited, we get more specification speeches and unique feature facts. This is also true of line printers and cartridge disk storage units. We know some applications are just not suited for some peripheral devices.

Are we expecting too much of the business machine and computer peripherals salesmen? Shouldn't these well-paid men be capable of *applying* the unique features of their equipment to specific problems? Isn't that what salesmanship is? We think so.

Won't someone please sell me a hammer?

Jerrold Asher is marketing manager for Sierra Data Systems, Inc., Pasadena, Calif.

Letters to the Editor

CDP Exam Not a Standard With 17 Questions on Cobol

After taking the CDP exam last month, I must say I was very disappointed with the software and programming section. Out of 60 questions in this section, 17 questions were directly related to Cobol.

I have read numerous articles regarding the CDP exam which make statements to the effect that this exam is aimed at the industry in general and should be established as a standard for the industry.

It is beyond reason that a "standard" for the industry should emphasize so heavily one computer language used by one segment of the industry. There were no other direct questions regarding any other procedure-oriented language in the software section or any other section of the exam.

If the DPMA cannot develop 60 basic software questions without reference to a procedure-oriented language, I would be most happy to supply them with questions that are basic to computer programming regardless of the language used.

If the intent of the DPMA is to make the CDP exam a standard, then direct references to tools used by only a segment of the industry must be removed. If the intent is to orient the exam toward one segment of the industry then this should be stated and the exam has met its due fate.

Douglas M. King

Houston, Texas

AEDS Support Was There!

I enjoyed the Alan Taylor column in the Feb. 14 issue. I am sorry, however, that his ears were not quite as sharp as they should have been at the initial meeting to discuss the organization of the Computer Foundation.

I am referring in particular to the boxed column in which he listed the professional societies which have expressed support for the Computer Foundation. He did not mention the Association for Educational Data Systems which was represented at that meeting by myself and Paul Pair.

AEDS currently has about 1,200 members and has been in existence since 1962. I should also mention that our annual convention will be held April 16-19 at the Marriott Hotel in New Orleans. Our dues are $20, and our headquarters are at 1201 Sixteenth St. N.W., Washington, D.C. 20036.

Bruce K. Alcorn
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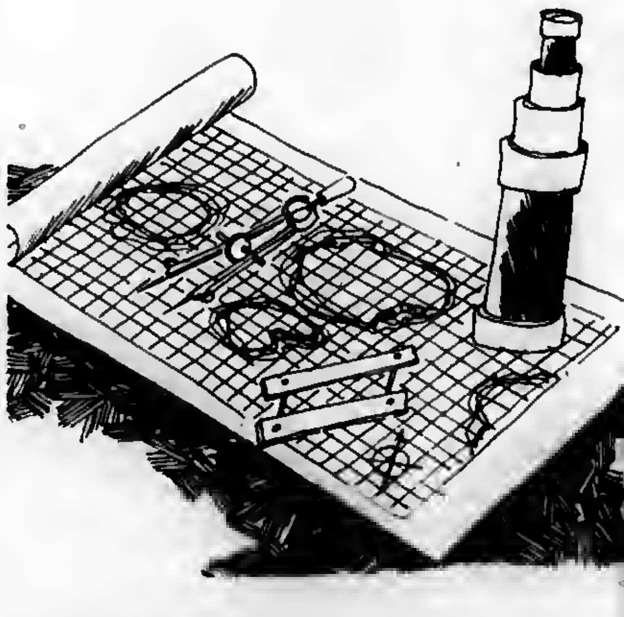

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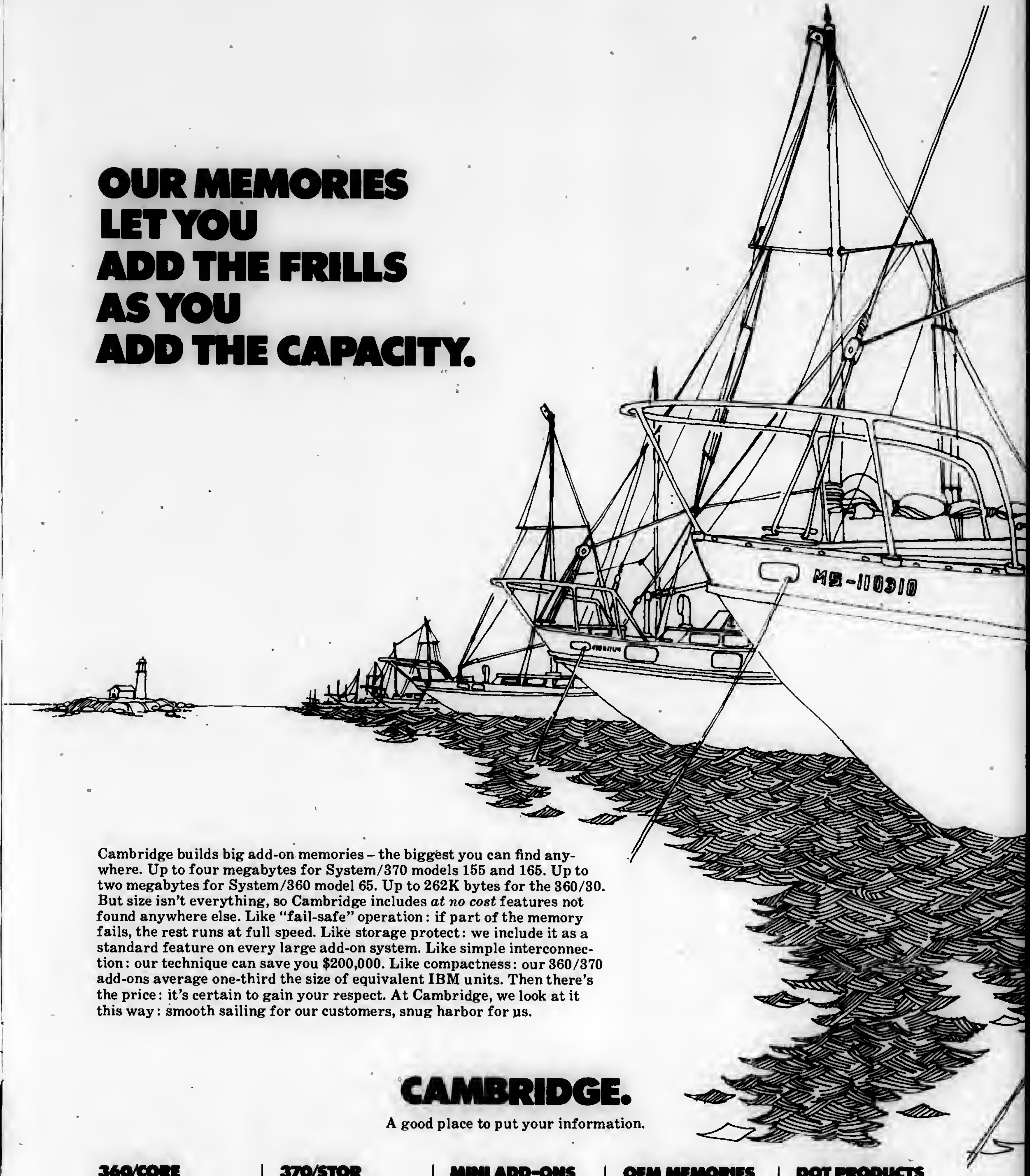

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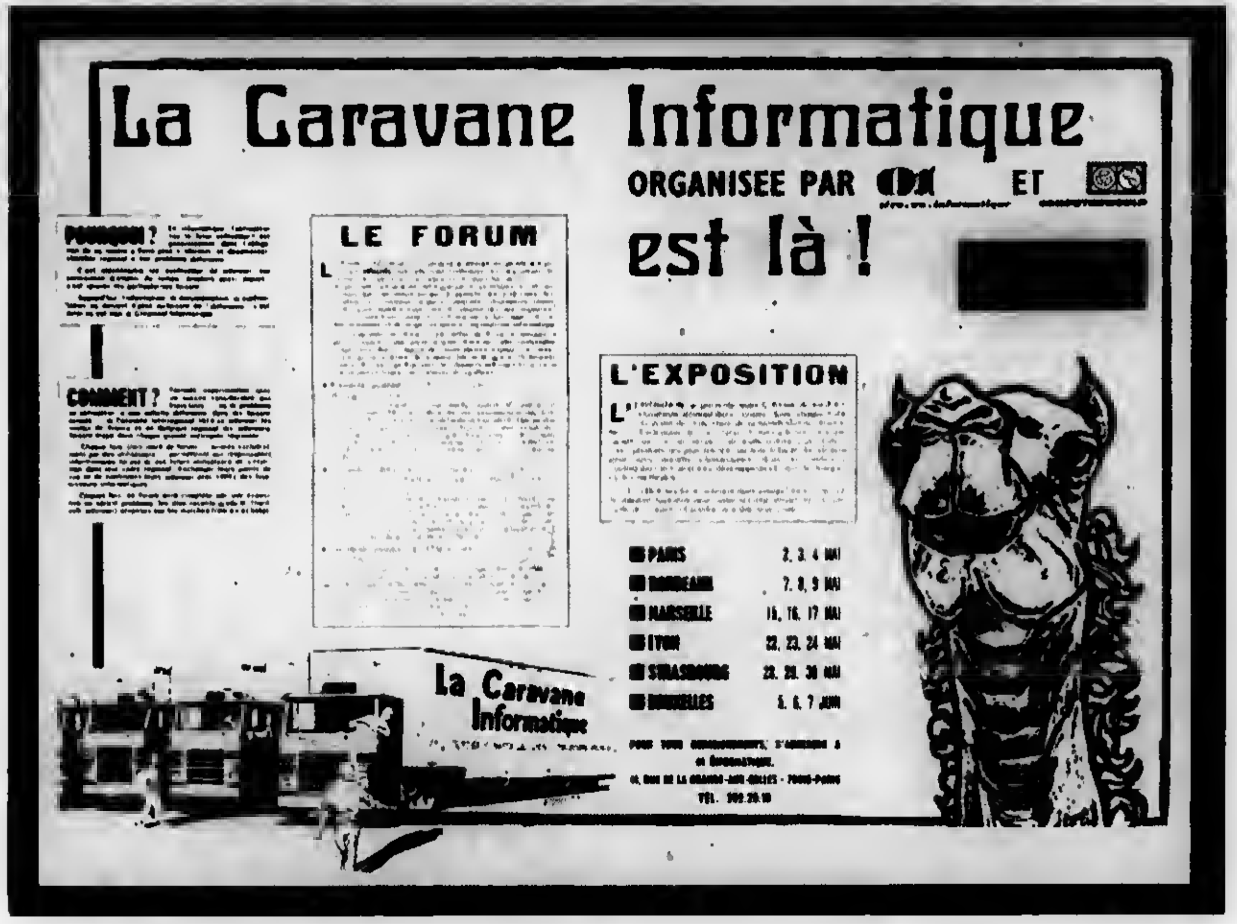

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L'EXPOSITION

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BORDEAUX 7, 8, 9 MAI

MARSEILLE 15, 16, 17 MAI

LYON 22, 23, 24 MAI

STRASBOURG 28, 29, 30 MAI

BRUXELLES 5, 6, 7 JUIN

Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, Zero-Un *Informatique*. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures		$1.48 billion
Projected increase for 1972	8.1%	(1.6 billion)
Projected increase for 1973	14.5%	(1.83 billion)

Submarket projections:

Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

Data Communications Terminals and Control Equipment expenditures are expected to go up 40% in 1973 to a total over $27 million.

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French Market Caravan Schedule

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May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
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SOFTWARE & SERVICES

Random Notes

Government Users Group Plans California Meeting

MONTEREY, Calif. – Open to DP staffs at all levels of government, the Computer Performance Evaluation Users Group (CPEUG) is holding its spring meeting next week at the Naval Postgraduate School here to encourage attendance by people from west coast facilities, according to CPEUG chairman John A. Blue of the Navy's ADP Equipment Selection Office.

Pre-registration is not required, Blue noted, and the meeting starts Tuesday, March 20, and will run through noon on Friday, March 23.

PDP-11 Users Gain New 'Bias' Cross-Assembler, and . . .

TARZANA, Calif. – A cross-assembler that can utilize various large-scale CPUs – including IBM 360/370, Burroughs B6700, or Univac 1100 – to produce object programs for DEC PDP-11/20 or 11/45 minicomputers, is now available from Compata Inc.

Written in Fortran, the package can be delivered in one week for $1,500. Given four to six weeks, Compata said it can adapt Bias to produce object code for other target machines, for an average cost of $7,000 to $10,000. Compata is at 18345 Ventura Blvd., 91356.

. . . 'Mimic' Device Simulation

WALTHAM, Mass. – Device simulation for DEC PDP-11 users, a new assembler for Data General Nova users and improved debugging facilities for most of the popular minis are among the enhancements in the Mimic system of programming aids available on the First Data Corp. time-sharing service.

Assembly, loading and testing support for GRI-909 and -99 minis has also been added to the Mimic system originally developed by Applied Data Research. In addition to those aids, a machine language assembler is available for the Honeywell H316/516 family of minis, First Data noted from 400 Totten Pond Road, 02154.

Univac Adapts 'Ices' for 1100s

BLUE BELL, Pa. – The Integrated Civil Engineering System (Ices) and two subsystems – Structural Design Language (Strudl II) and a file storage facility (Table 1) – will be available for Univac 1100 users operating in batch, remote batch or time-sharing mode under Exec 8, within the next two months.

The new software from Univac will include a problem oriented language (POL) allowing the user to state his input in familiar terms, and an engineering programming language (Icetran) to support dynamic array capabilities in the subroutines that actually perform the engineering operations.

Ex-ACM Head Claims

'Extensibles' Resolve Language Gaps

By Don Leavitt
Of the CW Staff

COLUMBUS, Ohio – Users should badger their vendors to provide extensible languages, Prof. Bernard A. Galler of the University of Michigan told the recent Computer Science Conference here, and there are very few reasons why the vendors shouldn't be willing to accommodate the users in this area, just as they are now making microprogramming more readily available.

Extensible languages (ELs) allow a user to define new functions as he needs them, without necessarily affecting the basic compiler. With this capability, programmers can express logic appropriate to the application, rather than express logic appropriate to an otherwise arbitrary language, the former president of the Association for Computing Machinery (ACM) noted.

"It's always greener in someone else's language," he mused, adding that the definition facility is useful to both novice and professional programmer. The latter is able to make small personal changes in the language so it is more comfortable for him; the other can build library "packages" of extensions to ease the work required by the average programmer.

Defining extensions is "something any intelligent programmer can do," Galler said, but noted he wasn't advocating a mass confusion of many personalized language processors. The best EL should be rich enough so that most users would never have to extend it, "as long as they have the possibility if they need it."

In effect, he added, ELs allow available languages to grow "in a graceful way" without some committee meeting somewhere to hammer out a revised standard.

Though ELs have limitations on how far they can be extended, they shouldn't be confused, he cautioned, with Cobol shorthands and other abbreviation schemes which don't actually change a language, or with "compiler-compilers" which change a language for all users – not just the one redefining the function.

The personal convenience of working with a language that does what the user really wants it to do can be translated directly into greater productivity, he said, and that should be reason enough for any DP manager to advocate the use of ELs.

Beyond that, however, programs written under ELs have been found to be easier for maintenance programmers to read, since they are problem- rather than DP procedure-oriented, Galler added.

Optimize Program

At a deeper level, Galler noted that the object code changes made possible through ELs can be used to optimize the program itself, in terms of accuracy or efficiency, or to monitor the performance of the program without requiring a special monitoring package.

ELs have been around since the days of MAD on the 7090 in the early 1960s, he noted, but the developers have matured sharply in the past few years. Not long ago, he said, each was interested in his own "beautiful little language." Now they are struggling with defining the real problems of language design and the harder problems of control structures.

In any case, ELs are better accepted than they were and they can be extremely effective tools. Vendors are still wary of problems they may encounter trying to maintain ELs at user sites, Galler said, but they should also see ELs as a way toward simpler standard languages that the user can customize on his own.

Accounting Standards Enforced Through 'Editor' JCL Checking

LYONS, Ill. – DOS/360 installation managers can enforce their system accounting standards as jobs are presented to the system for execution, through the Job Control Statement Editor program from General Electronics.

The Editor works in conjunction with the Job Accounting (JA) interface provided by DOS Release 25 and later releases, but is tailored to user-specified needs which may extend beyond the information saved or used by the JA interface. In effect, the Editor prevents nonstandard jobs from entering the job stream and ultimately the job accounting system.

The Editor checks every Job and Exec card for information defined as required by the user's standards. Parameters beyond those normally needed by JCL could be used, General Electronics suggested, to identify the processing cycle for each job, or its status in terms of test, production or rerun.

Explains Reruns

Reruns may include an additional code explaining why the job had to be done over. In any case, if the cards do not meet the standards, the Editor will, at a user option, issue a warning message, cancel the job or both.

The package requires no change in the IBM-supplied operating system or in the JA interface coding, the company said, and the use of the Editor can be stopped whenever the user is satisfied that the JCL cards are both accurate and set up according to the desired standards.

General Electronics handles the initial tailoring of the Editor to the user's specifications. This forces the user to define his standards before he orders the package and it insures that the program is tailored properly, at least the first time, the firm noted.

Once tailored, the package is delivered in object form. If the trial use is satisfactory, the user pays a one-time charge of $200 and the vendor sends the source code so the user can make any further modifications he wishes.

The company can be reached through P.O. Box 79, 60534.

'Pacer' Allows CICS Adjustment

HACKENSACK, N.J. – The Program Activity Configurator (Pacer) module from On-Line Software Inc. permits IBM CICS system adjustments to be made on a demand basis without taking the system or the programs off-line.

Pacer allows either OS or DOS users to reroute transactions to a substitute program when an executing program develops problems. It permits on-line modification of program control parameters, including both task priority and task security.

In operation this means several versions of a CICS application can be carried on the system concurrently, for testing or backup. Processing can be shifted back to a proven version of a program, for example, if a test or attempted production use of a revised version fails.

Pacer is accessed through a conventional CICS terminal entry, On-Line said. Rerouting is done by entering the name of the program that is to process the transactions, and the transaction code for each input being shifted.

Program characteristics can be altered by supplying the new security level of the module and the desired dispatching priority of the defined task. Pacer responds by typing out verifying information.

The response also lists other actions triggered by the request, but not specifically cited in the request. When transactions are rerouted, for example, the old program is shown as deleted. Both old and new conditions are listed when priority or security changes are made.

Pacer can be installed in any DOS/CICS version 1.0 or 1.1, or OS/CICS version 2.0 or 2.2 configuration. The package is available for $500 from 411 Hackensack Ave., 07601.

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Two Firms Install 'Public' Remote Batch Facilities

By Don Leavitt
Of the CW Staff

"Public" terminal facilities run by third parties allow qualified users to have high-speed I/O linkage to a choice of remote-computing networks, and may ultimately provide an alternative to users maintaining their own in-house DP installations.

Some network vendors have already seen the need to supplement the slow speed and limited output capabilities of terminals often found at user sites. They have set up remote batch stations in major cities to which users can direct output too bulky for their own interactive terminals.

Now, two separate independent companies – Advanced Terminal Applications (ATA), New York, and RJE Data Processing Inc., Chicago – have installed their own remote batch equipment and made it available to users with valid user numbers for remote-computing networks.

Since users from several networks will be underwriting the cost of the one remote station, the costs of the extended support should be less than if the station were limited to users from a single network. That, at least, is the concept.

Both ATA and RJE Data Processing are basing their services on Mohawk Data Sciences Model 2400 intelligent terminals, but the companies clearly differ in the amount of service they feel the user wants or needs.

ATA sees its primary role as a receiving point for long print runs and punched card output from application programs initiated at the user's own terminal. If the user wishes, ATA even arranges delivery of the output after it has been received on the MDS 2400.

User Work Space

By contrast, the Chicago office of RJE Data Processing includes work space so that users can run jobs and develop programs directly on or through the Mohawk equipment. Subscribers are provided offices specifically for their use, but even the more casual non-subscribing user will have desk space, the company said.

Each of the Mohawk systems can be used as a stand-alone CPU for simple jobs, in addition to serving as a terminal to a remote-computing network. ATA's configuration is large enough to handle a five-tape sort; RJE Data Processing's includes both a 7-channel and a 9-channel tape drive.

Users pay the remote-computing networks directly for any resources they access through the new centers, and pay ATA or RJE Data Processing separately for the use of their facilities. ATA has an initiation fee of $50 and an as-used charge of $24/terminal hour, subject to a $10 "per session" minimum.

Ata is at 437 Madison Ave., New York, N.Y. 10022.

RJE Data Processing subscribers pay $100/mo plus an average of $3 or $4/job, depending on the amount and type of output generated. This firm is located at 4738 W. Peterson Ave., Chicago, Ill. 60646.

'Relo-Plus' Supports 360/370 DOS

DANBURY, Conn. – Maintenance of a core image library of self-relocatable programs for DOS 360/370 users is easier and less core consuming with Relo-Plus than with earlier packages that performed the same basic function, according to the developer, Universal Software Inc.

As with all self-relocation packages, Relo-Plus allows the user to catalog one copy of an application program for execution in any partition that is available. Under standard DOS, the user has to catalog and maintain a copy of the program for each partition in which it might run.

Relocation with the Universal support is provided through the addition of a single control card when the user's program is being cataloged.

Relo-Plus supports either single or multiphased programs and provides an improved fetching method, to get the programs into core faster. The new approach is said to reduce the number of directory seeks and to allow the reading of multiple program blocks in a single disk revolution.

Universal sees self-relocation as a useful facility in its own right, but also as a complementary enhancement to the spooling of slow-speed I/O provided by Universal's Asap. Therefore the company offers Relo-Plus as a stand-alone package for $2,000 or $150/mo, or as an extra-cost option with DOS Asap for $950.

Universal Software is at Commerce Park, 06810.

In One Pass, Cars 2 Surveys Many Files, Produces 11 Reports

EAST ORANGE, N.J. – Users can generate as many as 11 reports from multiple files, with a single pass of the enhanced Cars 2 Audit Reporter package from Computer Audit Systems Inc.

Intended as an examination system for financial data files, the software permits three heading and two detail line formats per report with a free format to the heading and detail information for each. The system also supports flexible output editing, (which may be a report or a new magnetic tape), totaling of selected fields and user-controlled report sequencing.

The package can be used to extract information from a file or simply to survey the data contained in the file. Users may specify as many as 25 criteria per pass for either extraction or surveying, and internal control records can be bypassed as long as they can be recognized, a company spokesman said.

The Cars 2 Audit Reporter includes the previously available facility for the statistical sampling of records based on random selection.

While the package includes a broad range of possible audit routines, it is nonetheless efficient, the company explained, since only selected procedures are retained in the load-and-go programs created by the system. Since the parameters can be changed with each use, auditors are able to test files several ways in rapid succession, thereby assuring the integrity of the data, the spokesman noted.

Written in ANS Cobol, the new Cars 2 can be used on most third generation CPUs with at least 64K bytes of storage. The system costs $10,500 plus training and installation support. These costs may be modified somewhat in light of user experience with other audit retrieval systems, the company added.

Computer Audit Systems is at 725 Park Ave., 07107.

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Dennis G. Sisco – Marketing Manager

Data Briefs

Tektronix Questions Users On Plan for Graphics Group

BEAVERTON, Ore. – Tektronix Inc. is circulating a questionnaire to users of its graphics display terminals to determine the need for a user group.

The group would provide "a central point of exchange of information among users." The questionnaire asks users to list the equipment they are using together with their applications and programming languages now being utilized.

Information is available from Jon A. Meads, cochairman of the users' group committee, Box 500, 97005.

Singer Adds Stand-Alone Modem

SAN LEANDRO, Calif. – The Singer Co. has a stand-alone modem for its System Ten and 4310 data terminal. The 2024 modem operates over 2- and 4-wire dedicated or dial-up lines and is compatible with the Bell 201A and 201B data sets.

The Singer modem can transmit at switch-selectable rates ranging from 1,000 to 2,400 bit/sec. A front panel indicator displays carrier status, and the device includes local and remote loop-back features.

The modem costs $1,600 or $60/mo on a one-year lease. Delivery is 60 days from 2350 Washington Ave., 94577.

Telenet Plans Data System

WALTHAM, Mass. – Telenet Communications Corp., a subsidiary of Bolt, Beranek and Newman, Inc., is planning to operate a "multipurpose packet-switching network" for data communications users.

In a letter to the FCC, Telenet said it intends to file an application similar to that already filed by Packet Communications Inc., "as soon as supporting material is completed."

Telenet and BBN are developing packet-switching equipment to operate with satellites and higher-capacity digital facilities, the letter said. The firm is at 275 Wyman St., 02154.

Unit Tests Distortion

CHERRY HILL, N.J. – Computest Corp. has a portable distortion analyzer for testing synchronous and asynchronous data lines.

The Model DA-541 uses an LED display to record the percentage of distortion. In addition, the unit can determine the type and cause of distortion including bias, end, characteristic and speed.

The tester operates at 12 data speeds ranging from 45.5- to 4,800 bit/sec. The DA-541 operates from batteries or ac power and accepts 5- through 8-level start/stop codes. It is priced at $825 from the firm at Three Computer Drive, 08002.

Canada to Begin All-Digital Dataroute

OTTAWA, Canada – An end-to-end digital communications service called Dataroute will begin operations in 11 Canadian cities in April.

Providing full-duplex private-line serial transmissions in a broad range of synchronous and asynchronous speeds, the Dataroute service will be expressly designed to meet the needs of computer/communications users.

Described as the "first nationwide digital data system," the Dataroute service will provide cost savings up to 90% compared with present analog facilities, according to the Computer Communications Group of the Trans-Canada Telephone System (TCTS).

Dataroute service areas scheduled to begin operation on April 15 include Vancouver, Calgary, Regina, Winnipeg, Toronto, Ottawa, Montreal, Quebec City, Halifax, Moncton and St. John, N.B. By the end of the year the network will be expanded to 23 cities, a spokesman said.

For subscribers not directly in one of the initial service areas, dial-up access will be available. Included in the Dataroute service offerings are point-to-point private-line facilities operating from 110- to 50 kbit/sec; and multipoint private line from 110- to 19.2 kbit/sec.

The Dataroute service will be provided on an end-to-end turnkey basis including all interface equipment required up to the user's CPU and/or terminal interface.

The greatest cost savings will be realized by low-speed subscribers such as time-sharing users, according to TCTS. A 300 word/min circuit from Toronto to Vancouver now costs about $3,500/mo, but on the Dataroute the same facilities will cost only $350/mo. Savings in the medium-speed range are described as less dramatic but savings for high-speed transmission are also significant, according to TCTS.

The Dataroute rates will be less dependent on distance and more associated with transmission speed and the time of day than existing services. Separate rates will be available to cover the business day from 8 a.m. to 5 p.m.; for night-time service; and for 24-hour usage.

Much of the equipment being used for the Dataroute service is being provided by Computer Transmission Corp. and is also available to U.S. data users.

Two types of interface will be provided depending on the subscriber's data speed. The Directran will interface with sites operating at asynchronous speeds up to 2,400 bit/sec. The Intertran will be used for synchronous transmissions up to 50 kbit/sec.

For network multiplexing and switching operations, Multitran units will be used and Synchtran devices will provide Datatroute master clocking, a synchronous hierarchy and diagnostic alarm information for TCTS.

Rates for the Dataroute have been filed with appropriate Canadian regulatory bodies, and approval is expected in time to meet the April start-up date, according to a TCTS spokesman.

For Man-CPU Dialogue

Terminal Interface Called Inefficient

By Ronald A. Frank
Of the CW Staff

NEWTON, Mass. – For most types of computers users, "remarkably little has been done to provide an efficient man-machine interface. The user must be protected from the overwhelming mass of data that a CPU can generate while at the same time being able to effectively communicate with the system."

These are the types of problems addressed in a book by James Martin called *Design of Man-Computer Dialogues.*

Up to now, mainframe systems have been designed from the inside out based primarily on the capabilities of the CPU. But now they will have to be designed from the outside in, according to Martin.

The ease with which the terminal user can communicate with the system will determine how well he can utilize the system. And the "dialogue" that takes place between the user and his terminal should take into account the shortcomings of both the man and the machine, the author says.

In a section on terminal keyboards, the author contrasts the IBM 3670 stockbroker terminal, which has 178 dedicated function keys, with more free-form devices such as those which have PL/I or Fortran keyboards.

Careful attention should be given to the amount of data displayed at one time to the operator, Martin thinks. Some programmers have a tendency to fill up a display screen simply because it is there. But most alphanumeric dialogues between the terminal and the operator proceed faster if the amount of information on the screen is minimized.

There should be one idea per display and the operator should be asked to respond to only one thought at a time. This is especially critical in "computer-initiated" dialogues, the author says.

Columnar presentation of data on a display terminal is usually most efficient with numbers right-justified and letters left-justified. And short line lengths usually contribute to faster "absorption of the displayed data."

The potential or existing terminal user may find parts of the book frustrating because Martin calls attention to some characteristics over which there is little user control.

For example, the computer response times demanded by varying input methods are often difficult to change. Lines "drawn" on a screen by a light pen should appear faster than a character generated by depressing a key, the author says.

But by viewing the terminal interface as a way to talk to the computer, Martin will make users consider trade-offs that go far beyond the simple hardware constraints of the equipment. The book is available from Prentice-Hall, Englewood Cliffs, N.J.

Most Communication Parameters Monitored by CLA-3000 Analyzer

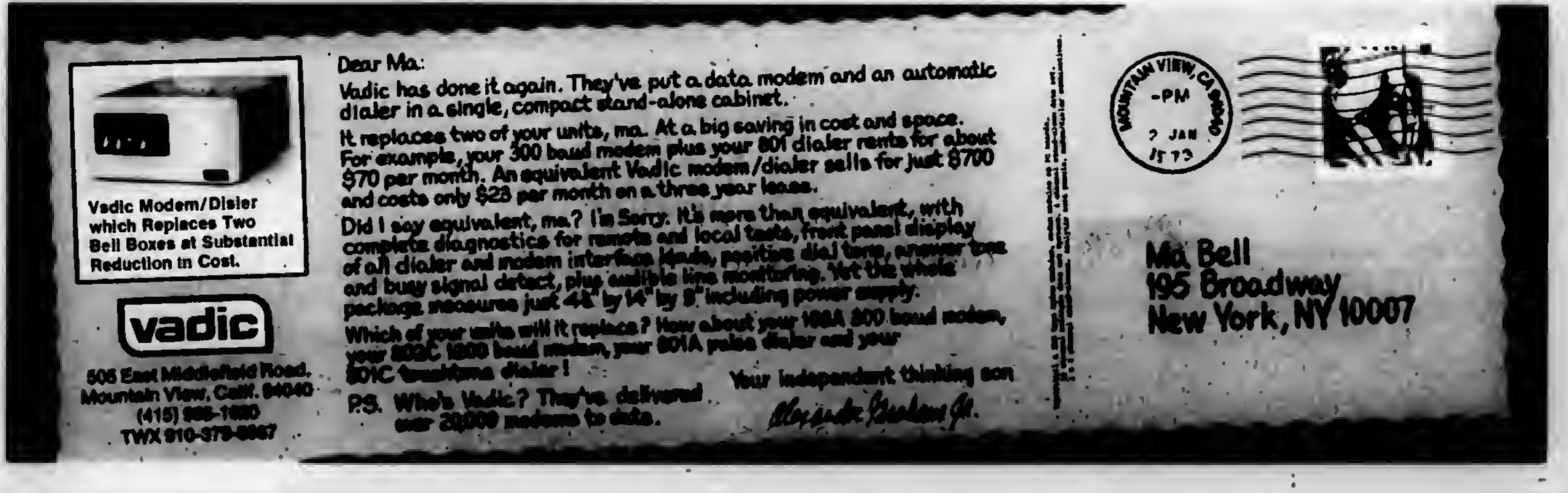
ROCKVILLE, Md. – Penril Data Communications, Inc. has introduced a portable communications line analyzer that is said to save users up to $15,000 compared with comparable test equipment.

Called the CLA-3000, the line analyzer can measure important parameters of a voice-grade line including envelope delay distortion, amplitude response, harmonic and intermodulation distortion, phase jitter, gain and phase hits, impulse noise hits, frequency monitoring and error rates.

Although a technically skilled operator is required to interpret the test readings, the CLA-3000 can function with a transponder located at a remote site. This allows a line to be analyzed without requiring a test instrument at both ends, the spokesman said.

The tester gives data users the same line analysis capabilities as Bell System engineers, the company said. Some functions, such as harmonic and intermodulation distortion, cannot currently be checked by local carriers, a Penril spokesman said.

The CLA-3000 costs $9,300 and a transponder for operation with a remote site would cost about $4,000. Comparable test equipment if purchased separately would cost up to $15,000, the company said. Penril is at 5520 Randolph Road, 20852.



Vadic Modem/Dialer which Replaces Two Bell Boxes at Substantial Reduction in Cost.

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Dear Ma:

Vadic has done it again. They've put a data modem and an automatic dialer in a single, compact stand-alone cabinet.

It replaces two of your units, ma. At a big saving in cost and space. For example, your 300 baud modem plus your 801 dialer rents for about $70 per month. An equivalent Vadic modem/dialer sells for just $700 and costs only $23 per month on a three year lease.

Did I say equivalent, ma? I'm Sorry. It's more than equivalent, with complete diagnostics for remote and local tests, front panel display of all dialer and modem interface leads, positive dial tone, answer tone and busy signal detect, plus audible line monitoring. Yet the whole package measures just 4½" by 14" by 9" including power supply.

Which of your units will it replace? How about your 103A 300 baud modem, your 202C 1200 baud modem, your 801A pulse dialer and your 801C touchtone dialer!

Your independent thinking son
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P.S. Who's Vadic? They've delivered over 20,000 modems to date.

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You can tell a lot about BASF/Endura computer tape from the professionals who use it.

They're the people who demand more from a computer tape than just accuracy.

They want accuracy *plus* the kind of long-term savings they can really brag about.

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Digital Links Best

WU Minimizes User-Caused Harm

WASHINGTON, D.C. – There have been no instances of harm to the Western Union communications network during 1972 which were attributable to customer-provided equipment.

This status report on possible harm arising from the interconnection of non-carrier equipment was contained in a letter from Western Union to the FCC.

On digital links, the Western Union transmission network is "rarely susceptible to harm from overload," the letter said. On analog links, "almost all customers" have transmission interface equipment designed to eliminate harm from customer-owned equipment.

Western Union is working with terminal suppliers to make it possible for the customer to own or lease all of the equipment except for a "demarcation terminal block," the letter said. The non-carrier equipment would interface with WU lines at the terminal block.

"There will inevitably be cases where . . . higher than normal signal levels or extraneous voltages" appear on WU lines, the letter from R.H. McConnell, executive vice-president, said. On digital services this is not expected to cause harm to the network since "regenerating equipment in the first central office will effectively block any harm.

"If any isolated instances should be found where a customer's practices are repeatedly causing" a harmful condition, WU will visit the site and explain the situation to the user. But it should rarely happen that a user will persist in causing problems, the letter said.

On lines which WU leases from Bell, telephone company protection standards will apply. But at present 40% of WU's network is non-Bell.

Converter Handles Data Codes

SANTA CLARA, Calif. – Data communications systems incorporating equipment with different code formats, levels or bit rates can now operate with on-line compatibility using the Model 702 Universal Code Converter from Plantronics, Inc.

The Model 702 electronically converts any Ascii, Baudot or other 5-, 6-, 7- or 8-level data signal to any other corresponding code, storing and expanding characters as necessary. Code conversion is accomplished with an MOS ROM programmed to individual user requirements. The memory can be reprogrammed at the factory if system formats change.

Data rates are selected with plug-in "speed chips" programmable from 37.5- to 4,800 bit/sec depending on character storage and expansion requirements. Selectable interface levels are available.

To prevent loss of characters due to code conversion and speed differentials, internal MOS storage can be provided in the Model 702 with a capacity up to 10,000 characters. Additional electronic storage can be added externally.

The Model 702 costs $1,545 with 30-day delivery from 385 Reed St., 95050.

CRT Driver Can Operate With TV Sets

WILLOW GROVE, Pa. – Digi-Log Systems, Inc. has a portable desk-top CRT driver that is compatible with Model 33 TTYs.

Called the Model 209, Telecomputer, the terminal can be acoustically coupled or hardwired. It has a display format of 640 characters, and can operate in half- or full-duplex modes at 110- and 300 bit/sec.

The Model 209 operates with any TV set or video monitor by clipping onto the antenna terminals at the back of the set. A single Model 209 is said to produce "high-resolution" displays on up to 10 displays.

The Model 209 uses a 64-character Ascii set and the keyboard is similar to the Model 33 TTY with additional control keys. Cursor controls, a local/remote switch, scroll and page modes are included.

The standard model includes either TTY current loop or RS 232 interface. Available options include "Here Is" coding, batch transmit capability, 16-key pad, and 9-in. or 12-in. video monitors.

The unit costs $1,295 or $15/mo., Delivery is about 30 days from Digi-Log at 666 Davisville Road, 19090.

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If you're still wading through reams of computer data and drawing your own charts and graphs, take ten minutes to read our new book: "The Story of Computer Graphics."

You'll learn how H-P's 7200 Series Graphics Plotter can transform the output of your terminal into concise, meaningful charts, curves and graphs . . . directly from the keyboard, paper tape, cassette or a card reader. With no special operating or programming/language needed on your part.

Now that our new high speed model is available, there's a 7200 Graphic Plotter for everybody . . . for every terminal. And it's so easy to set up, understand and use that our storybook has a short-form order blank on the last page.

You can buy, rent, or rent to buy, by mail.

Use the coupon above to order your free copy of "The Story of Computer Graphics." It's full of sample graphs and illustrations. There's even a full size fold-out of the 7200 Graphic Plotter. Hold it up next to your terminal and see how uncomplicated life can be.

H P's simple little $3,300 Graphic Plotter can uncomplicate your life.

Send for the big new picture book that shows you how.

This is the sensible option to IBM 3330 you knew would come from Mohawk Data Sciences.

Lease rate savings, sure.

But there's also greater speed built in for greater throughput with the new MDS 8830/8330 disk subsystem.

That leads to cost savings of up to 22%.

What's more, in formatted write operations, our secondary disconnect feature frees up the controller to further boost throughput as much as 10%.

With single spindle configuration of 100 million bytes each, you can buy exactly what you need all the way up to 1.6 billion bytes. This new one expands the Mohawk Data Sciences lineup of plug-compatible disk systems to four. So how many bytes do you need? We've got you covered from 7.2 million to 1.6 billion bytes. And we've got your tape transport and printer needs covered, too.

We didn't become the Peripheral Power without covering it all. Product and price and performance and service.

Big talk? You call, we'll come. Phone our nearest sales office or call headquarters at 315-792-2424. Mohawk Data Sciences Corp., World Headquarters, Utica, N.Y. 13503.

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Bits & Pieces

CDC Unveils Plug-to-Plug Replacement for IBM 3330s

MINNEAPOLIS – Control Data Corp. has announced the CDC 33301 Multiple Disk Memory System – a plug-interchangeable replacement for the IBM 3330 Disk Subsystem.

Designed for use with the IBM 370 Series computers and with Model 85 and larger units within the 360 Series, the 33301 replaces the IBM 3830/3330 Disk Storage Facility.

The CDC subsystem attaches to the IBM mainframe's block multiplexer channel, and uses either CDC 879 or IBM 3336 disk packs.

The CDC system provides 100M to 800M bytes of high-speed, random-access, on-line storage through the use of a control unit and one to eight disk storage units.

A Control Data 38301 System Controller with from one to eight drives leases for $2,650 to $5,650/mo on a one-year lease with full maintenance included.

Purchase price of these systems ranges from $106,000 to $238,000 without maintenance, for first delivery in June 1973.

Across the entire line, these prices average about 20% lower than IBM prices for comparable subsystems, a CDC spokesman said.

Speeding Up the D-116 Mini

FAIRFIELD, N.J. – Digital Computer Controls, Inc. has a faster version of its D-116 minicomputer.

The D-116H has a full cycle time of 960 nsec – 20% faster than the standard D-116 – and has a storage capacity of 32K 16-bit words of core memory.

Prices for the D-116H begin at $4,000 with 4K memory, central processor, programmer console and external I/O connector, from 12 Industrial Road, 07006.

Optical Reader 'Similar' to Copier

PARAMUS, N.J. – Creative Logic Corp. has introduced the Laser Vision Series 3200 Optical Page Reader.

The LV-3200, which uses a laser beam, prism system and a type-written font, can read speeds above 3200 char./sec.

Similar in operation and size to a free-standing office copying machine, the vacuum transport accepts paper sizes from 3 in. by 5 in. up to 9 in. by 11 in. A standard 8-1/2 in. by 11 in. page can be transported, read and processed in six seconds.

Output devices for the unit include 7- or 9-track computer-compatible magnetic tape, punched cards, punched paper tape and medium- or high-speed communication lines.

Priced at approximately $12,000 (scanner only), the LV-3200 is available from 80 E. Ridgewood Ave., 07652.

Testing--Part II

Disk Performance Improved by 5 Tests

By Alan M. Stoughton
and
Dr. John C. Scott
Special to Computerworld

An understanding of the causes of potential disk errors enables the user to respond more intelligently when troubles arise.

Many errors in writing data onto or reading data from magnetic disks result from protrusions or scratches on the disk's magnetic coating.

After the aluminum substrates have been tested, they are coated (or plated) with a thin film of magnetic material to give the disk its information storage capability.

The process is subject to aggregation of the oxide particles and formation of bubbles in the coating as it is setting. The possibility of nonuniformity of coating in the application process also arises.

A finished disk may contain microscopic surface protrusions which can interfere with the ability of the recording head to fly.

To minimize this risk, prior to sale the disk is spun at a speed less than its intended operating speed with a special burnishing head over the surface, at about one half the height of the normal read/write heads.

After burnishing, the height of any surface defects has been reduced to one-half the flying height of standard heads – enough to prevent damage to the read/write heads, but not enough to prevent data errors.

The disk after burnishing is ready for testing of magnetic recording performance.

Five of the more common tests are: extra bit; missing bit; amplitude modulation; resolution; and overwrite modulation.

When a constant dc write current is passed through the coils of the head, a uniform flux is generated. If the magnetic medium of the disk has been laid down uniformly, the medium will be magnetized uniformly in one direction.

Disks: Nothing But the Truth

On reading back there will be no induced voltage through the head, since the head only senses changes in flux.

However, where the coating has not been laid down uniformly and regions of differing magnetization exist, the read-back induces signals. The size and width of these extra pulses are directly related to the dimensions of the magnetic defects.

Where voids, scratches and pinholes occur in the magnetic medium, there will be a flux change.

At the edges of any such hole, it is possible that extra bits exist. If the hole is large, the signal amplitude of any magnetic transition scheduled for that region of the disk is zero and the information is lost.

If the hole is small, the signal may fall to x% of its expected amplitude. If x is less than the accepted limit of the read circuitry, then again the information is lost.

This phenomenon is the basis of the missing bit test. Any pulse less than x% is noted as a missing pulse with the value of x selected on the basis of performance specification and yield criteria.

Amplitude Modulation Test

As recorded data goes through the various permutations of the encoding method (e.g., 1 to 0 to 1 to 0 to 1), the amplitude of the read-back signal varies locally because of the differing separation between the magnetic transitions.

Coating uniformity is controlled by performing a modulation test on the playback signal. The signal is passed through low-level filters, and the level of modulation about a mean value is measured.

Resolution Test

Flux changes in a magnetic head cause corresponding flux changes in the magnetic medium passed under the head. The transitional region between is ideally shown as a line.

In reality, it has a finite width, dependent on the amplitude and phase of the applied head field, the magnetic medium formulation and thickness, and the writing frequency.

As the head moves over the disk, the ratio between amplitudes read back from signals written at frequency 1F and those written at 2F will vary.

If this ratio variation becomes excessive, undue peak shift occurs and information is improperly decoded. Consequently it is important to measure this ratio with a known head.

Overwrite Modulation Test

The transition region between data cells is a zone of unsaturated magnetization bounded by two regions of saturated magnetization.

Since the transition regions are differing widths for 1F and 2F, when a 1F signal is overwritten by a 2F signal, it is possible that some of the unsaturated regions for both frequencies coincide.

In this situation the overwritten signal does not completely obliterate the information beneath it.

The effect for a particular read/disk combination can be measured by observing the modulation of a 1F signal which has been overwritten with a 2F signal.

These fives tests combined with a measurement of the average amplitude for each test track result in a complete quantitative and qualitative analysis of a disk surface.

Alan Stoughton and Dr. John Scott are employees of Computest in Cherry Hill, N.J.

PDP-11 Users Reap 2 Offerings—Interface Kit and 16K-Bit ROMs

By a CW Staff Writer

In two separate offerings, PDP-11 users can use a do-it-yourself kit from DEC to attach non-DEC-supplied peripherals and can add 16K-bit read-only memories from Integrated Memories Inc.

The do-it-yourself interface kit allows non-DEC peripherals, production control units and laboratory control instruments to be plugged directly to the processor via the Unibus.

Each of the three kits includes a prewired backplane unit that accommodates from six to 18 standard logic modules which are configured by the user for his particular application, a spokesman said.

The Deckit11-H package can read four 16-bit data words from a peripheral device into any PDP-11 processor, and write four 16-bit words or eight 8-bit bytes to a peripheral device. It is priced from $1,165 (exclusive of cabling and Unibus connectors).

The Deckit11-F reads three 16-bit words while writing one word. It is priced from $750 (exclusive of cabling and Unibus connectors).

The Deckit11-K is designed for reading eight 16-bit words from a peripheral with no words written and is priced from $695 (exclusive of cabling and Unibus connectors).

Add-On ROM

The field-alterable Capacitive Read-Only Memory (Crom) System Model 1002G from Integrated Memories is pin-to-pin compatible with the DEC PDP-11. The basic system can also be interfaced and packaged for other minicomputers, the firm said.

The system on a pc board costs about $600 per unit. The full 256 x 16 Crom system uses one card slot in the PDP-11. Larger capacity systems with up to 16,000 bits could be accommodated on the same pc board, the firm noted.

The system has a MTBF calculated at greater than 200,000 hours. The firm is at 260 Fordham Road, Wilmington, Mass. 01887.

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a 100 char/sec, 80-column printer for $1995.
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Unbeatable price performance ratio!

At 60 to 150 lines per minute

The 306

CENTRONICS

new model 306 printer

Here's just some of what's happening at the 1973 Computer Users' Forums.

"A small computer ... Model 10 couldn't handle all on-line ... without a major upgrade ... of the system," Jester said. Intelligent terminals allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

... Despite the proli... Bell data equipment ... still reluctant to ... a Computer ... advantage ... to important ... independent

BOSTON – "Conditioning ... data transmission ... sure effective data transmission ... often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning. ... Overlan, assistant telecommunications manager for First National ... Boston, told a Caravan ... on leased-line usage.

BOSTON – A major ... line data entry is that the process out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank.

... real-time system at the bank ... receivables, stock transfers, mutual funds ... 720 ... 370/155 ... Cronin ... real-time systems.

Thibault ... o Mix or Not

Thibault advised users who choose multivendor systems to bring each vendor in one at a time and explain what is expected from him in the mix.

"Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain the ... rules of responsibility.

... workshops ... particular ... and ... warning other ... areas.

In all, more than 300 ... sessions on data entry ... tions and installation ... given on a separate ...

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never contract for custom programming of an application that he knew was going to entail heavy maintenance, ... as payroll, with its ... tax routines ... house, he ... programmers ...

... char... as a ... as an omnipotent ... Zayre Corp. has found the ... lation of an IBM 1287 more than justified on one application alone.

Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

BOSTON – Sometimes all the in-house staff knows – even after a package system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

And it'll be happening soon in a city near you:

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the ... avail... and what the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: Houston. And here are some of the panelists who will be there: Gerry Hammer, Getty Oil; Robert Balough, J. Weingarten; C.M. Metcalf, Bank of the Southwest; Phil Rossiter, Texas Commerce Bank; Joe Hopkins, Gulf State Utilities.

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

sponsored by

COMPUTERWORLD

Computer Users' Forum Registration

Name____________________________

Title____________________________

Company____________________________

Address____________________________

City____________________________

State______________Zip______________

1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:____________

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:____________

2. Please check the appropriate city:

Atlanta	March 13-15 (Tues, Wed, Thur)	Regency Hyatt House
Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
797 Washington Street
Newton, Mass. 02160

For additional registrations, copy this form – or write for extra copies.

The Problems of Power

IBM Opts for Temporary Power System Backup for Data Processing Division

WHITE PLAINS, N.Y. – In choosing a backup power system for its internal Data Processing Division, IBM opted to install a temporary power system.

The system is designed to allow an orderly shutdown through the use of batteries as opposed to attempting to keep the system going for a prolonged period of time with backup power supplied by generators, according to a spokesman for C&D Batteries.

IBM's prime consideration, according to the spokesman, is the protection of a data base that receives an average of 600,000 inquiries daily from about 350 IBM locations – including branch offices, manufacturing plants and education centers – nationwide.

The need to protect this data base from damage through transient disturbances and short-term power outages led the firm to install a battery-powered UPS system that could handle problems up to 30 minutes in duration.

In the event of changing requirements, however, space provisions were made for possible installation of generators in the facility, the spokesman added.

Batteries Fill Gap

The current system, designed by GE in conjunction with IBM engineers, is shown in Chart 1.

Rating	1,250 kVA at 0.8 pF for approximately 30 minutes
Components	3 – rectifiers – 500 kW Input – 480 V – ac – 750A 3ph 60Hz Output – 390 V – dc – 1,280 A
	6 – solid-state inverters – 250 kVA Input – 320 to 420 V – dc Output – 208 – 120 V – ac – 690 A
	Battery banks 177 cells in bank – 3 banks – 531 total 2.2 to 2.25 V/cell (nominal) 1.8 to 2.20 V/cell (operating range) 1,950 A hr – 8-hr capacity

Chart 1. IBM's Uninterruptible Power Supply (UPS) System

2	System/360 Model 85s
4	System/360 Model 65s
1	System/360 Model 30
58	2314 disk storage units
17	2841/2303 drum storage units
110	tape drives
20	printers
25	communications control units
40	modems and data sets

Chart 2. Equipment Supported by Battery UPS System at IBM's Data Processing Division

Also considered in the installation of a battery-type system is protection against transient disturbances to equipment, the spokesman said.

With the UPS system, transient disturbances are eliminated since even minor power interruptions are avoided by means of the batteries filling the power gap, he asserted.

The GE UPS system was installed in 1970, when the computer center in White Plains was completed. Data processing equipment supported by the backup power system is found in Chart 2.

Monitors Detect Disturbances

MENLO PARK, Calif. – Three portable power-line disturbance monitors that simultaneously detect, count, categorize, time and record overvoltages, fast transients and frequency variations on single or 3-phase power lines have been introduced by Programmed Power Inc.

The 3200 Series provides audio/visual alarms and hard-copy printout indicating day, hour and minute, plus a code digit correlating to the specific power anomaly noted, the firm's spokesman said.

The visual alarm (front panel lights) is provided for under/over frequency, overvoltage and undervoltage registers.

The appropriate visual alarm is activated when a disturbance exceeds a preset limit with an audio alarm activated at the same time.

A 3-phase switch permits users to select phases for visual metering of voltage.

Power consumption ranges from 30 to 40W for the three units available.

Optional features include external alarm voltage terminals, BCD output terminals, 440 Vac modification and a 400 Hz, 3-phase modification, he added.

Prices for the three units range from $2,995 to $3,600 from 141 Jefferson Drive, 94025.

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Bankers find deposits
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modems

A family of low-speed modems for the user or OEM. Here are eight models . . . many others to choose from.

Model 150A—Acoustic coupler for TTY only	$147
Model 150P—Built-in acoustic coupler for Series 33 Teletype	$175
Model 302A—Acoustic coupler TTY and EIA Interfaces	$245
Model 302D—replacement for 103A. Automatic answering with CBS or CBT DAA. TTY motor starter, Initiate & respond to long space disconnect and 10 minute activity disconnect	$325
Model 302F—replacement for 103F. Private line and 1000A, CDT DAA applications	$245
Model 310—PC modem for OEM. Originate, acoustic/DAA, carrier detect, 4½x5½x½"	$125
Model 320—PC modem for OEM. Answer/originate, acoustic/DAA, carrier detect, integral power supply. 4½x10½x¾"	$165

Series 330—Replacement for 103A, 103F, 103E, 113A and 113B. Automatic answering with CBS or CBT DAA. 16 modems in a 19" rack. Colored display panel indicates 4 controls and 2 data functions.

Auto answer modem	$170
Private line modem	$150
Complete cabinet, display and 16 Modems	$3,185

or $73.00/month.
(5-year lease with purchase option)

Also a complete line of other data communication equipment including frequency division multiplexers, data channel expanders, data channel concentrators, Teletype terminals, etc. Write for specs today.

Datapoint delivers at Day's, Inc.

Day's, Inc., is a national leader in the explosive field of double knit men's slacks and jackets. In the fast moving fashion field, there's a real need for data *fast* to keep up with and ahead of sudden sales trends. Like other companies in the field, Day's has had the problem of moving data swiftly and economically between central offices and field facilities, and formatting this data so as to extract maximum benefit from it. Their answer: Datapoint 2200 systems are used in a number of departments at Day's to expedite transmission of source data to the company's central computing system and at the same time provide significant on site computer power at remote sites. The full programability of the 2200 plus the DATABUS processing language and other software aids supplied with the system make it easily adaptable to complex and changing application requirements.

Two Datapoint systems with attached tape units constitute an on-line link between the company's central computer operation in Tacoma and its warehouse in Clearfield, Utah. All incoming sales orders are funnelled through the central computer, matched against available inventory, and "picking ticket" data generated which is then transmitted via 2200/Tape to the 2200/Tape in Clearfield. There, a printer prints out the forms which clerks use to fill orders from shelf stock. When orders are filled, verification is sent back *the same day* to the central computer and an invoice generated and mailed, also the *same day*, compared to the three to four day lag common with previous methods "This is another way in which our cash float is greatly helped by the Datapoints," said Decker. Swift data reportage also permits computerized compilation of daily "net to sell" reports for Day's sales department which give comprehensive information on shelf stock available to buyers.

Datapoint 2200's are also being used in Day's accounts receivable department, the payroll department and in production planning where their ability to accommodate large volumes of data according to pre-programmed formats is a major advantage. "The Datapoint 2200's have not only streamlined our data entry activities throughout the company but they have added as much as three years of useful life to our present central computer installation," said Decker. "Without them, we would have had to have gone to a larger computer system with RJE terminals for our remote data users at a cost far in excess of what we're paying for the 2200's — and not have their on-site computing capability."

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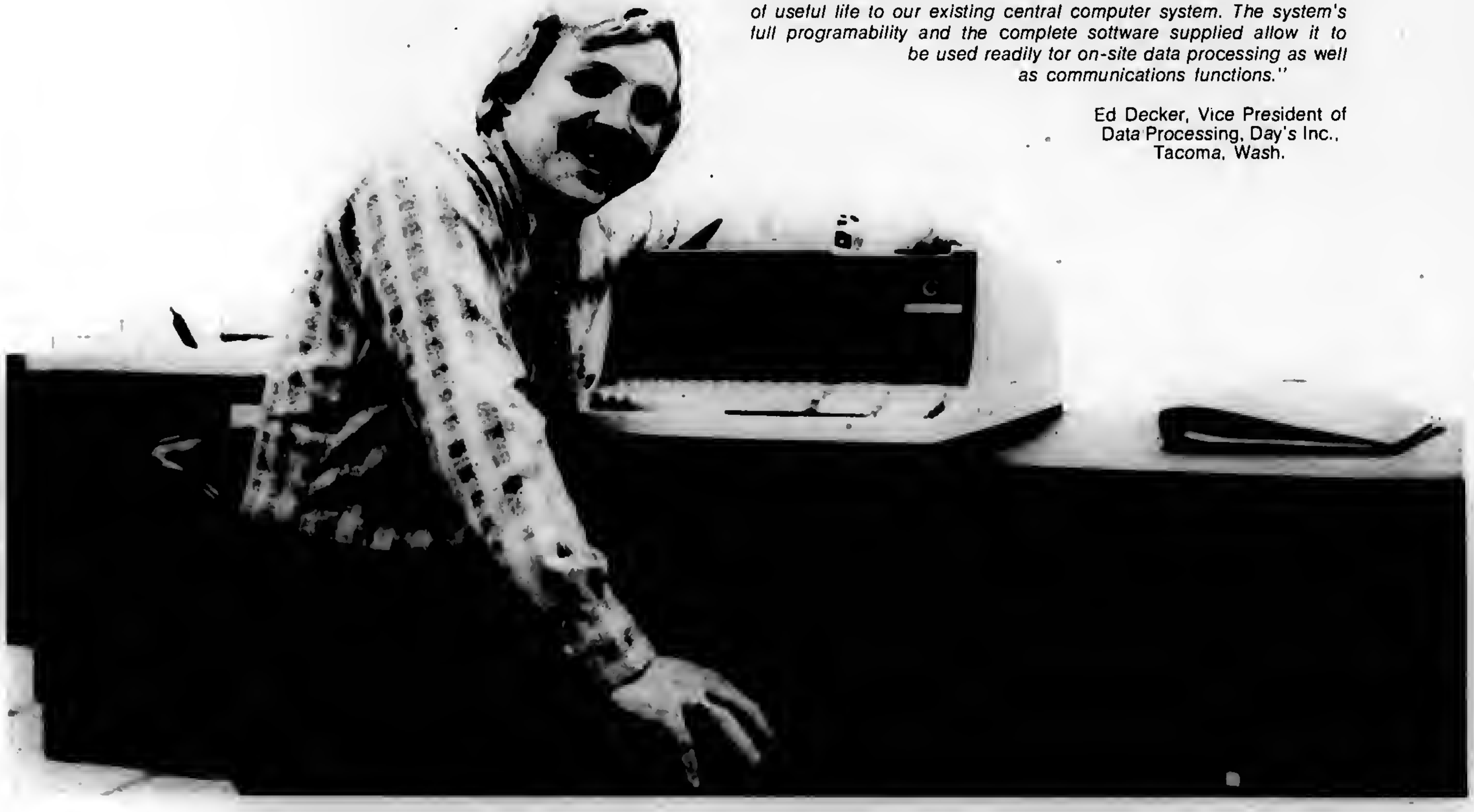
Ed Decker, Vice President of
Data Processing, Day's Inc.,
Tacoma, Wash.



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DP, Radio Stations Harmonize to Make Sweet Music

Special to Computerworld

YORK, Pa. – If there is a formula for good FM radio listening, the Susquehanna stations may have hit on it through a small computer.

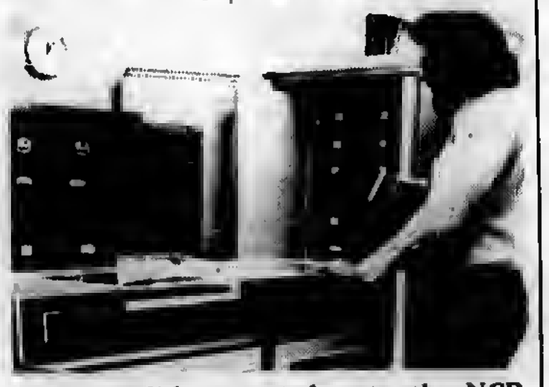
Applying computer techniques to proven broadcasting parameters, Susquehanna Broadcasting Co. is cutting weekly tapes for five FM stations that are turning listeners on in increasing numbers.

The parameters are simple enough. Songs and artists are separated so no particular one is played back-to-back or repeated in a four-hour time segment. Also, no half-hour tape is repeated in 68 hours – to avoid a selection being played in the same time slot.

Thus, a station does not follow one Frank Sinatra tune with another and the same Sinatra song will not be played again for at least four hours. And, the tape with the Sinatra piece slotted for 11 a.m. is not run again for 68 hours to avoid repeating the song in the same time frame.

"We could not do what we are doing on a manual basis," explains Robert B. Shipley, group FM program director. "This enables us to stay on target with the type of music we play and it controls repeats," he claims.

The Susquehanna approach is similar to that of the research laboratory where tests are conducted and the results are analyzed for flaws, re-examined and tried until a logical solution is found. In the same vein, the computer goes through a trial and error process, matching and rejecting half hour tapes until the log assembled meets Susquehanna requirements. One result has been an average of less than one hole per week to fill.


Magnetic disk mounted onto the NCR Century 100 computer contains the selections and artists recorded on half-hour tapes played by the five FM stations.

Susquehanna makes its program selections from thousands of musical standards, preparing half-hour tapes with selections balanced according to valid listening patterns and established popularity of titles. The company's five FM stations are furnished with several hundred numerically-coded tapes, each containing breaks for news, weather, public service information and commercial announcements. The company's tape-preparation system allows wide flexibility for each station to respond to major news developments or other local occurrences without difficulty. The number of each tape, its selections and artists, are captured on the computer's magnetic disk files.

Then, each Thursday, the computer, applying the program parameters, selects a week's tapes and prints a program log for each day's broadcasting beginning with the following Monday night. If there are any holes, they are filled in manually in York before the logs are distributed to the stations.

While the weekly log indicates when each tape is to be played, a computer list accompanying the tape details the selections, timing and break points.

Besides serving the stations themselves, the computer draws on its disk files to print an alphabetic list of selections and the number of times they're on the tapes. Management uses the report to determine whether the songs are being featured in proportion to their popularity and in keeping with the company's ideas on good listening.

Another computer report shows the frequency with which each tape is being played. The information alerts the programming staff to examine why one tape may be getting more plays than another, or if a frequently broadcast tape may have outplayed its effectiveness.

The Small Systems User

When the computer is not assembling the program logs for the company's FM stations, it is doing the billing for Susquehanna's cable TV operations, CATV of York, and maintaining the accounts receivable records for seven AM and the five FM outlets.

Bills are prepared by the AM and FM stations and copies are sent to York where the accounts receivable files are updated and aged and sales are analyzed. Aside from typing the bills, the local stations have nothing more to do with billing and accounts receivable paperwork.

On the other hand, the computer prepares the bills sent monthly to some 17,000 cable TV customers. Bills are prepared weekly on a cycle basis and receipts are posted at random daily, at which time the accounts are updated.

The bills are in continuous card format. The company has delayed making the bill a turnaround document because of a large number of exception payments and because the volume has not yet warranted it.

But the bill, according to Larry D. Potteiger, data processing manager, could easily be converted and Susquehanna can do the billing for several additional cable TV companies without appreciably increasing costs.

When orders are received, they are edited and the information is entered into the NCR Century 100. The computer stores the data and prints the necessary shipping copies/bills of lading and order register.

After the orders, which average 150 to 180 daily for all divisions, are shipped, the computer prints the invoices, updates the accounts receivable file, prepares an invoice register and reduces inventories.

Sales and inventory reports are produced daily. Open orders, including current, future and back orders, are reflected in the remaining available inventory. Applying set minimums, the production department can determine output needs.

The computer performs the usual aging that goes with every accounts receivable record-keeping process. There are 20,000 customer records in the file. It also figures the commissions based on the sales information captured on entering the orders. Performance reports by customer and product sales forecasting are two other computerized summaries.

Bar graphs are prepared by the computer which shows each line's production, orders, shipments and inventory. The graphs are used by management in determining output cycles and work schedules.

The computer also processes the weekly payrolls for the manufacturing operation and the semimonthly pay records for the salaried radio personnel.

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Cautious User Becomes a Fan of Key-to-Disk

By Michael Weinstein
Of the CW Staff

BOSTON – Questions asked at a workshop here on keypunch replacement indicate users still have basic doubts as to the feasibility of using key-to-disk systems.

Everett Lawton of New England Electric Co. addressed the fears of many users when he told of his experiences as one of the first East Coast users to replace keypunch operations with a shared processor key-to-disk system.

He related how he had set up his key-to-disk operation so input was identical to keypunch input – using 80-column records.

"Quite frankly," he said, "we were scared the system might not work and by having an identical format we could always go right back to keypunching.

"But as we got deeper into our new operation, we found our initial fears were unfounded," he stated.

Lawton's system consists of two identical systems, each with a central processor tied directly to a tape unit. Storage medium for each system is a 2.2M-character fixed-head disk subsystem which accepts input – through the CPU – from 11 terminals.

Data is entered from the terminals and stored on disk until preset times when contents of disk are dumped onto tape for input to the company's central computer, he related.

The major benefit to the company, Lawton stated, was the ability of 12 operators to surpass the work performed previously by 18 keypunch operators.

Also, because the verification techniques were superior, the individual quality of each operator was not so critical, he maintained.

In response to questions about actual throughput under the key-to-disk system, Lawton related how the average input by each operator was now about 10,000 keystroke/hr – with some operators at around 15,000 keystroke/hr. With IBM 029s the standard had been less than 8,000.

Other reasons cited for this improvement included the shared processors' ability to take data in diverse formats.

Using his key-to-disk system data can be entered in the manner most convenient for the operator and later reformatted by the shared processor into a form the programmer desires.

"We pay $5,000 total for both systems including two CPUs, two disk subsystems, two tape drives and a shared printer," Lawton said.

"Of this cost, we pay $75 for each terminal and can add up to 64 terminals to either or both systems for $75 per terminal."

His advice to other users looking into key-to-disk was "be more concerned with the software and always think 'how can I get my operators to reduce the number of steps needed to enter data.'

"In view of retraining it is important that a prospective user get an 029 type of keyboard as this is what his keypunch operators are used to working with," he advised.

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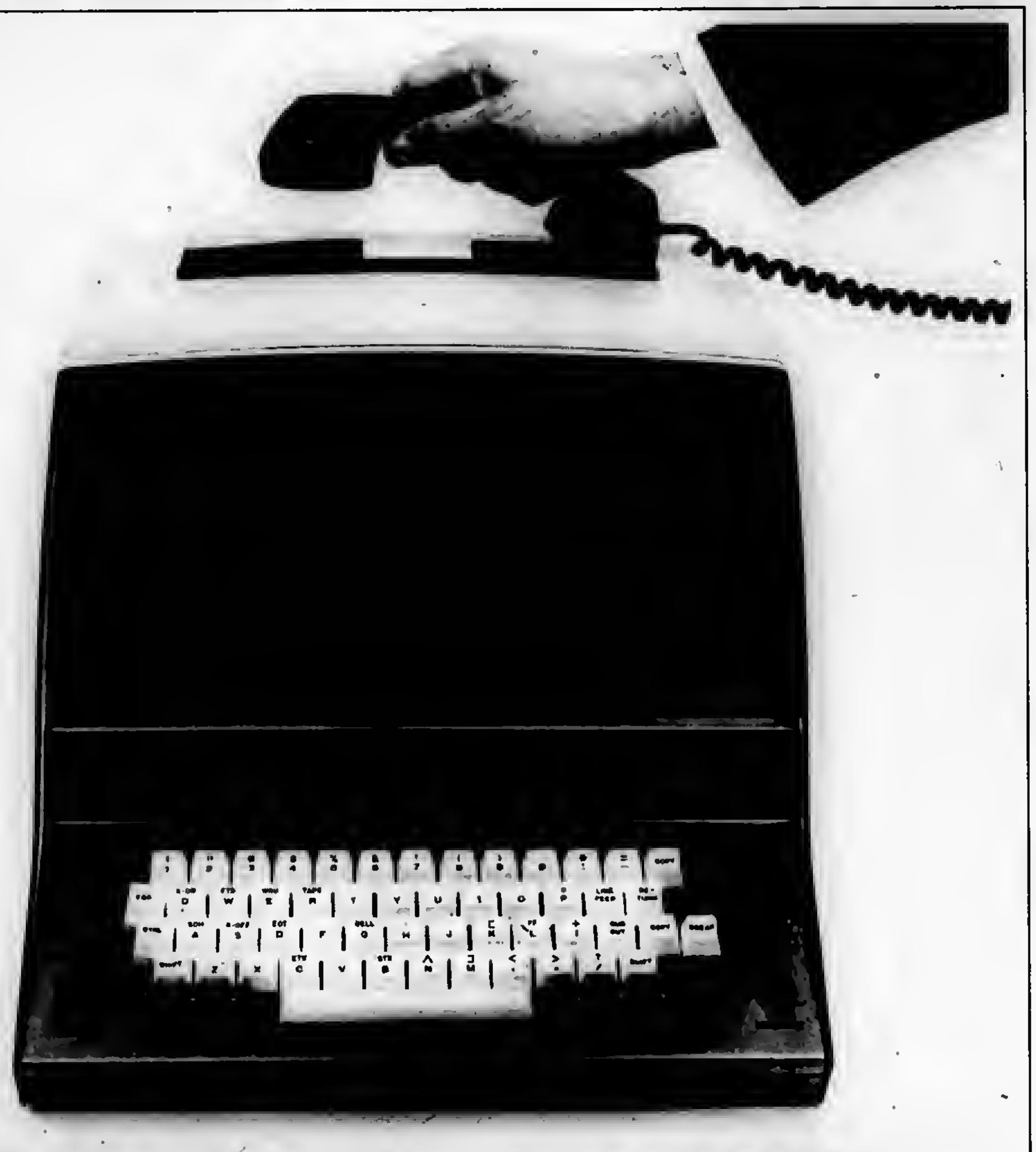

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Bell Synthesizer Aimed at Turning Writing to Speech

WASHINGTON, D.C. – In the not-too-distant future travelers may call up for airline reservations and hear a voice that sounds foreign, and has some trouble with pronunciation – but on the other end will be a computer-based device which translates written input into spoken output.

The new unit is still in the development stage, even though a patent has been granted to two members of Bell Labs.

In operation there is no human interaction or recorded audio tape. When a written passage reaches the synthesizing unit, the computer device analyzes the sentences, assigns stress and timing, and finds a phonetic description of each word.

Software for the synthesizer takes into account speech patterns and relationships between spoken and written language. To illustrate some of the problems that must be overcome, one of the inventors pointed out the difficulty in the expression "a nice man."

If the program is faulty, this might be interpreted as "an ice man," he commented.

Application areas being investigated for the new system are reading machines for the blind, a computer-based instruction system and business data systems.

Graphics Data Becomes Digital

ROCKVILLE, Md. – The Model GD-10C (Series 1) Digi-Grid has been unveiled for users wanting a general-purpose, electronic grid digitizing system for conversion of any type of graphic data into digital form suitable for DP processing, according to a spokesman for Computer Equipment Corp.

The Digi-Grid is an electronic grid, free-cursor digitizing system with no moving parts to prepare input from strip charts, scope traces, charts, photos or drawings, the firm's spokesman said.

The electronic console and readout unit includes sign plus 5-digit X-Y coordinate display, basic formatting and interface electronics to a TTY and other output devices, he added.

Units are priced from $15,000 through $22,350 and are supplied with software support.

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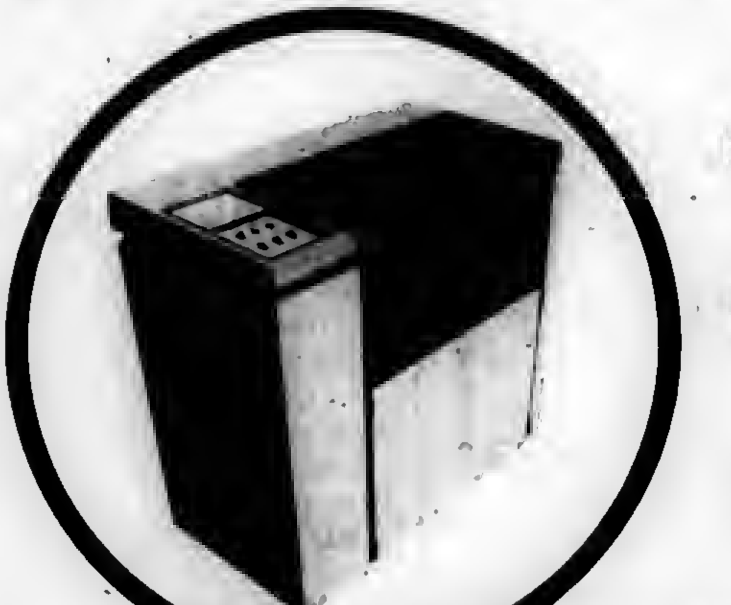

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Task Force Report Blamed

Government Control Feared

DP Image in Canada at 'All-Time Low'

By Judy Kramer
Of the CW Staff

TORONTO – The computer/communications industry needs to devote considerably more attention than it has in the past to the public interest, according to Gordon Inns, Bell Canada's vice-president of computer communications.

"The public image of computers in Canada is at an all-time low," Inns said, thanks to the recent report of the Task Force on Computers and Privacy [CW, Dec. 20, 1972] which, among other things, found "more personal information being collected than most Canadians probably suspect . . . and made available to a larger number of users than is probably supposed." And the result of this poor public image, he added, is likely to be increased government involvement.

Speaking at a recent meeting of Digital Equipment Corp. users here, Inns said concern over computers is really concern over communications, since it is the information retrieval and transmission capability which make data banks a potential threat to the public.

Innovation Needed

To improve this image and prevent government regulation, Inns suggested, the industry needs to innovate and to improve existing services and make them more economical for data users.

"Although the basic telephone network is still a versatile and almost universally available network for carrying low-speed data, its accuracy is not as good as desired for data," he admitted. And the long holding times of time-sharing terminals make long distance time-sharing via the switched network expensive.

To take the load pressure off the telephone network, Inns said, Bell Canada is developing specialized data networks and services.

Some of these new offerings include:

- The Multicom network, a switched, dial-up configuration offering a set-up time of three seconds and transmission speeds up to 50 kbit/sec.
- Software Controlled Communications Service which uses minis as front-end communications controllers.
- New data terminals including Datacom 300, a high-speed teletypewriter terminal and the Vucom I CRT terminal.
- Increased use of digital transmission which would reduce the costs of computer communications. A trial digital network was established in 1971 with "most successful" results.
- The formation of a Computer Communications Group in conjunction with the Trans-Canada Telephone System, to provide complete service (including hardware, system design and implementation) for data users.

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Rewards of User 'Shopping Around' Outweigh Software Building Costs

WASHINGTON, D.C. – When the data communications user goes to a source other than the mainframe maker for his communications processor and terminals, he has to pay a price – the cost of developing the software for the system – but the rewards outweigh that cost.

That is the opinion of Air Force Major Glen Vincent of the Defense Intelligence Agency.

"If the user is satisfied with the terminals and processors offered by the mainframe maker, then he can use the software that those manufacturers have developed," he told a recent Caravan/73 session.

But, he noted, those manufacturers have little desire or reason to make software that will work with other systems and there are few standards that could force them to make such interchangeable software.

So if the user is not completely satisfied with the offerings of his mainframe maker in the communications area, he will have to write his own software for the front-end processor in order to handle the terminals. Or if he doesn't have the capability to have it written in-house, he will have to turn to an outside software developer and pay for it.

"If the user breaks away from the manufacturer of the host system," he said, "he will have to pay the price of developing the software. But the benefits offered by non-mainframe-made communications equipment outweigh this price in most situations.

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COMPUTER INDUSTRY

CI Notes

IBM Papers Remain Secret

TULSA, Okla. – The Computer Industry Association (CIA) has lost in its bid to get some of the secret documents released to the public in the IBM vs. Telex case being heard here.

Judge A. Sherman Christensen did not specifically rule on whether the 25 documents in question actually contained trade secret information.

But he said there had been "insufficient showing" by CIA to justify the release of the requested documents to it at this time, "specifically because all the documents in question together with a vast number of others doubtlessly will be introduced in evidence and thus become public in any even during the early stages of the trial . . ."

IBM, Itel Agree on 30s

SAN FRANCISCO – IBM has agreed to maintain on a worldwide basis IBM 360/30s with Itel Corp./Advanced Memory Systems, Inc. add-on memory beyond IBM limits.

Under the agreement, IBM will extend to all countries – where it has Model 30 service capabilities – service on the same basis as in the U.S.

In addition, IBM agreed to pay Itel 97% of court costs and expenses incurred in a West German trial on this issue [CW, Feb. 14]. Itel, in return, agreed to withdraw the judgment of the German court and its appeal in France.

Supershorts

Pitney Bowes Data Systems Ltd., a newly created subsidiary of Pitney Bowes, will market electronic point-of-sale and related systems in Europe. Operational and marketing headquarters will be in London.

– – –

Eldorado Computer Corp. has obtained U.S. marketing rights for Hermes Products, Inc. systems equipment.

– – –

Tally Corp. has signed an OEM agreement with Hewlett-Packard, S.A. of Brussels, Belgium, for the sale of Tally Series 2000 Line Printers for use in HP computer systems for the wholesale and retail distribution industry.

– – –

Digital Information Devices, Inc., has appointed Data Dynamics Ltd. as its exclusive representative in Great Britain and 12 countries in Europe, and non-exclusive representation in seven other nations including Scandinavia.

– – –

Pertec Corp.'s 3700 computer output microfilm readers will be marketed by Synergraphics Inc., a microfilm service subsidiary of Transamerica Corp.

DP Doors Should Open in 1977

Japan Makers OK Liberalizing Imports

By E. Drake Lundell Jr.
Of the CW Staff

TOKYO – Japanese computer manufacturers have reportedly agreed to cooperate with government plans to liberalize the importation of DP equipment starting in 1977. In return, the government has promised increased support for their domestic operations.

The agreement announced here last week called for the heavy supports in order to offset the increased competition from foreign computer makers, especially Americans.

It also contains an escape clause which would permit the Japanese to reimpose heavy import restrictions if the competition became too heavy.

In addition, the agreement would liberalize the rules for the imports of integrated circuits starting in 1975, sources said.

Under present regulations it is very difficult for an American manufacturer to get permission to import equipment into Japan and the present regulations effectively ban any imports if the foreign share of the market reaches over 50% of the market in any one year.

The new liberalized rules were agreed to by the Japanese computer industry after reportedly heavy political pressure had been placed on it by the U.S. Government, which is upset over the restrictive regulations – particularly in view of the recurring dollar crises and the Japanese balance of payments surplus resulting from Japanese exports to the U.S.

Payoff

Up to now the Japanese computer industry has been receiving from its government around $510 million yearly for research and development support. But under the new arrangement it would get an additional $200 million yearly in return for its agreement to allow the liberalization in the rules regulating the importation of computer mainframes.

The industry would also receive around $200 million in the form of loans to the Japan Electronic Computer Co., the financing arm for the Japanese industry.

The Japanese industry would also receive around $30 million for research and development work in software and approximately $20 million for integrated circuit research.

Market Potential

The Japanese computer market is one of the fastest growing in the world, according to International Data Corp. (IDC), a market research firm that estimates the use of computers in Japan has been growing at an annual rate of 40% for the past six years.

In addition, IDC estimates the Japanese market will continue to grow at an "above average" rate for the next few years.

U.S. manufacturers have been frustrated in efforts to penetrate the Japanese market since the Japanese Government considers its fledgling computer industry a national resource and has erected trade barriers to protect it, in addition to providing large subsidies to support research and development efforts.

"This is a case of too little too late," one industry source indicated last week. With all of those subsidies for research and development, he indicated, "the Japanese industry is going to be pretty strong by the time they open the door to us. It may be impossible to compete then anyway on their own ground," he said.

The new agreement does not ease the "buy Japan" policy of the government in any way, several sources observed.

Adapso Asks Permanent Exclusion Of IBM From Data Center Sector

By Molly Upton
Of the CW Staff

NEW YORK – The Association of Data Processing Service Organizations (Adapso) has submitted a position paper to the Justice Department calling for the permanent exclusion of IBM from the data center business.

Under the terms of the settlement with Control Data Corp. involving the sale of the Service Bureau Corp., IBM agreed to withdraw from the data center business for a period of six years.

The paper noted that Adapso Data Center Section believes the transfer of the Service Bureau Corp. should "resolve the special tie-in problems of its segment, provided:

- "The complete separation is formalized by court decree, so that it is not subject to later change by private action.
- "It is made permanent and not limited to the six years which IBM has consented to stay out of the data center segment.
- "It is made clear that IBM's exclusion from the furnishings of data center services is complete and includes commercial and scientific DP services; batch processing; remote job entry processing; time-sharing services; data preparation services; and facility management operations.

"Such exclusion should also prohibit the supply of any 'back-door' entry into the data processing services industry," the paper stated.

This paper is the second submitted to Justice by Adapso in its efforts to advise Justice in the pending litigation against IBM [CW, Feb. 28].

The association's general position urges the elimination of "tie-ins" or linking together of separate products and activities of IBM and other manufacturers.

Reaction to IBM Lease

Lessors Say Prices Still Lower

By a CW Staff Writer

NEW YORK – Leasing companies tentatively welcomed IBM into the long-term leasing business last week by pointing out their prices were still lower than the new ones offered by IBM, which dropped the overtime usage charge on all virtual 370s.

At the same time, they noted the IBM move to give users a four-year lease indicates IBM is "blessing" the concept of leasing, a move they said might potentially open up new markets for them among users who had previously shied away from the concept.

"We are still very competitive with IBM even without the overtime charges," one leasing company vice-president said. However, he admitted the shorter term leases were not as competitive without the overtime charges from IBM as they had been before.

Previously, he noted, leasing companies had figured the overtime charges as part of the IBM rental when making comparisons with their lease rates. "What used to be a 40% advantage for us," he noted, "is now a smaller advantage, around 20% to 25%."

"On the longer term deals we could beat the IBM straight rental price; the overtime charges just served to make us look even better than we were on the straight monthly rental plan," he said.

"If users start thinking in terms of signing up for longer deals since it is now encouraged by IBM, then we should be able to pick up some business. After all, if they have made the decision to save the overtime charges by turning to a four-year deal from IBM, why wouldn't they decide to save an additional 20% to 30% by signing up for a five-year deal with one of the leasing companies?"

Still another leasing executive also saw the IBM plan as a help to the third-party leasing companies.

"For years," he said, "IBM has been pushing short-term leases so that the user wouldn't, IBM said, be stuck with obsolete equipment. With the new plan, however, they are in essence assuring users that the equipment will have a life of at least four years, thereby taking the onus away from long-term leases."

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'Technology, Not Labor, the Key'

World Trade Head Defends Multinational Cause

By E. Dreke Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – IBM rolled out one of its big guns here last week to defend multinational corporations like itself from a combined congressional and lebor attack.

Gilbert E. Jones, chairman of the IBM World Trade Corp., contended that multinational corporations were not in fact exploiting jobs but rether that the overseas operations helped to create jobs in the U.S.

This position is essentially backed by the Nixon Administration, but a coalition of Democretic congressmen and organized labor has attacked the multinationals claiming the firms move plants to areas where labor is cheaper and thus deprive U.S. workers of jobs.

This coalition also claims that by manufacturing at plants overseas the multinationals – like IBM – don't contribute as much as they could to U.S. exports.

IBM was called to testify because in the words of Sen. Abraham Ribicoff (D-Conn.), head of the Senete Subcommittee on International Trade, "when one thinks of multinational companies, one immediately thinks of IBM."

Crossroads

"There is no mistaking the fact," Jones told the senators, "that we have come to a crossroads in the evolution of American foreign policy. Decisions that will be made in the next few months by the Congress will affect future domestic and international economic patterns in fundamental ways."

With mounting criticism of the activities of multinational firms, Jones said it was time for firms such as IBM – which do business on a multinational basis – to "confront" the critics.

Jones claimed the greatest strength of U.S. business was the fact that it held e technological edge over business in other countries and that by maintaining this edge it would be able to compete effectively.

In high technology industries such as the computer industry, he said, the lebor content of the equipment was not the major factor, but rather technical innovation was.

Therefore, he noted, "the key for successful governmentat policy is the creation of a climate which will encourage innovation and improvement in American industry, not sheltering it from competitive forces," through tariff restrictions or other means.

Congress should "avoid thinking in terms of days gone by, when handcrafts and high labor content were the general rule in American plants," the IBM executive said.

"Rether, we should think in terms of the '70s and the '80s when our ability to compete will depend primarily on our technological innovation, our creative abilities and our salesmanship."

He noted that on previous occasions it had been estimated that one out of every eight jobs at IBM in the U.S. was directly related to export business, but stated that in 1972 one out of every five IBM U.S. jobs was directly related to overseas operations.

Investment Reatity

And, Jones contended, "there is absolutely no way in which we could have held onto our markets overseas, and increased U.S. jobs these last dozen years, if we had refused to invest in foreign facilities."

This is because many overseas governments would not allow themselves to drain their foreign reserves in order to import all of the equipment that they presently buy from IBM plants overseas, he said.

Although Jones admitted that "t cannot prove it to you scientifically, if IBM tried to serve the world market entirety from the U.S., our business abroad would shrink to a very small fraction of its present size," he said.

"The choice for us is not between exporting or manufacturing abroad, but between manufacturing abroad or losing large portions of the world market."

In addition, Jones said that out of the 115,000 persons employed by World Trade, only 27,600 were in manufacturing positions, and therefore if all manufacturing was done in the U.S. it would only add that many jobs to the rolls.

Bleak Future?

Jones concluded that if U.S. legislation should "handicap American computer manufacturers in their overseas operations, the technology gap that still favors the Americans would tend to close. Foreign manufacturers eyeing expanded markets – including the U.S. – would be helped. The damage done to the U.S. economy would be considerable, perhaps irreversible.

"In our view, the proper response is legislation that looks toward the elimination of trade barriers, including, and most importantly, non-tariff barriers that discriminate against U.S.-owned companies operating abroad," he said.

"Far from treating U.S.-foreign investment as a threat, we must regard it as an important national resource that can provide U.S. exports, U.S. jobs, surpluses for the U.S. balance of payments and technology essential for progress in the U.S."

IBM Denies Charge Of Dollar Speculation

WASHINGTON, D.C. – One of the most serious charges against multinational companies concerns the speculative use of their reserves of currency overseas which puts pressure on the U.S. dollar.

When speculation on the dollar was at its height recently, the former finance minister of West Germany, Kart Schiller, was quoted on CBS News of eccusing IBM of selling dollars for German marks, in effect helping drive the price of the dollar down in international merkets.

IBM denied the cherge and earlier in the day, IBM World Trade Corp. Chairman Gilbert E. Jones had told a Senate panel that IBM refused to speculate in world currencies in order to make a profit on the decline of the doltar overseas.

However, several sources have wondered whether a large multinational firm would not be forced to do some speculating just in order to protect its stockholders' investments.

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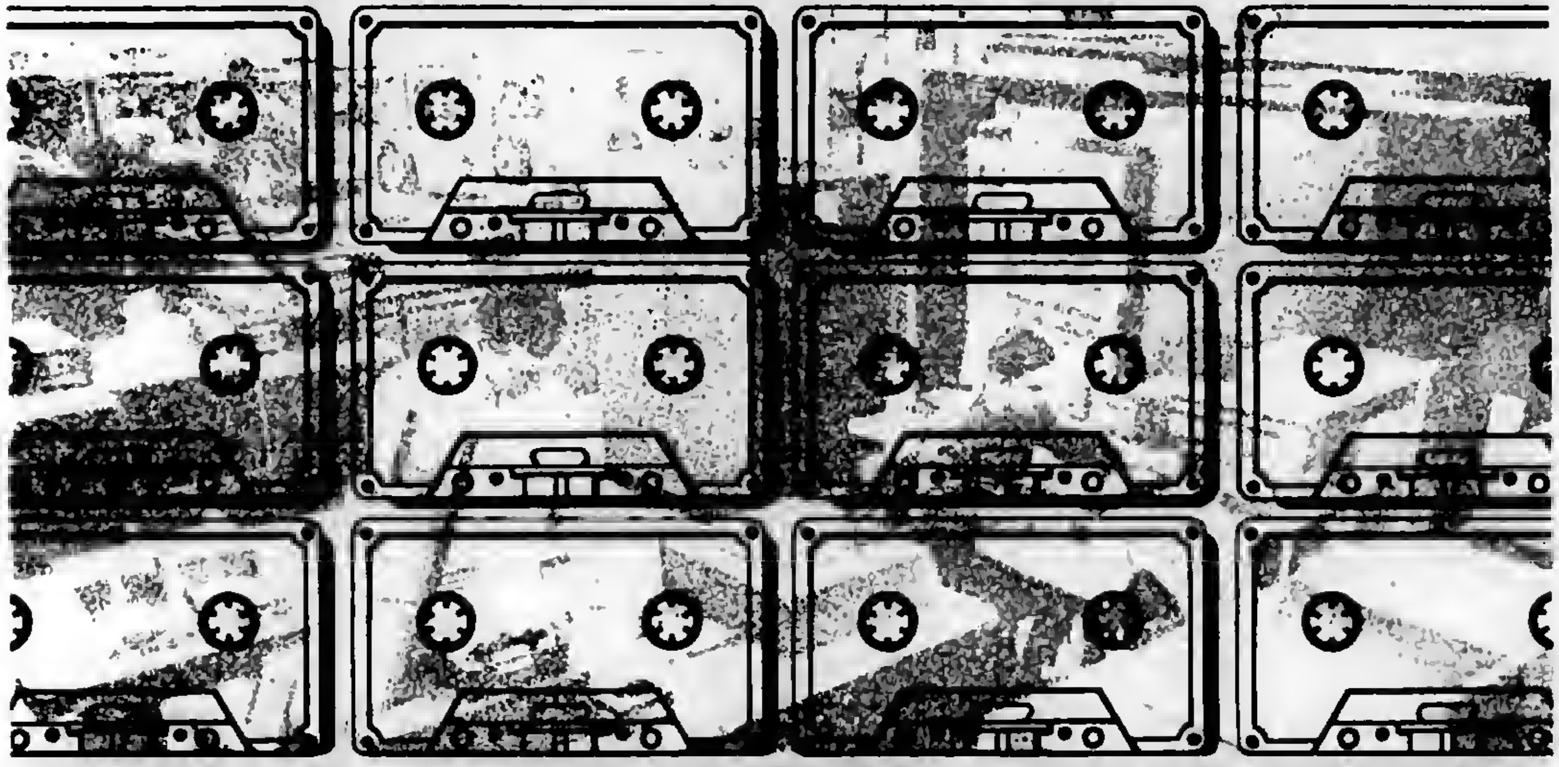

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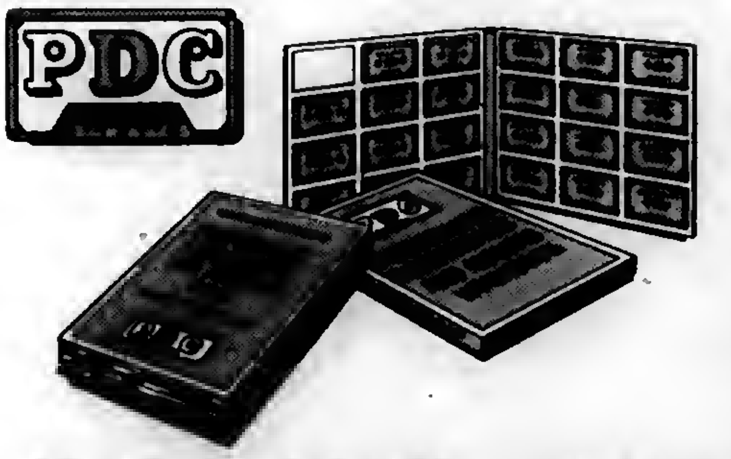

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GSA Awards 370 Contracts

Memory Bids 60%-70% Off IBM Price

By a CW Staff Writer

WASHINGTON, D.C. – Substantial price reductions marked the latest round of bidding for add-on and replacement memory contracts with the General Services Administration here.

And when the dust had cleared, Memory Technology, Inc. won the award for replacement memory on IBM 370/155s while Ampex landed the order for memory on the government's 370/165s.

In order to get the 155 bid, Memory Technology offered the government 262K of semiconductor memory for the 155 at a price of $55,570, which is 60.6% off the original IBM price for the same increment of memory.

The bidding was even tougher in the 165 area; Ampex had to take 70.5% off the original IBM price in order to get the bid at $83,526 for one 512K increment of core memory.

Under the requirements-type contracts, any government agency that does business through the GSA must purchase either the Ampex or Memory Technology type of memory if it wishes to replace or add memory onto its system.

Earlier Award

While this is the first big government award for Memory Technology, Ampex shared an earlier GSA award with Cambridge Memories, Inc. for replacement and add-on memory for the 360/30, 40, 50 and 65 computers as well as the Univac 1106 and 1108 [CW, Feb. 28].

To get that bid, the firms offered prices that were 76% to 88% off the original IBM prices for the equivalent types of memory.

Six European Firms Share in Pact From Space Research Organization

DARMSTADT, W. Germany – Six European computer firms will share in contracts recently announced by the European Space Research Organization (Esro).

ICL, Siemens, Compagnie Internationale pour l'Informatique (CII), Logica, Sesa and AEG-Telefunken were chosen to provide a real-time system for the European Space Organization Center here.

IBM is the existing supplier to Esro.

ICL is scheduled to supply a number of System 4-72s, while Sesa and Logica will direct project management and provide software and special hardware.

The real-time system will be based on two CII 10070s and six Siemens 330 systems.

The CII units will process all control and experimental information generated by a satellite, while the Siemens computers will generate information on graphic displays and handle experimental data acquisition from the satellite.

CIA Expands Membership Base

LOS ANGELES – The Computer Industry Association has broadened the base of its membership with eight new members.

"I am very happy to add that it is no longer possible for CIA to be considered an association of peripheral companies," noted President Dan L. McGurk.

"Our membership includes companies from the software, components and processor segments of the industry. We expect to expand still further to include as broad a representation as possible," he added.

With the new members, CIA picked up representation from the minicomputer segment, General Automation; the software area, with Informatics and Foresight Systems, Inc.; as well as component and peripherals makers. Other new members are Advanced Memory Systems, Cambridge Memories, Inc., Xytex Corp., Applied Magnetics and Information Magnetics Corp.

Aussies Keep Tariff

CANBERRA, Australia – The Federal Cabinet has decided to defer any amendment to the tariff on CRT display terminals while the Tariff Board considers the position of the electronics industry overall, according to Lance H. Barnard, acting prime minister.

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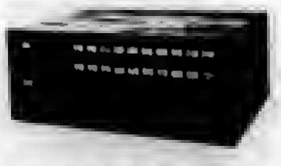

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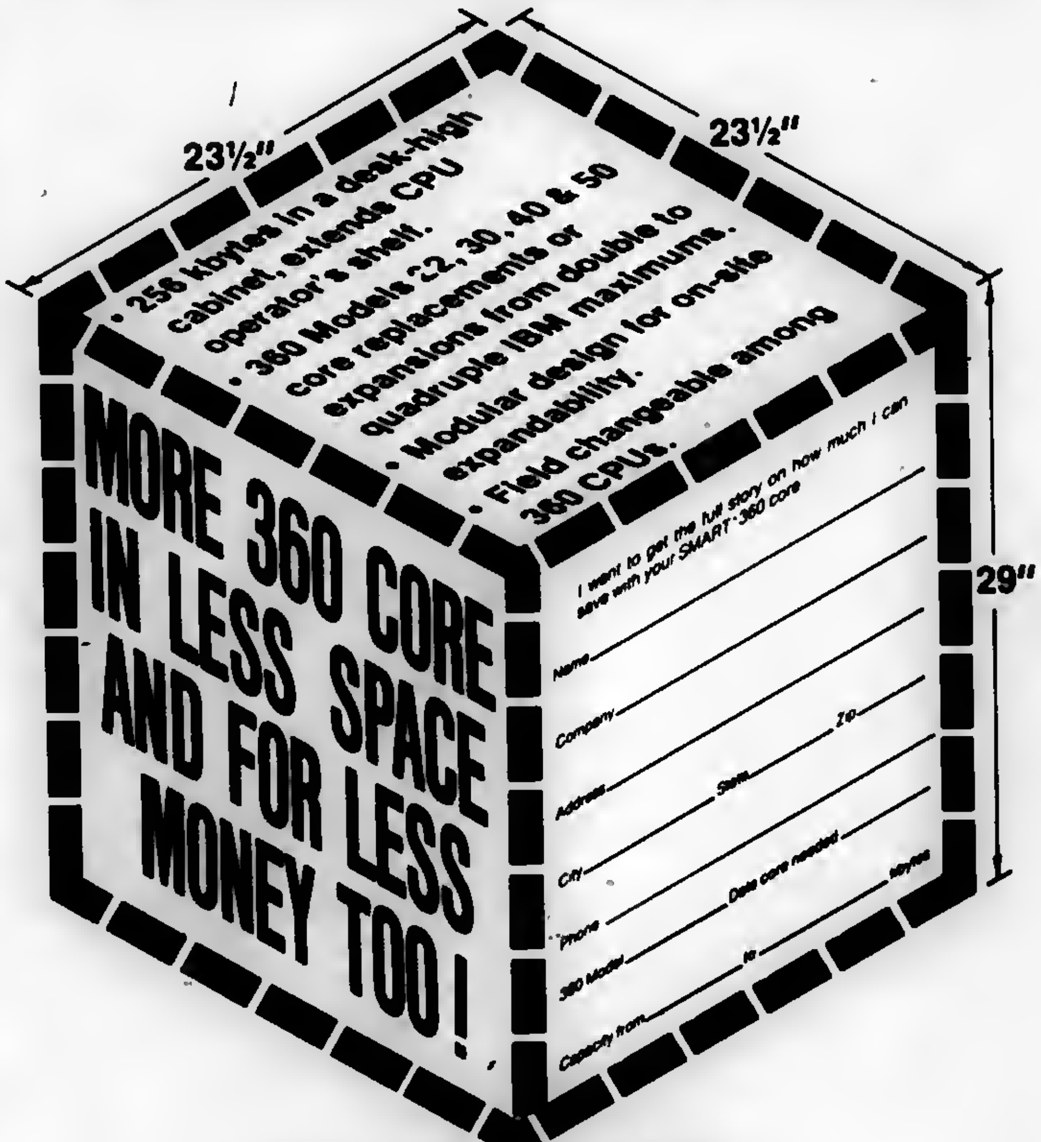
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Contracts

The Potomac Electric Power Co. has awarded a $10 million contract to System Monitoring Division of Rockwell International Corp. to develop a computer-based energy control system. The system will monitor and control the utility's entire generation and transmission network.

Commonwealth Edison Co., Chicago, has engaged Control Data Corp.'s Professional Services Division to help develop a computerized system for the accountability of nuclear reactor fuel assemblies. The system will provide Edison with a computerized library of current and historical data on the firm's assemblies.

The Department of Defense has asked Medlab Computer Services, Inc. to install a $1 million clinical laboratory information system at the Bethesda (Md.) Naval Hospital. The contract also provides the Navy with options on two additional systems.

Data Transmission Co. (Datran) has awarded contracts to Burroughs Corp., Comten, Inc. and Paradyne Corp. for the construction of its nationwide digital data communications network. Datran declined to announce the value of the multimillion dollar awards.

Burroughs will provide the customer terminal interface unit and the fault alarm and control system, Comten will manufacture the stored program computer switch controller. Paradyne was selected to make 4,800/9,600 bit/sec modems and installer test sets.

The Business Data Systems Division of Northrop BSL has contracted with Microdata Corp. for its 1600 Series minicomputers. The minis will be the heart of BSL's real-time business data system, the BDS 2000 Series.

Western Union Telegraph Co. has awarded a contract to International Communications Corp., a Milgo subsidiary, for 2,000 modems. One application of the modems will be Western Union's new Multipoint Data Service.

Evolution the Key

AJ Looks at Data Entry Market

By E. Drake Lundell Jr.
Of the CW Staff

MOUNTAIN VIEW, Calif. – Even though the firm is best known for acoustic couplers, the majority of Anderson Jacobson's (AJ) business in terms of dollars is in the terminal area and the firm is presently taking a close look at the data entry portion of the market.

But whatever moves the firm makes in this area will be on an evolutionary basis; that is, new products will be designed to take advantage of features of present ones, much like the firm's entry into the terminal field, according to Gerry Schoenwald, director of marketing.

The firm got into the terminal business because some customers on their own were integrating the Anderson Jacobson acoustic couplers with teletypewriters so the firm decided to do it for them.

But as the terminal market grew, the firm then added more and more of its own electronics and other parts to the basic system, so that now its latest terminal, the 630, is a 100% Anderson Jacobson product from thermal printer through coupler.

"We moved into the terminal business because it broadened our base," Schoenwald said, "and because it was a natural move up."

Overpopulation

The acoustic coupler business, he said, was extremely crowded and very price-competitive because almost anyone could get into the field without a major investment.

But, he added, it was much harder to become a terminal company and therefore the number of competitors, while large, was not as large as in the coupler business.

Presently, he said, couplers and modems only account for around 10% of the firm's business on a dollar basis with the rest coming primarily from the terminal area.

The firm's entry into the data entry marketplace will probably come about in the same way, Schoenwald indicated, if it decides to get into the market.

The firm is presently marketing one cassette recorder and is working on the development of a "high-performance" unit that should be ready before the end of the year.

Parts Are There

The combination of these devices with the equipment used in putting together the firm's terminal line could be used to make either data entry or data acquisition systems, Schoenwald related.

The major need would be software, and this is an important consideration when entering the data entry field, Schoenwald stressed, and a firm has to make a choice between offering generalized packages or customizing systems for specific applications.

Even though Schoenwald emphasized that the firm had "just started looking at the data entry area," he indicated that modular systems might be the best product in the future.

For example, he said a firm might want to offer a system that could either have cassettes for data storage or, optionally, a floppy disk for storage. Then the user could choose the system that best met his particular needs.

In other areas, Schoenwald noted the firm was planning basically to expand its terminal lines with higher speed or more capable units, with the area of remote hatch terminals under study.

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Sanders Doubles Quarter, Half Earnings

NASHUA, N.H. – Sanders Associates, Inc. doubled its earnings in the second-quarter and six-month periods ended Jan. 26 compared with comparable periods last year.

"Results for the first six months confirm our confidence that we will achieve our goals for fiscal 1973 – increased sales and significant profit improvement quarter by quarter through the year," observed President Royden C. Sanders Jr.

In the quarter, Sanders earnings reached $1.1 million or 24 cents a share compared with $559,000 or 12 cents a share in the year-ago period.

Special credits totaled $318,000 in fiscal 1973 compared with $113,000 last year.

Revenues rose 18% to $43.1 million compared with $36.6 million. Revenues have risen for six consecutive quarters, the firm noted.

For the half, Sanders earnings totaled $2.1 million or 46 cents a share compared with $1 million or 22 cents a share in the year-before period. Sales climbed to $81.8 million from $66.2 million in the same period last year.

SEL Earnings Drop on Revenue Gain

FORT LAUDERDALE, Fla. – Systems Engineering Laboratories, Inc. experienced a decline in six-month earnings and an increase in revenues.

With a heftier special credit of $349,709 or 13 cents a share, earnings totaled $539,390 or 20 cents a share in the period ended Dec. 29, compared with $581,212 or 23 cents a share last year, when the special credit was $201,832 or 8 cents a share.

Revenues rose slightly to $7.6 million from $7.1 million in the comparable year-ago period.

Revenues Rise For Vermont

N. SPRINGFIELD, Vt. – Vermont Research Corp. saw first-quarter revenues rise in the period ended Dec. 31.

Revenues climbed to $1.4 million from $1.3 million a year ago, while earnings, boosted by a $205,000 credit, totaled $307,000 compared with $115,000 in the same period last year. The credit resulted from the sale of securities of Consolidated Computer, Inc.

Vermont has completed the acquisition of OMI Memorics, Inc., which has developed a prototype moving-head disk.

Operating expenses of the new unit, called VRC California, will be written off as incurred, according to President Hugh M. Taft.

"Also, it will be some time before any significant revenues will be derived from sales of this moving-head disk product," he said.

"The immediate net effect of the merger will be a substantial reduction in our earnings in the second quarter ending March 31, 1973, and succeeding quarters, until disk sales can be achieved in some volume," he added.

Simplicity Heralds Fourth Record Year

NEW YORK – Simplicity Computer Corp. continued its streak of reporting record sales and earnings for its fourth consecutive year.

Leasing accounted for about 40% of revenues, up from 30% last year, and a "sharply higher percentage of our profits," according to President Louis Marolda. Simplicity specializes in the long-term leasing of IBM 360/20's and other small satellite computers.

The firm's DP subsidiary, Babbage Systems, Inc., also contributed to earnings.

Earnings for the year rose 75% to $177,293 or 35 cents a share from $102,959 or 21 cents a share last year. Revenues rose 35% to $2.8 million from $2.1 million in 1971.

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Fixed-Price Contracts Blamed

2 Software Firms Show Charges

Losses on fixed-price software contracts were reflected in the nine month reports of Informatics Inc. and Cybermatics. Informatics, however, reported increased earnings for the period, while Cybermatics reported a loss.

Nine month earnings and revenues were improved at Informatics compared with the year-ago period, when a loss of 7 cents a share from discontinued operations was included.

Earnings totaled $349,000 or 23 cents a share compared with $296,000 or 19 cents a share in the year-ago period. Revenues rose to $13.3 million from $12.7 million.

"Especially good progress has been made in volume growth in the commercial areas of communications and software products, and in the civilian agency government sector," observed President Walter F. Bauer.

Performance in all areas increased significantly since last year except revenues from three Nasa contracts, he said.

A provision of $55,000 to cover estimated losses on a large fixed-price contract scheduled for completion in the fall was included in the period, the company said.

Two Contract Losses

At Cybermatics, the loss of $662,150 or 66 cents a share on revenues of $5.7 million for the nine months ended Dec. 31 resulted from a $216,575 provision for losses on two fixed-price contracts, as well as $210,599 in non-recurring charges to income. Changes in accounting procedures were also reflected in a $242,822 charge.

In the previous year the firm earned $216,717 or 20 cents a share on revenues of $4.6 million.

Cybermatics changed its policy of accounting for research and development expenses from a deferral method to a current expense method.

After three quarters of significant losses, the Software Division returned to profitability in the month of January, the firm said. Cybermatics' participation in the continuous computer forms and pressure sensitive labels businesses accounts for about two-thirds of consolidated revenues, observed President J. Roy Morris.

Morris added he expects Cybermatics to return to profitable operations during the fourth quarter and during the next fiscal year.

Nickels & Dimes

Computer Machinery has reduced its line of credit with Security Pacific National Bank and First National City Bank to finance U.S. leases. Under a new agreement, CMC may borrow up to $15 million through February 1974, including loans outstanding under the old agreement, which had an upper limit of $20 million.

$$$

Lots of activity in the stock splitting department: **Datapoint** stock had a reverse split of 1 for 2-1/2; **Data General** stock will split 3 for 1 payable March 22 to stockholders of record March 7; and **Texas Instruments** shareholders vote April 18 on a 2 for 1 split.

$$$

In the name game, Computing & Software is now **Cordura.**

$$$

Computer Financial, now **Lencor International,** posted record nine month earnings for the period ended Dec. 31, and attributed the rise primarily to increased demand for disk packs.

$$$

Electronic Memories & Magnetics will pay a preferred share dividend of 25 cents March 10 to shareholders of record March 2. The dividend has been omitted since the fourth quarter of 1971.

$$$

Graham Magnetics declared a 3% stock dividend to shareholders of record Feb. 23.

$$$

On-Line Systems common stock will split three-for-two payable March 7 to shareholders of record Feb. 14.

$$$

Western Digital, circuit and test system maker, passed the break even point for monthly operations during the quarter ended Dec. 31, and cut its losses for the period by 59% from the year-ago period, to $139,887.

$$$

Scan-Data has recorded third-quarter shipments of nine systems.

Pitney Bowes Absorbs $1.4 Million Charge for POS Unit in 4th Period

STAMFORD, Conn. – Pitney Bowes has begun to write off its share of the charges for jointly-owned Pitney Bowes-Alpex, Inc., maker of point of sale systems, but Pitney Bowes' overall profits were more than sufficient to absorb the $1.4 million charge for the fourth quarter and year ended Dec. 31.

However, for the first quarter of 1973, President Fred T. Allen sees earnings "about the same" as those of the comparable year-ago period. Operating earnings are expected to rise, and revenues should be up 10% to 15% from $76.1 million in the first quarter of 1972.

The $1.4 million special charge reflects Pitney Bowes' first quarter share of $18.6 million in operating losses and charges for the amortization of the previously deferred startup costs of Pitney Bowes-Alpex.

Fourth quarter earnings totaled $4.5 million or 34 cents a share, up from almost $3 million in the year earlier period. Revenues climbed to $98.1 million from $83.7 million in the fourth quarter of 1971.

Although mailing equipment currently accounts for 71% of the firm's revenue, in five years revenue is expected to be split evenly between mailing equipment, copiers and retail systems, Allen said.

Acquisitions

A merger has been consummated between **Axicom Systems, Inc.** of Paramus, N.J., and **Transport Data Communications, Inc.,** Greenville, S.C. The agreement provides for an exchange of common stock of the two corporations.

Control Data Corp. has acquired all the outstanding common stock of **Nuclear Associates International Corp.,** Rockville, Md., in exchange for shares of Control Data common stock.

GTE Information Systems Inc. has acquired **EDP Resources Inc.'s** 75% interest in **EDP Resources Deutschland AG,** West Germany, for $3.4 million.

Mathematical Applications Group, Inc., Elmsford, N.Y., has acquired the Swedish firm of **Stroede, AB,** through its wholly owned Swedish subsidiary, Industri-Matematik, AB, based in Gothenberg, provides complete mailing and computer services.

Network Data Processing Corp. of Cedar Rapids, Iowa, has purchased all the payroll account business from **Data Services, of Iowa, Inc.**

Itel Corp. has agreed in principle to acquire **First National Indemnity Co.,** a Texas insurance company in the mortgage guaranty field, for an undisclosed amount of common stock.

William Marion Co., Inc. of New York City has acquired all the inventory and leases of **E.D.P. Leasing Corp.**

Charterhouse Canada has agreed to acquire a significant minority interest in **Comma Services, Ltd.**

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TRADE*QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, MARCH 8, 1973

EXCH		PRICE 1972-73 RANGE (1)	CLOSE MAR 8 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 5/8	+ 1/8	+8.3
A	APPLIED DATA RES.	3- 7	3 1/2	+ 3/8	+12.0
O	APPLIED LOGIC	1- 4	2 1/2	- 1/8	-4.7
N	AUTOMATIC DATA PROC	69- 99	68 3/4	-4 7/8	-6.6
O	BRANDON APPLIED SYST	1- 2	5/8	- 1/8	-16.6
O	COMPUTER DIMENSIONS	3- 14	3	- 3/8	-11.1
O	COMPUTER DYNAMICS	1- 4	7/8	- 1/8	-12.5
O	COMPUTER NETWORK	2- 7	2	- 1/4	-11.1
N	COMPUTER SCIENCES	4- 10	4 1/8	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	2- 8	2 3/4	0	0.0
O	COMPUTER USAGE	6- 14	6 1/2	+ 1/4	+4.0
N	COMPUTING & SOFTWARE	9- 28	9 5/8	- 1/4	-2.5
O	COMRESS	1- 3	3/4	0	0.0
O	COMSHARE	5- 10	6 7/8	- 1/4	-3.5
O	DATATAB	4- 9	3 1/4	- 1/4	-7.1
O	EDP RESOURCES	1- 8	1 5/8	+ 1/8	+8.3
A	ELECT COMP PROG	1- 5	1 1/2	0	0.0
N	ELECTRONIC DATA SYS.	43- 65	52	+3 3/8	+6.9
O	INFORMATICS	3- 11	3 5/8	- 1/8	-3.3
O	I.D.A. DATA CORP	1- 3	3/4	+ 1/8	+20.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	8 5/8	+ 1/8	+1.4
O	LOGICON	4- 9	5 5/8	+ 1/2	+9.7
A	MANAGEMENT DATA	3- 10	3	- 1/4	-7.6
O	NATIONAL CSS INC	8- 41	38 1/2	+5 5/8	+17.1
O	NATIONAL INFO SRVCS	1- 5	1 7/8	0	0.0
P	ON LINE SYSTEMS INC	5- 19	16 5/8	+2 5/8	+18.7
N	PLANNING RESEARCH	4- 17	3 3/4	- 3/8	-9.0
O	PROGRAMMING METHODS	20- 25	23 5/8	+1 3/8	+6.1
O	PROGRAMMING & SYS	1- 2	3/4	0	0.0
O	RAPIDATA INC	5- 27	20	-1 1/4	-5.8
O	SCIENTIFIC COMPUTERS	1- 4	1 1/2	+ 1/4	+20.0
O	SIMPLICITY COMPUTER	1- 5	2 3/8	- 1/2	-17.3
O	TBS COMPUTER CENTERS	3- 6	3 1/4	0	0.0
O	TCC INC	1- 3	1/4	- 1/8	-33.3
O	TYMSHARE INC	7- 12	8 3/8	+ 3/4	+9.8
O	UNITED DATA CENTER	5- 8	5 1/2	+ 1/4	+4.7
N	UNIVERSITY COMPUTING	7- 26	9 1/8	0	0.0
A	UBS SYSTEMS	6- 10	5 5/8	0	0.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	23- 49	24	+1 1/[illegible]	[illegible]
O	ADVANCED MEMORY SYS	12- 23	18 1/4	+1 5/8	+9.7
N	AMPEX CORP	5- 15	5 7/8	- 3/8	-6.0
O	ANDERSON JACOBSON	4- 8	5 3/4	0	0.0
O	BEEHIVE MEDICAL ELEC	1- 8	.7	+ 1/4	+3.7
A	BOLT,BERANEK & NEW	5- 21	11	+2 1/4	+25.7
N	BUNKER-RAMO	7- 14	6 7/8	- 5/8	-8.3
A	CALCOMP	9- 25	11 3/4	+ 1/4	+2.1
O	CAMBRIDGE MEMORIES	9- 15	11 1/4	+ 5/8	+5.8
O	CENTRONICS DATA COMP	6- 28	20 1/2	-1	-4.6
O	CODEX CORP	6- 25	14	+1	+7.6
O	COGNITRONICS	1- 5	1 1/2	0	0.0
O	COMPUTER COMMUN.	1- 7	2 3/8	- 1/8	-5.0
A	COMPUTER EQUIPMENT	2- 4	2 1/4	+ 1/4	+12.5
O	COMPUTER MACHINERY	7- 13	11	+ 7/8	+8.6
O	COMPUTER TRANSCEIVER	2- 9	2 5/8	- 1/8	-4.5
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	24 1/4	+ 3/4	+3.1
A	DATA PRODUCTS CORP	3- 7	3 3/8	0	0.0
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 7/8	0	0.0
O	DI/AN CONTROLS	3- 8	3 3/8	0	0.0
N	ELECTRONIC M & M	3- 8	3 7/8	- 1/4	-6.0
O	FABRI-TEK	2- 5	3 3/8	- 1/8	-3.5
O	GENERAL COMPUTER SYS	6- 16	8 1/2	+ 1/4	+3.0
N	GENERAL ELECTRIC	59- 74	68 1/4	+2	+3.0
N	HAZELTINE CORP	7- 13	6 3/4	+ 1/4	+3.8
O	INFOREX INC	14- 36	18	+4 3/8	+32.1
O	INFORMATION DISPLAYS	1- 5	5/8	0	0.0
O	INFORMATION INTL INC	8- 25	11 1/2	0	0.0
A	LUNDY ELECTRONICS	6- 14	7 1/8	+ 1/4	+3.6
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	21	+ 3/4	+3.7
N	MOHAWK DATA SCI	8- 27	8 1/4	+ 5/8	+8.1
O	ODEC COMPUTER SYST.	3- 12	4 1/4	+1 1/4	+41.6
O	OPTICAL SCANNING	2- 16	4 1/4	+1	+30.7
O	PERTEC CORP	5- 17	6 1/4	+1	+19.0
O	PHOTON	3- 15	4 1/2	+ 1/2	+12.5
A	POTTER INSTRUMENT	6- 21	6 1/2	+ 1/4	+4.0
O	PRECISION INST.	2- 13	4	- 1/4	-5.8
O	RECOGNITION EQUIP	5- 15	5 3/4	+ 1/4	+4.5
N	SANDERS ASSOCIATES	11- 21	11 5/8	+ 1/4	+2.1
O	SCAN DATA	3- 13	2 7/8	0	0.0
O	STORAGE TECHNOLOGY	17- 39	22 1/2	+2 1/2	+12.5
O	SYCOR INC	7- 11	9	+ 1/2	+5.8
O	TALLY CORP.	8- 15	9 5/8	- 3/8	-3.7
N	TEKTRONIX INC	34- 64	42	+1 1/8	+2.7
N	TELEX	4- 15	5	+1	+25.0
O	WILTEK INC	10- 26	15 1/2	+ 1/4	+1.6
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	5	-1 3/4	-25.9
A	BARRY WRIGHT	9- 14	9 1/4	+ 5/8	+7.2
A	DATA DOCUMENTS	17- 26	18 1/2	- 1/4	-1.3
O	DUPLEX PRODUCTS INC	8- 16	9 1/4	+ 1/2	+5.7
N	ENNIS BUS. FORMS	6- 10	6 1/8	- 1/4	-3.9
O	GRAHAM MAGNETICS	15- 27	17 1/2	+1	+6.0
O	GRAPHIC CONTROLS	11- 15	11 1/8	- 1/4	-2.1
N	3M COMPANY	76- 88	85	+5 1/4	+6.5
O	MOORE CORP LTD	42- 57	55 1/2	+ 1/2	+0.9
N	NASHUA CORP	48- 62	53 1/2	+ 3/4	+1.4
O	REYNOLDS & REYNOLD	37- 77	49 3/4	+2 1/8	+4.4
O	STANDARD REGISTER	14- 20	17 3/4	0	0.0
O	TAB PRODUCTS CO	14- 23	18 1/2	0	0.0
N	UARCO	20- 28	20 7/8	+ 5/8	+3.0
A	WABASH MAGNETICS	6- 11	6 1/8	0	0.0
N	WALLACE BUS FORMS	21- 26	23 1/2	+ 1/8	+0.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-241	238 3/8	+11 7/8	+5.2
N	COLLINS RADIO	14- 27	24 3/8	+2	+8.9
N	CONTROL DATA CORP	43- 78	46 3/8	- 1/8	-0.2
N	DATA GENERAL CORP	39-131	44 1/2	+5	+12.6
O	DIGITAL COMP CONTROL	3- 25	4	+ 3/4	+23.0
N	DIGITAL EQUIPMENT	72-105	88 1/4	-1 1/2	-1.6
N	ELECTRONIC ASSOC.	6- 13	6 5/8	0	0.0
A	ELECTRONIC ENGINEER.	6- 14	9 1/4	+1	+12.1
N	FOXBORO	23- 41	29 1/2	+2 1/2	+9.2
O	GENERAL AUTOMATION	13- 55	43	+2	+4.8
O	GRI COMPUTER CORP	2- 5	1 7/8	- 1/8	-6.2
N	HEWLETT-PACKARD CO	46- 94	91 1/8	+4 1/4	+4.8
N	HONEYWELL INC	106-170	109 3/4	+2	+1.8
N	IBM	333-451	440 1/2	+13 1/2	+3.1
O	INTERDATA INC	8- 16	9 5/8	+ 1/4	+2.6
N	MEMOREX	10- 38	10 1/8	0	0.0
O	MICRODATA CORP	5- 10	8 1/4	0	0.0
N	NCR	27- 38	28 1/8	+1 3/8	+5.1
N	RAYTHEON CO	27- 47	30 7/8	+1 7/8	+6.4
N	SPERRY RAND	30- 50	43 3/8	+ 3/4	+1.7
A	SYSTEMS ENG. LABS	4- 16	5 3/4	+1 1/4	+27.7
N	VARIAN ASSOCIATES	14- 22	15 5/8	+1 5/8	+11.6
N	WANG LABS.	22- 61	23 5/8	+ 5/8	+2.7
N	XEROX CORP	121-172	164 1/4	+7 1/8	+4.5
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3 3/4	+ 1/8	+3.4
O	BRESNAHAN COMP.	1- 3	1 1/4	0	0.0
O	COMDISCO INC	3- 18	13 3/8	+1 5/8	+13.8
O	COMMERCE GROUP CORP	5- 11	4 3/4	0	0.0
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4 3/8	+ 1/8	+2.9
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	7 3/4	- 1/4	-3.1
N	DATRONIC RENTAL	2- 4	2 1/4	+ 1/8	+5.8
A	DCL INC.	2- 10	2 1/8	- 1/8	-5.5
A	DEARBORN-STORM	16- 26	20 3/4	+1	+5.0
A	DPA, INC.	5- 8	6 3/8	- 3/8	-5.5
A	GRANITE MGT	5- 11	4 7/8	- 1/8	-2.5
A	GREYHOUND COMPUTER	5- 11	5	+ 1/4	+5.2
A	ITEL	7- 12	8	- 1/2	-5.8
N	LEASCO CORP	12- 24	13 3/4	+ 5/8	+4.7
O	LEASPAC CORP	6- 15	6	0	0.0
O	LECTRO MGT INC	1- 4	1 1/8	- 1/4	-18.1
A	ROCKWOOD COMPUTER	2- 7	1 7/8	0	0.0
O	SYSTEMS CAPITAL	3- 20	10 3/8	+1 3/8	+15.2
N	U.S. LEASING	19- 35	26 3/8	- 1/8	-0.4

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L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
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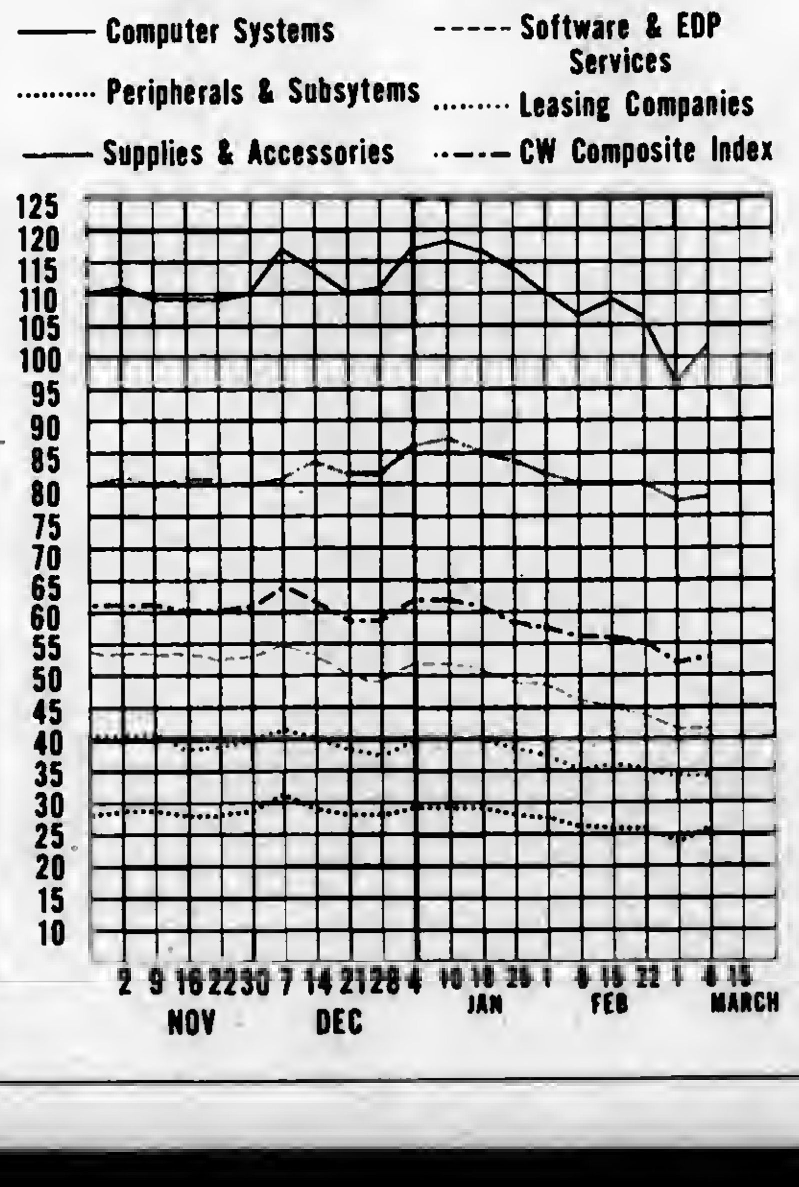
Computer Stocks Trading Index



Earnings Reports

BUNKER RAMO
Year Ended Dec. 31

	a1972	1971
Shr Ernd	$.56	$.09
Revenue	252,000,000	224,669,407
Earnings	13,500,000	4,256,573
3 Mo Shr	.20	.06
Revenue	64,200,000	57,929,613
Earnings	4,800,000	1,776,594

a-Preliminary.

COMPUDYNE
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.04	$.02
Revenue	7,218,634	5,709,248
Earnings	167,514	131,507

COMPUTER DATA SYSTEMS
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.22	$.06
Revenue	1,000,100	659,400
Tax Cred	49,100	10,300
Earnings	115,800	33,000

TELEX
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.08	$.02
Revenue	26,542,000	16,629,000
Earnings	862,000	172,000
9 Mo Shr	.22	.28
Revenue	67,486,000	60,870,000
Earnings	2,277,000	2,888,000

AUTOMATIC DATA PROCESSING
Six Months Ended Dec. 31

	1972	a1971
Shr Ernd	$.59	$.41
Revenue	38,580,000	31,177,000
Earnings	3,454,000	2,340,000

a-Restated for pooling-of-interests transactions.

DATA DOCUMENTS
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.52	$.45
Revenue	7,847,588	6,610,177
Tax Cred	11,579	13,807
Earnings	242,095	211,166

DATA PRODUCTS
Nine Months Ended Dec. 23

	1972	1971
Shr Ernd	$.18	$.07
Revenue	41,839,000	36,840,000
Disc Op	.....	(135,000)
Tax Cred	494,000	285,000
Earnings	1,209,000	488,000

AGS COMPUTERS
Nine Months Ended Sept. 30

	1972	1971
Shr Ernd	$.19	$.06
Revenue	936,840	808,076
Disc Op	.....	(28,572)
Earnings	81,387	26,685

ELECTRONIC DATA SYSTEMS
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.30	$.25
Revenue	27,450,307	21,263,926
Earnings	3,585,504	2,970,952
6 Mo Shr	.57	.48
Revenue	53,528,192	41,735,177
Earnings	6,764,958	5,719,582

REYNOLDS & REYNOLDS
Three Months Ended Dec. 31

	1972	a1971
Shr Ernd	$.30	b$.28
Revenue	15,088,760	13,542,544
Earnings	1,405,431	1,314,507

a-Restated for acquisition of World Wide Time-Sharing, Inc. on a pooling-of-interests basis. b-Adjusted for two-for-one stock split in February 1972.

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☐ Vertical tabulation.

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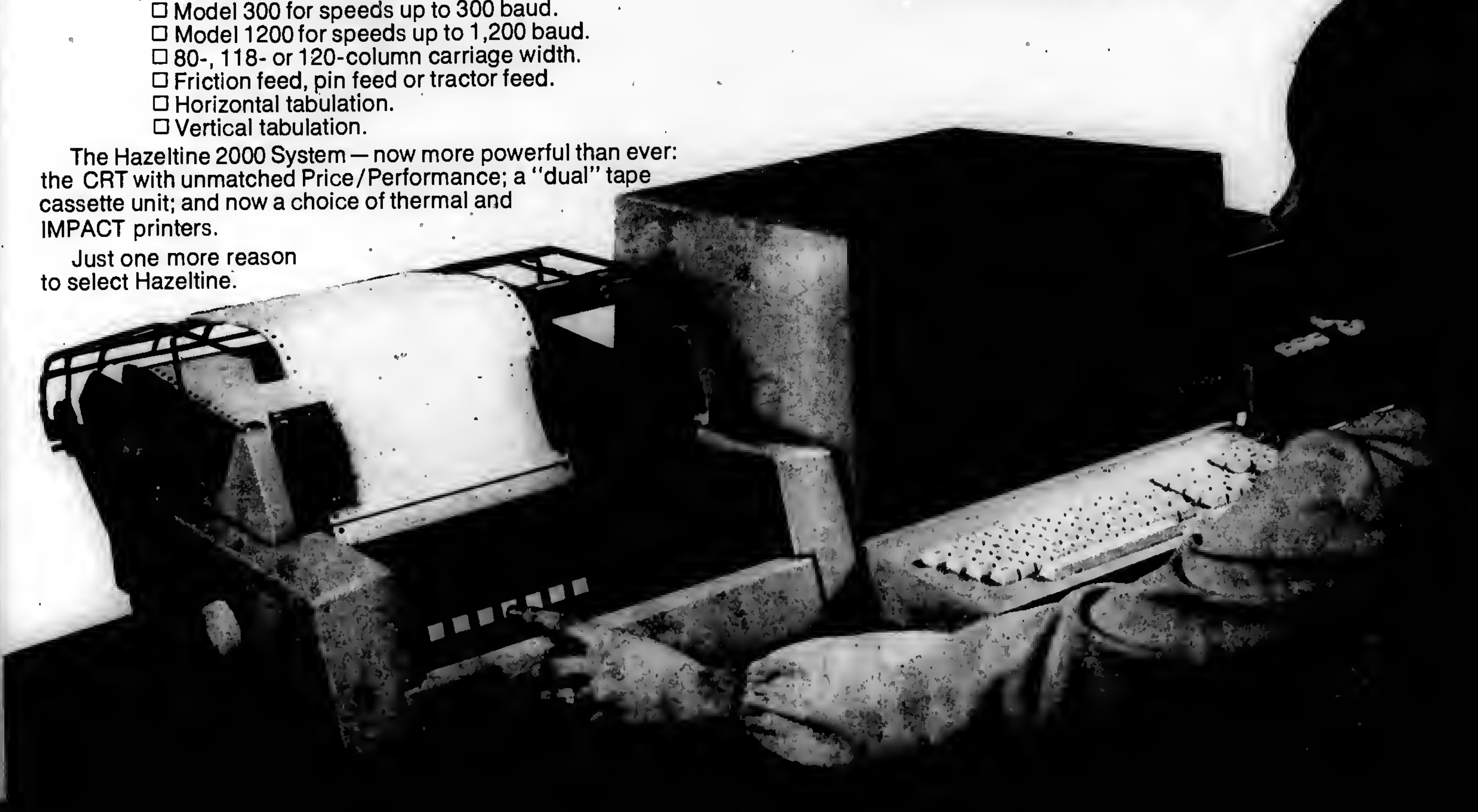

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March 21, 1973

Vol. VII, No. 12

NEWSPAPER

115 Arrives With New 370 Disk

Smallest 370 S/3-Compatible

By Michael Weinstein

Of the CW Staff

WHITE PLAINS, N.Y. – IBM has unveiled the long-expected 370/115 as an entry-level machine – to the "virtual memory" 370 series – for users of IBM System/3s and smaller 360 models.

A new disk device – the 3340 direct access storage facility – and the 3203 printer were released concurrently with the 115.

In keeping with efforts to facilitate moving into the 370s, IBM has allowed DOS users to move to the new computer with little or no reprogramming of existing applications, a spokesman said.

"An optional integrated emulator is available for users of the 360/20. The 115 also can run applications written in RPG II and Cobol, providing a smooth transition for S/3 users," he added.

The 3340 can be used with any 370 operating under DOS/VS; the new printer, also supported by DOS/VS, can be used with either the 370/115 or the 370/125 the two IBM systems that have incorporated controllers within the mainframe.

A technological advance used in the 3340s over standard disk packs is the combination of disk-recording surfaces, access arms and read/write heads into a single cartridge.

Thus, the head that records the data is the head that reads data "eliminating problems caused by minute head-to-track misalignment," according to IBM.

IBM 370/115 With Console and Four 3340 Disk Drives

The Model 115 comes in 65K characters which can be expanded to 98K characters. Cycle time for main storage is set at 480 nsec for two bytes of information.

This cycle time is a result of using semiconductor technology in the memory and makes the 370/115 "more than seven times faster than the ferrite core storage used in the 360 Model 20-4."

Instruction execution rates are up to 1.5 times faster than the 360/22 and up to three times faster than the 360/25, the spokesman asserted.

In addition to main memory, the 370/115 contains 20K words (22-bit word) of reloadable control storage which is loaded from a magnetic disk cartridge.

Reloadable control store is used for running emulations, system monitoring and other system functions.

To ease conversion problems that might

(Continued on Page 2)

3348 Data Module

Double Standard For Basic? Group Likes the Idea

By Don Leavitt

Of the CW Staff

WASHINGTON, D.C. – A standard for Basic should be developed to include many of the extensions already available in current versions of the originally very simple language, according to an ad hoc group organized by the Standards Planning and Requirements Committee (Spare) of the American National Standards Institute (Ansi).

The study group was set up by Spare in August 1971 at the suggestion of Prof. J.A.N. Lee of the University of Massachusetts. Its task was to determine the technical feasibility and economic justification for a Basic standard.

Prof. Thomas Kurtz of Dartmouth, one of the codevelopers of the language, has chaired the study group and a positive recommendation "is not entirely a surprise," in the view of at least one industry observer.

The proposal is expected to be approved at Spare's meeting March 25, and a formal standard development committee would be organized after that, under Ansi's X3 Computers and Information Processing Committee.

Lee wanted a standard that would prevent the language from becoming distorted from its original purpose.

Though the final report sees the need for a full standard, the recommendation is phrased in such a way that it leaves the door open for standardization of both an extended Basic and a basic Basic, much as Fortran has been defined on two levels, one a subset of the other.

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State Acts to End Storage Of Crime Intelligence Data

By Michael D. Sorkin

Special to Computerworld

DES MOINES, Iowa – A total ban on using computers in Iowa to store police intelligence data is a step closer to reality with approval of legislation by the State Senate.

The legislation – based in large part on model legislation recommended by Project Search, a Law Enforcement Assistance Administration program – is believed to include the toughest restrictions yet on criminal justice computer uses of any state.

Manual Files Regulated

The legislation not only bans police intelligence data kept in any computerized form but also regulates the information police may keep in their manual files.

The bill prohibits police from keeping any surveillance data in manual files on any individual, organization or assembly of persons "unless a criminal act has been committed or is imminently threatened."

Without the legislation, which now goes to the Iowa House where ratification is expected, police currently can collect any intelligence data on individuals and circulate the information through newly acquired police computers, which are expected to have a National Crime Information Center (NCIC) link in the near future.

Last year it was revealed that for nearly a year Des Moines area police had been collecting unsubstantiated or incomplete intelligence data about citizens from paid informants and other sources and placing the data in the city's municipal crime computer [CW, Sept. 20, 1972].

The computerized data labeled individuals as "known criminals," even though some of the information was on persons with no criminal convictions and in some cases, with no arrest records.

The legislation is directly aimed at prohibiting such police activities. Iowa Gov. Robert Ray pledged during last fall's elec-

(Continued on Page 5)

Rap Sheets and GAO–Part 1

FBI System Under Attack

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. – The present operation of the Computerized Criminal History (CCH) system is under attack and the FBI and the Law Enforcement Assistance Administration (LEAA) have been told to develop new ways to improve the reporting of arrest and disposition data in the system.

The FBI's Computerized Criminal History system has often been attacked by sources outside the government because of a possible invasion of privacy and lack of security for confidential information.

Now the General Accounting Office has joined the critics.

This series examines the GAO criticisms.

The General Accounting Office (GAO) said in a report that Congress should not appropriate further funds for the system until "the FBI and LEAA implement a program for improving the reporting of arrests and dispositions by law enforcement agencies, courts and correctional institutions."

GAO, an independent agency reporting to Congress on the effectiveness of various government programs, said law enforcement agencies and others "are not reporting all arrest and disposition data to the state agencies which enter such data into the system" at the present time.

> *"Until such reporting is improved, the exchange system cannot be fully effective. System users must be certain they are aware of all of an offender's prior arrests and their dispositions."*

"Until they do," the congressional "watchdog" agency said, "system users have no assurance that the data they receive is complete or accurate."

FBI Takeover

The CCH system was designed by an LEAA program called Project Search, but after it was proven 'feasible' it was taken over by the FBI as part of the National Crime Information Center.

The system provides for the computer storage and exchange of criminal histories

(Continued on Page 5)

DP Science Crisis Demands Course Revision: Perles

By Don Leavitt
Of the CW Staff

COLUMBUS, Ohio – Computer scientists must believe that "computation is an indefinitely perfectable activity," and if that is true, the commercial DP establishment must be considered as their adversary, according to Dr. Alan Perles, Eugene Higgins Professor at Yale University and former president of the Association for Computing Machinery.

Speaking here recently, Perles said no matter how innovative industry may seem, it really has "a huge investment in entrenched incompetence." It has to be more pragmatic than the academic computer scientist, but that must not deter the universities from their role, he added.

"What industry says it wants is exactly what we should never train our students to do," he told the dinner meeting of last month's Computer Science Conference. Even those students preparing to go into the business world should not be trained directly for that work, he added.

The standard programming languages should not be formally taught in the universities any more than English is taught as a subject for credit. "After all, Fortran is a vox populi – a language of the streets – in the world of data processing, and it can be absorbed informally through conversations in dining halls or from thoughts scribbled on the walls of public toilets," Perles commented, partly in jest.

What They Should Do

Instead of the standard language, computer science departments must expose their students to languages that have content, structure or some other insight of real interest in their design, regardless of how limited their uses might be, he said. "Industry will always need people to do piecemeal work," he added, "but we have to get industry to rethink the ways it attacks problems."

Commenting further on what he called the impending crisis in computer science, Perles noted the growing tendency for universities to have computer centers that are not ready to cope with application problems.

The expertise in that area is growing up "around us, and independent of us," he said, but then suggested that such a development might be inevitable. Computer science is an established part of the U.S. university scene, he said, but – because the discipline is so new – the departments are not now staffed by people trained in computer science.

As that type of staffing takes place over the next five to seven years, the view from the departments will become more and more "from the computer outward" rather than "from the larger world, seeing the computer as one of several possible tools."

Although the administrations are generally "enormously reluctant to take the step," computer science will be available at all universities at the undergraduate level by the late 1970s, and that will pose three levels of concern for the faculties involved.

They will be training non-specialists who want to know something about computers; "terminal" students who will be going out into industry; and candidates for PhDs in computer science.

The first type of student "must be taught how to do something useful, how to solve problems," and must get some grounding in computer concepts. The industry-aimed student must be taught, on the other hand, how the computer relates to the world of action for which he is heading.

For the perhaps reluctant doctoral candidate, the computer scientist has to have some valid explanation of why he or anyone else should dedicate his life to computer science. "We have not done an adequate job of explaining ourselves to other curricula," he mused.

In fact, he noted, the curriculum used or being proposed today is not substantially different than it was five or six years ago. Though that seems a short time span, he said, it would be the same as saying that physics or chemistry curriculum had not changed in the past 50 to 75 years.

Most universities must throw away or drastically revise their computer science curriculum. "If you don't think so, ask yourselves one question," he challenged his audience – "what content – if any – do PhD theses have today?"

COMPUTERWORLD
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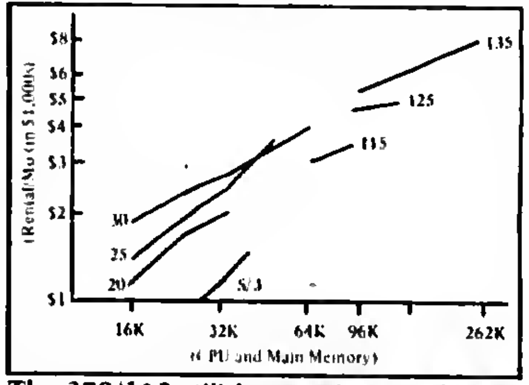
S/3-Compatible 370/115 Arrives With New Disk

(Continued from Page 1)

dissuade users to enter the 370 world, the 115 is designed to handle both 80-column cards and the newer 96-column cards.

The ability to handle 96-column cards allows the 115 to exchange data with an S/3, the spokesman confirmed.

An optional integrated card I/O attachment allows users to attach either the 2560 or 5425 multifunction card unit.



The 370/115 still leaves a large dollar gap for System/3 users if they upgrade to the 370 Series.

An optional byte multiplexer channel lets users attach other IBM peripherals including the 1419 magnetic character reader, 3260 information display system and 3886 optical character reader and communications controllers such as the 3704.

With 32 subchannels, the multiplexer channel has data rates of 29 kchar./sec in burst mode and 19 kchar./sec in byte mode.

A third option allows users to operate the 370/115 with up to six 3410/3411 tape drives.

Software includes Assembler Language and compilers for running several higher-level languages: RPG II, Cobol, Fortran and PL/I.

The 370/115's DOS/VS is designed to require a minimal amount of reprogramming of applications currently running on 360s under DOS, the spokesman said.

Under control of DOS/VS the 115 has a virtual addressing capability up to 16M characters, he related.

The 3340 disk drives can be used with any 370 system.

The new drives achieve a faster seek time and data rate than the larger 3330-series disk drives and can hold nearly 280M characters of on-line data, IBM said.

The 3340 writes more than 1.5M bits of data per square inch, which is twice the recording density of the 3330s and nearly eight times that of 2314s.

Removable data modules are available with 34.9M and 69.8M characters. Storage size can be increased by the user's adding a larger module, much the same as he would change a phonograph record. All modules can fit any 3340 disk drive.

	IBM 3340	IBM 3330	IBM 2314
Average Seek Time (msec)	25	30	60
Average Latency (msec)	10.1	8.3	12.5
Maximum Data Rate (byte/sec)	885K	806K	312K
Capacity (per drive)	34.9M- or 69.8M bytes	100M bytes	29.1M bytes

Operating Specifications of the New 3340 and Older Models

The 370/115 uses a minimum of two and a maximum of four directly attached 3340 drives.

Up to eight drives attach directly to the 370/125. Sixteen 3340s can be attached to the 370/135 and 370/145, while the 370/158 can attach up to 32 drives.

The 3203 printer – which can be attached to the 115 – is offered as an improvement on the older 1403 printer.

Available in two models, the 3203 has speeds of 600- and 1,200 line/min with a 48-character set. Faster speeds are possible with a reduced number of characters.

The new printer has 132 standard print positions with 10 characters printed per inch. Vertical spacing may be either 6- or 8 line/in.

Typical monthly rentals for the 370/115 range from $5,891 (for 65K-byte CPU, card equipment, printer and two disk drives) to $8,115 (for 98K-byte CPU, card equipment, printer, tape drive and two disk drives). Portions of the system – CPU, console and optional multiplexer channel – are available under IBM's recently announced term lease plan.

In essence, this means a user who signs a 48-month lease pays no overtime charges or extra charges above the basic monthly rental.

Purchase price of the Model 115 ranges from $265,165 to $352,115.

First deliveries are set for the beginning of 1974.

The IBM 3340 direct access storage facility may be installed with a selection of three disk drive models – Model A2 provides the first two drives, Model B1 the third or Model B2 the third and fourth.

Under IBM's extended-term plan (ETP), which provides for a 24-month contract period, monthly rental for a four-drive 3340 subsystem will be $1,450. Users with shorter-term needs may use the IBM rental agreement, with a monthly charge of $1,704. Purchase price for the four-drive configuration will be $68,000.

The IBM 3348 data modules are available in two sizes, 34,944,768 and 69,889,536 characters, for monthly ETP rentals of $50 and $70, or for $59 and $82 under the standard rental agreement. Purchase prices are $1,600 and $2,200.

First shipments of the 3340 subsystem for attachment to the 370/125 are scheduled for the fourth quarter of this year and for attachment to other 370s in the first quarter of 1974.

ETP rentals for the two IBM 3203 printer models will be $800 and $1,050. Monthly rental under the standard agreement will be $940 and $1,234. Purchase prices will be $38,000 and $49,000.

First customer shipments of 3203 printer are scheduled for the first quarter of 1974.

And How About Two Cobols?

Special to Computerworld

WASHINGTON, D.C. – The concept of two standard Cobols – one the 1968 current version and the other the new version now being proposed by the Conference on Data Systems Languages and Ansi Committee X3J4 – is gaining some support here.

Last week Robert J. Brown, director of standards for the Computer and Business Equipment Manufacturers Association (Cbema) and secretary of X3, said he was sending the proposal to Ansi for comments, as well as to the subcommittee on the language itself.

"It seems to be a good idea, and it is surprising that no one has formally requested it before," Brown told the Cobol Coordinating Committee which sent in the proposal.

The Cobol Coordinating Committee had urged the current standard be kept in use so the investment in programs and compilers would be protected.

Dental Students Hone Skills

WASHINGTON, D.C. – An experiment in computer-assisted instruction resulted in improved diagnostic skills for a group of dental students at Ohio State University.

Sixteen fourth-year students used teletypewriter terminals, slides and a list of clinical tests and observations in diagnosing the type of pain causing toothache.

After a case history was narrated to the student, he could ask any additional questions of the computer "patient."

Thirteen of the 16 students improved their overall diagnostic skills.

One Town's Tale

First-Time Government DP User Easy Mark for Vendors

By E. Drake Lundell Jr.
Of the CW Staff

SALEM, Mass. – There is apparently a growing trend among computer makers to "prey on the inexperience of lay people in municipal governments in selling systems."

At least the experience of this town in trying to computerize many of its operations points in that direction, according to deposed DP director Pierre DeGrandpre.

Too often computer manufacturers, he said, oversimplify problems involved with system use or overstate the capabilities of a computer to the lay people who make up the city councils and other governing bodies in local governments.

These people are very well-intentioned, he said, but since they are inexperienced in computer use they can be misled by salesmen as to the capabilities of systems they are considering.

"The manufacturers sell their systems too often through oversimplification," he said. "Then when the system does not work out, everyone in the government is unhappy with the results."

This oversimplification raises the expectations of people in the local governments, he said, noting it is often impossible to fulfill those expectations.

Case History

Salem had an 88K IBM 1130 installed before it even hired a DP director, DeGrandpre said.

The selection committee that advised the town on the systems was made up of local businessmen, whose primary experience was in tab operations, even though one of the three had some computer experience, according to local sources.

What really impressed the city council and administrators within the government was the IBM library of more than 4,000 programs and its promise of expert technical assistance if needed, they added.

The non-technical people on the council, however, did not realize that most of the programs in the library were either in Fortran or RPG and that the town was planning to run a Cobol shop.

In addition, even the programs in Cobol could not be easily fitted to the town's operations without extensive modifications, which were offered by IBM at a fee, the sources said.

At the same time, they noted the "experts" provided to the town were really little more than trainees who required training before they could be used effectively.

The city council was told by the salesman on the account that the system could be up and running with three applications – school applications, payroll, real estate – within three months.

That turned out to be a hopeless task, according to DeGrandpre and other local sources, since the programs in the library could not be easily fitted to the Salem situation.

They also said the task was impossible to complete because the town had no unified data base from which to start and the whole system had to be built from scratch.

To illustrate how lay people can be misled when they are not familiar with computer systems, local sources told of an occasion when a group of local administrators was taken to a local IBM office to see a demonstration of a school-scheduling system running on another 1130.

But either IBM neglected to tell them or the people unfamiliar with computers forgot the demonstration was on an 1130 with 32K of memory, not an 8K machine.

When the same package was run on the Salem machine, it took 40 hours for the first pass alone to be run.

The DP manager recommended getting a larger computer system and prepared specifications to better meet the town's needs for computer power.

At the same time, however, local sources indicated that IBM personnel were suggesting to various people that the problem was not with the equipment but rather with the man running it.

The town then let the DP manager go and issued specifications for a new system. In fact, it issued the old specification once again.

This time, however, IBM failed to bid on the system.

While IBM said it just overlooked the new bidding, local sources felt differently.

"If they rebid the 1130, everyone would ask them why it didn't work the first time like they said it could," DeGrandpre stated.

"And if they bid another system, it would be an admission that they had sold the city a system that couldn't meet its needs the first time and that the problems were with the system and not with me," he added.

Salem has now selected Honeywell to supply its computer needs.

Its first order of business now will be to hire a new DP director – who will once again be a man who had no hand in selecting the equipment to be used.

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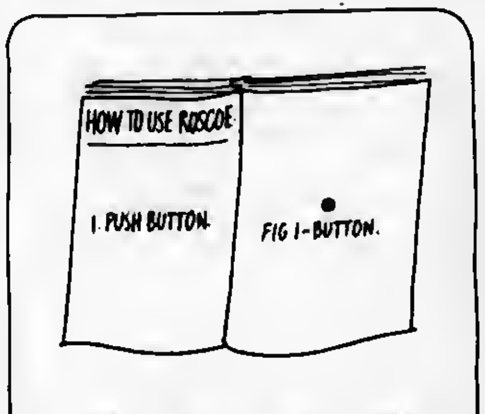
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Vendor Problems Lessened

In-House Testing Affirmed

By E. Drake Lundell Jr.
Of the CW Staff

ATLANTA – One thing data communications users seem to agree on is the need for an in-house testing capability to prevent problems between several vendors in maintaining their systems.

This message was reemphasized here at the Computer Caravan/73 sessions on data communications last week.

Caravan 73:
Atlanta

Bob Kale of Collins and Aikman claimed this in-house analytical ability was one of the major reasons his firm could run a "very successful" data communications network linking 28 plants in 10 states.

In a multivendor installation, he said, the vendors are not interested in particularly finding why a user is having a problem, but are interested only in proving that their equipment is not the cause of the problems.

Therefore, he said, "you need one guy in-house to ride herd" on the various vendors and to isolate the problems in the system so the right vendor's service organization can be called in to fix it.

To isolate the problem the in-house expert needs to know how all of the interfaces work in the system, he said, and he needs to know what happens in the system and the order of events.

In-House Trouble-Shooting

In addition, Kale noted that computer operators themselves could be trained to some extent to be able to isolate the problem areas.

His shop, he said, has developed a procedure manual to be followed by the computer operators to trace the problem area.

Following this procedure, he said, the operators were able to trace faults to lines or modems successfully in almost every case.

This in-house capability is so important, Kale said, users should consider sending members of their staffs to school just to learn how to trouble-shoot their systems.

In addition to the in-house capability to trouble-shoot communications systems, panelists and the audience agreed that a communications user had to continually evaluate his system and equipment in order to make it more effective.

Jim Brown of the First National Bank of Atlanta said his organization was "constantly looking for a better and cheaper way" to operate its network and indicated that about 2% of the data processing budget was spent on this type of planning.

'Applications Determine Systems'

ATLANTA – A user's specific applications – not technology – determine his data entry and communications systems, most users emphasized at the Caravan here.

For example, Vic Davis of the City of Atlanta noted the city had gone to a leased communications network because it had a frequent number of inquiries into the system and many updates.

If the city was able to batch its jobs, however, it probably would have stayed with a dial-up network for its communications needs, he added.

But in the city's particular applications, he said, the time that would have been wasted by people dialing into the system frequently would have made it uneconomical to operate.

Jim Brown of the First National Bank of Atlanta noted that in the bank's statewide operation the cost of physically trucking documents to a central center was greater than the cost of the communication lines used now, so that made the new system feasible, in addition to its increased efficiency.

Richard Trimmer, who led a workshop on intelligent terminals told the users every application was unique to a particular company in some ways and that different systems would have to be used to meet these differing user needs.

Letting Operators Do More Improves Overall Efficiency

ATLANTA – Increasing the responsibility of operators of key-to-disk systems can help a firm improve the quality of its data entry operation, Howard Miller of the First National Bank of Atlanta told a Caravan forum.

CW Photos by E. Drake Lundell Jr.

'smart cookies out there'

"There are a lot of smart cookies out there" in the data entry or keypunch department, Miller told the users, and letting them do more improves the overall efficiency and quality of the work being done.

Miller, who noted that in his shop the lead operators were responsible for doing a lot of programming of the system, said at the same time the user might have to pay the operators a little more as their responsibilities are increased, but he indicated the increased productivity would be worth it.

For example, when an operator is responsible for doing an entire job, Miller said, the operator could edit documents coming in to the shop and therefore catch errors before they were keystroked, a move which could cut the error rate for the shop.

Would-Be Net Users Hurt by Poor Cost Planning

ATLANTA – Computer users planning data communications networks often overlook important cost elements in the planning stages that can later plague them, Gilbert Hoxie of Booz, Allen & Hamilton told users at the Caravan.

Among the areas that need to be considered, Hoxie included equipment costs, personnel costs and a range of "other" costs sometimes overlooked.

Hoxie said the circuit and data terminals costs were the areas over which the user had the most control when planning his network.

He warned the users to be wary of purchasing terminal equipment since the cost of such equipment was dropping rapidly and the user with purchased equipment might find his equipment of little value in a few years because of newer and better offerings.

'other costs'

Other costs besides the communications lines and the terminals the user should be aware of when planning the network, Hoxie said, include:

- Modems and DAAs.
- Multiplexers and concentrators.
- Computer interfaces.
- Patch panels and switchboards.
- Data preparation equipment such as keypunches and flexowriters.
- Computer simulation and test time.
- Equipment shipping charges.
- Fall-back (duplex) equipment.
- Circuit monitors and hardware test equipment.
- Maintenance charges for the new equipment.
- New magnetic storage requirements.
- Message-processing computer time and memory.

All these factors, Hoxie said, have to be considered when the user decides to go to a communications system, and users usually underestimate the costs of implementing such a system while overestimating the benefits from the planned systems, he noted.

In the personnel area, Hoxie stated that users often overlook the cost of systems design and programming in the development of the project and they also overlook the systems analysis and maintenance programming that will be needed when the system is operational.

Users, he added, also often overlook the costs that would be associated with the project management during the development stage and the on-going facility management costs that would be incurred when the system is installed.

Other personnel costs to be considered include operators for communication computers, data terminal operators, data preparation equipment operators, training, personnel needed for file creation and conversion, post-installation appraisals, control clerks and the personnel time needed for liaison between departments.

In the area of "other" costs that could be expected with communications systems, Hoxie listed badges and embossers; paper supplies and CRT overlays; documentation; modification of existing software or applications programs; and site acquisition.

Other unexpected costs might include electrical and air-conditioning costs; auditing services for the new system; transportation for personnel to maintain liaison between departments; and non-system communications costs.

Hoxie told the users they should try to get equipment and packages that were available off-the-shelf instead of doing their own development work since in-house development was usually more expensive.

Only users with very special requirements should do their own development, he said.

In the area of non-technical and non-cost considerations Hoxie said the user should be aware of all the implications of installing a data communications system.

For example, he said, in some applications data transmission systems could not take the place of paper documents because of legal requirements, such as in stock certificates and bank records.

If the user configures his own system, he said, he must be sure to know who will be liable for errors. If an error is caused by a particular piece of equipment, is that manufacturer responsible, or is the user? he asked.

. . . On to Houston

ATLANTA – With an estimated 2,000 attendees at the Atlanta Caravan the total attendance for the four Caravans to date is 10,500. Computer Caravan/73 heads for Houston March 20-22.

Outside Software Offers Challenge

ATLANTA – "One of the real tests of a programming manager is the ability to control the cost and progress of a project that is handled outside his organization," according to Jack Grantham, systems officer at Trust Company Bank.

Speaking at a Caravan session on software evaluation, Grantham said there were generally two reasons for a firm to go outside for software help.

First, he said, it may need to buy expertise unavailable in-house, but his firm rarely did that unless "we can arrange for them to leave some of their expertise behind with our staff."

A more common reason, he said, is to better utilize manpower in order to meet tight schedules on a project or to get a proprietary product or service.

In addition, he said, outside contractors should be used to help the company at peak load times as opposed to increasing the in-house staff. His firm, he said, "prefers to increase staff if prospective work load justifies it, but only if."

Users should always be careful when it comes time for contract negotiations

The potential buyer of software should always consult with his lawyer and every party to the contract should be sure of the product and the scope of work expected under the agreement before it is signed.

It is important to evaluate the prospective vendor, he said, noting that 80% to 90% of the vendors his firm has done business with, or the individual directly involved with the firm's work, had either gone bankrupt or left the area during or "just after our work."

Affair to Remember

Atlanta Mayor Sam Massell cuts the "ribbon" of computer tape to open the Caravan. Flanking the mayor are Leo Bowser, Caravan manager; Dottie Travis, sales and marketing administrator; and Robert Rankin, general manager.

Ban Close on Storage of Intelligence Data

(Continued from Page 1)

tion campaign to prevent intelligence data from being placed in the state's crime computer and said such information should not be housed in any local crime computer in the state.

Most importantly, the Iowa legislation would:

- Prevent intelligence data of any kind from being placed in any crime computer in Iowa, including those operated by local police departments.
- Allow any citizen to inspect for accuracy criminal-history information that refers to him in the files of the state police. That same right is not, however, assured for information kept by local police departments.
- Allow police to disclose criminal-history information (limited to factual arrest, court or corrections data) only to other criminal justice agencies or to other government agencies authorized to receive the information by a Confidential Records Council, which the act creates.
- Allow manual intelligence reports (defined as any unsubstantiated file of a police investigation) to be disclosed only to peace officers, criminal justice agencies or to state and federal regulatory agencies. This would exclude any local government agency, such as city councils, not involved in law enforcement work.

If a government official releases crime data to someone unauthorized to receive it, or otherwise misuses the data, he is liable for both civil and criminal penalties under the bill.

If an individual has been acquitted or the charges against him have been dismissed, police are forbidden to keep a record of the charge in any crime computer.

Minor charges against juveniles may no longer be retained as permanent records under the proposed legislation. They may be retained only if the charge would be considered either an indictable misdemeanor or felony if committed by an adult.

If a peace officer detains an individual and decides to perform a computer check to determine whether the individual has a criminal record, the officer must inform the citizen a check is being made.

The bill also calls for a nine-person Confidential Records Council – including two private citizens, four legislators, a district court judge, a local police officer and the state public safety commissioner – to monitor the operation of government information systems, review complaints from the public and review regulations for dissemination of crime data drawn up by the state Public Safety Department.

The records council also has authority to review all agreements for exchanging Iowa's computerized crime data with government agencies.

The state computer system already has a temporary NCIC link with the FBI for testing purposes and state officials will apply for a permanent link later this year. Within several weeks, wanted persons and stolen property files are expected to be on-line.

While it is designed to house crime and traffic records, the system is also slated to be connected to such agencies as the Iowa Revenue Department, the Highway Commission, the Department of Public Instruction, the Department of Social Services, county treasurers and recorders and many others.

The computerized records of these agencies are not covered in the bill passed by the Iowa Senate.

While State Sen. Gene Glenn hailed the bill as "a milestone in the protection of confidential criminal records of citizens," the legislation drew attacks from other sectors of the state.

Senator Gene Kennedy, a former Iowa Highway Patrol trooper, charged: "There seems to be some anti-cop legislation in the air." And he warned his Senate colleagues not to "legislate out of fear that you will be accused of limiting individual rights."

Some senators also warned that because the legislation prohibits intelligence data from being placed in any crime computer in Iowa, it conceivably could prohibit the FBI or the CIA from computerizing intelligence data within the state.

GAO Criticizes Reporting of FBI CCH Exchange System

(Continued from Page 1)

or rap sheets between the states and the Federal Government. These rap sheets contain information on arrests for felonies and whether the person was found guilty, found innocent or whether the charges were dismissed.

Under Project Search guidelines, information on criminals was to be kept in a state computer with only an index of the person's name stored at the national level unless he had committed crimes in several states or violated federal laws.

National Data Base

However, the GAO report indicated, the FBI is now keeping all of the records in a national data base here, even though it said it would like to follow the Search guidelines.

Under the system, local police forces and other agencies are supposed to report arrests and their dispositions to one central computer in each state which will be able to communicate that information to the national FBI-run system.

GAO found, howwever, that at present only 24 states have laws requiring local agencies to report arrest and dispositions to a central identification unit.

In fact, it found that "only four states had achieved more than 90% reporting for both arrests and dispositions which means that, in each of these four states, over 90% of the arrests and over 90% of the dispositions were reported" to the central location.

Poor Reporting?

Critics have complained that the information in the system is often incomplete, a fact which seems supported by the GAO report. In some cases, the critics have noted, a person has been reported as having been arrested without any further information included about the case, even after he has been found not guilty or the charges have been dismissed.

"Until such reporting is improved, the exchange cannot be fully effective," GAO said. "System users must be certain they are aware of all of an offender's prior arrests and their dispositions," it added.

"The value of the system to law enforcement or court officials will be diminished if they cannot rely on the completeness of the records they are using," GAO added.

Current LEAA and FBI plans to make the system more efficient, GAO said, are really not solutions to the problems with the systems because they "will not insure that the file is accurate or complete at all times and will have no effect on preventing dissemination of information on an arrest for which a disposition has not been obtained.

Nets Treated Like Toys: Davis

Special to Computerworld

SAN FRANCISCO – DPers must stop treating computer networks as technological Tinkertoys and should get down to the business of making networks serve the users, Dr. Ruth M. Davis of the National Bureau of Standards told a Compcon 73 Conference here.

In her keynote speech on "Computing Networks: a Powerful National Force," Davis also told the IEEE Computer Society's annual three-day conference that DPers must not wait for the government to provide policy leadership. Instead, she advocated that the computer industry and users act in the general interest to identify and resolve policy issues.

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House Inaugurates Bill Status System, Wider DP Use Urged

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The House of Representatives recently launched a major new computer-based information service – the Bill Status System – making it the most computerized national legislature in the world, according to Rep. Wayne Hays (D-Ohio).

The Bill Status System gives congressmen and senators, as well as the general public, instant access to the status of each of the more than 25,000 bills introduced each year in Congress, according to Hays. Hays heads the Committee on House Administration which runs the new system as well as the computer-based vote-counting system used in the House.

A bill may go through as many as 118 steps after it is introduced in Congress, Hays noted, where it is either rejected, passed or just forgotten.

Each day there are between 1,500 and 4,500 requests for information about the status of specific pieces of legislation, coming from congressmen, constituents, federal agencies or the press, he noted.

Previously, a group of clerks had to follow up on each of these requests manually and the results of their searches were not always accurate due to delays in reporting on various actions that might have been taken on the measures.

Computers In Government

Now eight clerks can communicate with the House's leased (from Federal Data Systems) IBM 360/50 computer through Four-Phase Systems terminals and can answer telephone requests for such information on bills almost instantaneously.

All the caller has to know is either the number of the bill, the sponsor of the bill, the subject matter of the bill or the committee to which the bill was referred to get up-to-date information on what action has been taken on the measure.

If the caller wants further information, he can be supplied with a hard-copy printout of the actions on the bill from the system's four Univac DCT-500 printers.

"This bill status system will be a great aid in the legislative process," Hays said, adding that "it will save money and man-hours" over the previous manual system.

The equipment costs the House around $22,800/yr in rentals, he noted, and the salaries for the operators are around $72,000 for a total of almost $95,000 for the new system. The old manual search method cost about $125,000 yearly, he noted.

"However," Hays said, "the speed and accuracy of the new system is more important" than the cost reduction.

Wider Use Urged

Even though the House is the most computerized national legislature in the world, Hays said, he is urging the Congress to employ computers even more widely than it does today to help in analyzing the great amount of data sent up every year by the Executive Branch.

Presently the Bill Status System, which can be reached by calling 202-225-1772, is only operated on a phone basis or by direct request to the computer center in the House.

However, Hays noted, it probably will be expanded to include terminals in every committee room in the Congress and in the office of every member of Congress.

The system was developed by the House's internal data processing staff, headed by Frank Ryan. He estimated the system cost $200,000 to develop overall, but noted that this in-house effort was cheaper than it would have been to have an outside contractor develop the system.

'Keeping Up With the President'

WASHINGTON, D.C. – The score presently reads 6,000 to 3.

Those figures reflect the imbalance between the computer power of the Executive Branch of government and the Congress – and some congressmen think something should be done about it.

Congress needs more computers of its own, according to Wayne Hays (D-Ohio), so it will have a data collection and analysis ability equal to that of the Executive Branch.

The Executive Branch, he said, does not allow Congress or individual congressmen to tap into its computers and only feeds Congress the data it wants to give out – usually data that makes Executive proposals look good.

Hays said at present there are more than 6,000 computers installed in one area or another of the Executive Branch, but Congress only has one large-scale system and two smaller computers.

Presently, he said, his Committee on House Administration is giving "highest priority" to the development of a bill analysis system that would give the Congress the capability to analyze the effects and costs of various pieces of legislation before they are passed into law.

In addition, he indicated, Congress needs computer systems capable of doing budgetary analysis so Congress will not be so dependent on the Executive Branch for its data on the effect of budgetary cutbacks or realignments.

Dial-a-Bill on N.Y. Legislative 'Hot Line'

By Peggy Zientara
Of the CW Staff

ALBANY, N.Y. – A state Senate information "hot line" here is keeping the New York public informed of just what's happening up at the State House.

A toll-free number, dialable from any place in the state, will connect the caller with an information source concerning the status of any bill before either house of the legislature.

Brief History

When a computer is fed the number of the Senate of Assembly bill, a CRT displays the name of the legislator who introduced the bill, what law the bill amends or affects and a brief description of what it does. Then the bill's status is shown – whether it is still in committee, on the floor or has passed or been defeated.

All this information is available momentarily only when the bill number is provided. Otherwise, the process may take hours or even days, while someone researches the Legislative Index, which lists the 15,000 bills introduced each year.

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'Bug' Squashes Football Team's Championship Hopes

By Ken Shonk
Of the CW Staff

HANNIBAL, Ohio – A post-season cruncher, thrown by a programming "bug," dropped the Hannibal River High School football team from first to third in its region and sat the 10-0-0 team on the sidelines in Ohio's first year of tournaments.

When the "bug" was found two months later in the computer program used by the Ohio High School Athletic Association (OHSAA) to generate the point ranking of each team in the state, the OHSAA named Hannibal River the winner in Region 7 and publicly apologized, but the tournament games had already been played.

Hannibal River had led the region for seven weeks prior to the final game, so the quick drop was a shock.

As Coach Martin Flannery, who retired at the end of the 1972 season after 24 years, said, "I felt worse when I learned of the error than I did when we missed the post-season games. I felt cheated. I could never forgive the computer company which did the work for the OHSAA, but, of course, they have never apologized."

"Of course the error upset us too," said Commissioner Harold Meyer of the OHSAA, "but under the system of point accumulation used, a drop is theoretically possible even when a team wins a game.

Error Suggested

When school officials first learned of the drop in the standings, they met with Meyer to suggest an error. But according to Coach Flannery, Meyer told them, "These standings are final. If you have any doubts, you go back home and prove us wrong."

So Hannibal River booster club president Stan Bonar, an accountant with some computer training, pinpointed the simple mathematical oversight after two months of manually checking the calculations.

The ratings are based on a 10-game schedule, explained Bonar. "If a team played less than a 10-game schedule, the computer was to project to a 10-game schedule, dividing the total points by the number of games played and then multiplying by 10. However, the computer program only made allowances for one game under 10. If you played eight games, the program still divided by nine. Since our team played two out-of-state games which counted as open dates, the error penalized us."

"The system had been tested for two years," noted Meyer, "and last year both the system and the program were tested, and no one complained about the ratings they received. We just didn't expect any bugs to show up."

However, Bonar suggested, "since no tournament games were played until this year, no one had a stake in finding an error. If some manually worked examples had been checked against the computer, I suspect the error would have shown up."

"We feel extremely sorry about the error, especially in the first year of the tournaments," said Bill Fouss, a spokesman for National Scanning, the Columbus firm that did the computer work. "We went through two years of dry run testing and so an error was naturally unexpected.

Of course, the group hardest hit by the error was the team which was ready to suit up and tee off for a postseason game anyway. Only this time, guard Eric Brubaker indicated, the team wanted to send its front line through the computer room.

"The fans felt just like the team," he said. Presumably, the cheerleading section was ready with a new yell, "Kick that disk, block that drive, punch that tape, blitz the programmers."

Users Agree: Contract Proviso Can Eliminate Mixed-Vendor Hassles

NEW YORK – Users at a Caravan/73 data communications panel proposed an answer to the question: "How do users setting up a communications network stop the various equipment suppliers from pointing at one another when trouble arises?"

The suggested solution is to incorporate into all contracts a clause which states that if any vendor claims problems are caused by another vendor's equipment, his recommendation will be followed, but with the following proviso:

If the trouble is eventually traced to the first vendor's equipment, he must pay all expenses incurred to resolve the problem.

For example, if a modem manufacturer stated emphatically that a user's problems were caused by the front-end processor company, the user would accept this contention, and call in experts from the processor company to correct the alleged problem.

If the processor personnel were able to prove the problems really were with the modem, the modem manufacturer – who initially claimed innocence – must fix his modem and reimburse the user for all expenses incurred through his erroneous first judgment.

Personnel Contracts Aid Career Growth

NEW YORK – Personnel promotions should be treated as formal contractual agreements, according to Robert King of Mobil Oil Corp.

In the contract concept, the company gives the promoted employee more money and other considerations in return for the employee's taking more responsibility.

These responsibilities should be written out, according to King, to alleviate any possibility of future misunderstandings.

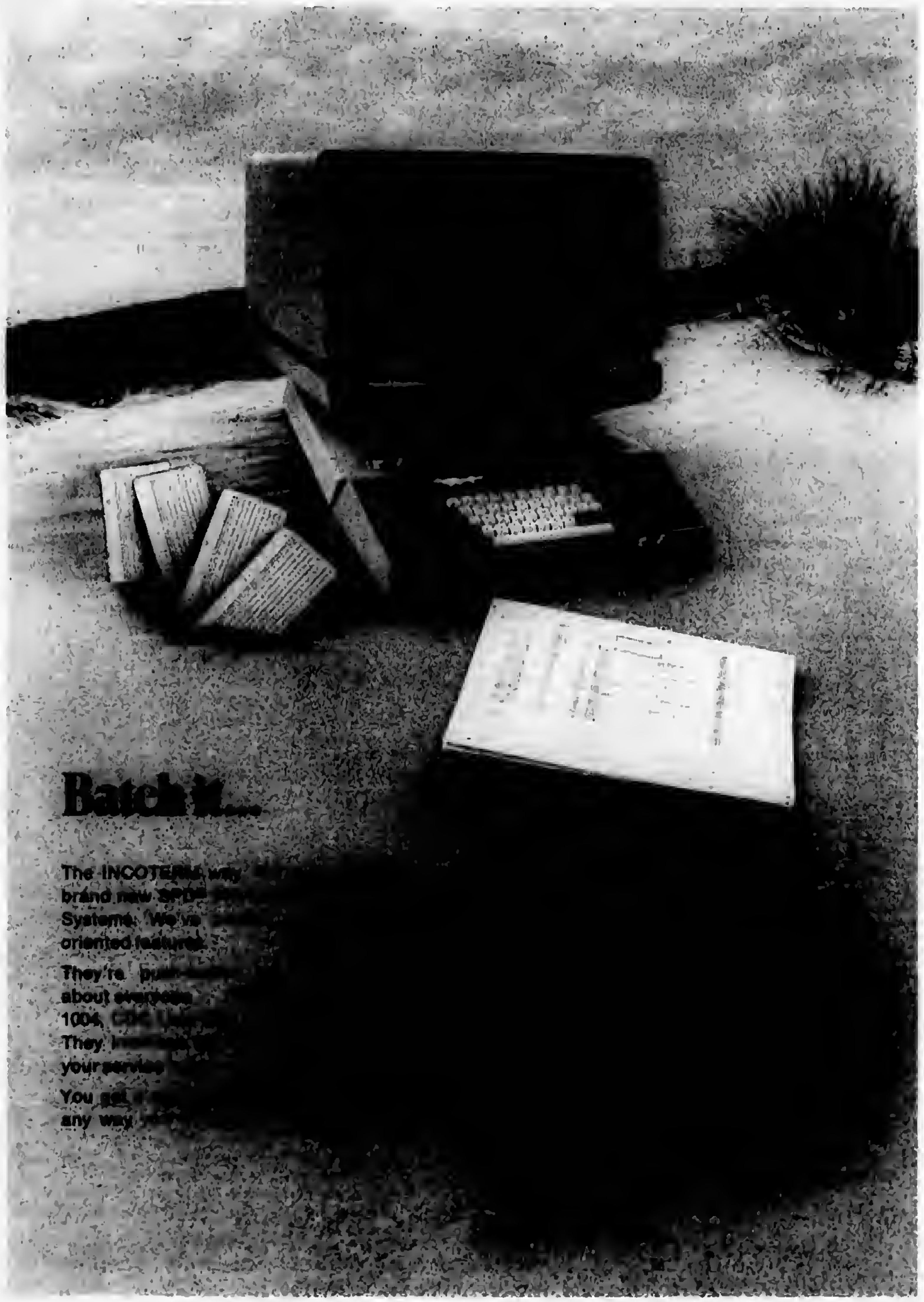
If a company employs the contract approach it will be able to develop a ladder for career paths, he said.

In developing the career paths, King told a Caravan/73 workshop on installation management, users should note that good technical people do not always make good management personnel.

To avoid the dangers of invoking the Peter Principle – people rising to the level of their incompetence – companies should develop a career ladder for technical people that does not always lead to an administrative or management position.

The programming staff is usually broken up into application areas, each with its own responsibility and dependent on the other groups. While this modularity helps the company plan and control its work product, the possibility exists that it may work to alienate programmers.

King's response to this problem is to provide a defined path for programmers and to rotate them so they can build enough experience to move up.



Editorials

Reality, Not Just Data

The recent IBM advertising campaign has attracted more attention than any prestige-type corporate advertising we can recall since the time the then Esso Corp. started stuffing "tigers" into people's tanks. At least, that is, it has among our readers.

Whether or not it has impressed its meaning upon any high executive able to decide in IBM's favor, we do not know. Our interest is more in why our readers have shown this interest.

There appear two theories accounting for this interest. A quick look suggests that IBM, which for years has outproduced everyone with manuals, exhibits and other data during computer selections, is now finding pure volume of data does not always support its case.

Therefore, the argument runs, the appeal to reality as being somewhat different from data introduces another alternative to IBM arguments. This meaning can then be used in the cases where the data is against IBM.

The other theory that accounts for the advertising's attractivenesss to data processors is that it brings out a previously hidden truth many users have subconsciously felt, but have never been able to put into words as effectively as IBM's advertising agency.

According to this viewpoint, the attractiveness comes from the fact that the slogans pinpoint a great weakness in data processing – that data, no matter how well processed, remains just data. Its relationship to reality is still questionable.

We are inclined to believe the latter theory.

Here, in fact, we may have the hint which can make data processing a profession – the profession of people dedicated to ensuring that data presented by them shall reflect reality. That would certainly be a worthy goal.

Computerworld, therefore, commends the IBM slogan, and suggests to all the various professional societies that they take a good look at the implications involved in IBM's distinction between data and reality.

Living With a Problem

(see adjoining letter to editor)

Dear Mr. D'Unger:

I recently came across your cri de coeur for the hundreds of thousands who, like yourself, try to get their names spelled correctly in computer applications. Your case is, of course, somewhat special, as you will undoubtedly agree – perhaps even more special than your other colleagues in misfortune.

Yet, the remedy, we suspect, must be in your hands. Apostrophes do not belong in English names – and most of our business programming is done in English language systems like Cobol. Cobol programmers become leery of apostrophes, also – although in general there is no true reason for them to do so in this case.

The real problem is in sorting routines. You simply would not like, we suspect, to be found among the "Us," with no mention of the "D" left. You don't like being found among the "Ds" at "DU." But who would ever find you at "D'U" in either the "Us" or the "Ds?" Where would "D'U" fall? And how would we program our systems to get you there anyway?

Half the time your name would appear with a space on one side or other of the apostrophe, and the other half it would appear with no space at all involved. The result would be absolute chaos.

It would be nice if something else was really practical, and perhaps one of our readers has a more constructive suggestion for you. Unless they do, however, we suggest you channel your efforts into living with the problem, rather than fighting for the right to be different.

Au revoir, mon brave,
A poor English-speaking computer

'Sorry, But I'll Have to Take Your Weapon...

Letters to the Editor

Identity Crisis Concerns Name

I have a complaint regarding computers. It appears to me that the matter regarding proper names could be a serious legal one.

My name is Robert M. D'Unger, and in the use of computers it appears as "ROBERT M DUNGER" or "ROBERT M D UNGER," each of which is incorrect; and the reason given me regarding this is that there is no provision for an apostrophe in the computer system. (Yet, I believe that a decimal point is used involving figures.)

With thousands of names in which an apostrophe is part of the spelling of the name, it seems inconceivable that an omission such as this is legally acceptable. Is it possible to obtain some explanation as to why this cannot be corrected?

Robert M. D'Unger

Arlington, Mass.

See editorial. Ed.

IBM Thrives on Competition

The letter from Johnnie Jackson, chief of data processing, Walter Reed Army Medical Center [CW, Feb. 28] was ridiculous. To say that IBM should be protected by legislation from "parasitic competition" is really the height of naivete.

IBM has been responsive to the customer both service- and price-wise only because of the "parasites." Several years ago, an IBM 2420-VII tape drive rented for $1,020/mo and there was no such thing as a fixed-term plan with reduced rates. When other manufacturers began to give IBM serious competition, they were forced to offer a better tape drive (the 3420) and at a much lower price. The same thing happened with many other types of equipment.

Each IBM development has been in response to healthy competition in the industry. Competition is what keeps corporations honest, not their inherent feelings of goodness toward mankind.

Jackson's letter was especially distressing since he is a representative of the U.S. Government. As a taxpayer, I resent his attitude toward an industry that saves the government millions of dollars a year. I hope his attitude reflects only his personal bias, and not that of the U.S. Army.

Sharon K. Ray

College Park, Md.

QTRAN a Helpful Program

The Feb. 21 issue contains an article by Miles Benson concerning a project and/or program called QTRAN. The third paragraph from the end of the article concludes that "QTRAN was, quite simply, worthless."

Let it be known that there actually exists a program called QTRAN, a concise description of which appeared in 1966 in a book published by UCLA entitled *"A Study of the Aviation Mechanics Occupation."*

QTRAN was the basis of the program used to analyze the input and prepare the output for the report produced by this study.

An extended version of QTRAN proved to be quite valuable in our effort to translate programs from one machine language to another.

E.W. Banhagel

Los Angeles, Calif.

For obvious reasons and with all good intentions the article chose to disguise the real name of the program. As fate would have it, it is truly a small world. Our apologies. Ed.

Sensibly Speaking, IMS Was Right

Regarding the article, "Accounting System Growth Monitored by Manager Pairs," [CW, Feb. 28], I would like to clarify my statement that I did not think IMS was the best technique for the current operation.

The accounting system did not in and of itself necessarily justify IMS, but because of future plans for systems that would depend heavily on IMS and interface with the accounting system, it made a great deal of sense to use IMS right from the start. This would then save Notre Dame a great deal of time and expense on interface later on.

James F. Donnelly
Systems Manager

Keane Associates
Wellesley Hills, Mass.

Setting the Record Straight

Thank you for all the nice things you said about the Corporate Shareholder System package at Bendix in the Feb. 28 Special Report. However, I think we won the battle but lost the war.

The system is the PMI Corporate Shareholder System (CSS) now installed in over 70 installations. The rights and responsibility for this system rest with Programming Methods, and not with our close associate, Stockholder Systems, Inc., as indicated.

Edward Opengart
Senior Vice-President

Programming Methods
Division of GTE Information Systems
New York, N.Y.

Stockholder Systems, Inc. continues to service Bendix and several other CSS package users, on behalf of Programming Methods which acquired marketing responsibility for the package after MSA, the original vendor, went bankrupt.

Bendix's Jack Patterson also noted that the payroll system his company uses was acquired from Computer Sciences Corp., not MSA as he first reported. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

...By Any Other Name

Can 360 Become a 370? DAT Box, Add-Ons Say Yes

The Taylor Report

By Alan Taylor, CDP

Much work has been done recently on determining the impact of the 370s, and in particular the impact of the new virtual storage systems.

Unfortunately, however, very little consideration has been given to a very basic question – Just what is a 370? I know it may sound silly, but then so do a number of items about computers.

Computers are like nothing else when it comes to classifying their value, a problem many of us have to face daily. Certainly we have to face it when the auditors come around.

The fact is, labels put upon computer systems are quite arbitrary. Not long ago there was one computer sold under different names by both Control Data and NCR.

The manufacturers often change one computer into another one. They call it upgrading – if they let the user know about it. Privately, it is called "hobbling," when the new computer is really the same one with a few wires disconnected, or "salvaging" when the item is reconfigured.

The term is unimportant. The fact is, computer hardware is capable of being changed from one machine into another.

In the old days, when the alchemists went looking for a "philospher's stone" that would change lead into gold they called it transmutation. We still refer to transmutation when one element is changed into another. But few of us realize that computers, as well as elements, can be transmuted.

Clearly, if computers can be transmuted, any study regarding 360s and 370s should be considered in the light of the definition of a 370, and whether 360s or any other systems can be "transmuted" into 370s.

Such machines have been transmuted and have been quite successful. Last year IBM claimed such systems could not be maintained, but history (which I have checked) has shown that once again IBM's technical experts were wrong.

Already machines such as the CHCS accelerated Model 30s are now running Operating System programs at rates only a few percentage points below the throughput of the Model 40.

This makes it rather incorrect to label them "Model 30s." A little bit more and they will be – in users' eyes – Model 40s.

It is becoming clear that 360 computers – like some elements – *can* be transmuted.

So much for the 360 question. Now we face a similar question as to what a 370 really is.

Possible Approaches

There are a number of ways the question can be approached. For instance, it can be approached from the technicalities of 370 engineering, the characteristics of the different models, the memories, etc.

From an engineering point of view, 370s can be regarded as enriched reconfigurations of 360 hardware. The use of the M-9 memories from the 360s in some 370s, albeit with an improved control system, is an example of this type of process.

Yet, from the users' point of view, this does not seem very relevant. Recent surveys indicate users first decide on the performance characteristics they want in their own installations, and then look around to find out where they can obtain them.

If they like a 370 characteristic, it will be related to a 370 performance characteristic, not an engineering characteristic. So it is 370-style performance, from the eyes of the users, that will determine the answer to the question of the real nature of a 370.

It is generally admitted that users, at least until last August, looked at the 370 as simply a speeded-up version of the 360. The performance characteristics were the same. There was no particular attraction for the 370 system, as such, that could not be obtained by adding additional memory on the 360s, through third-party leasing, etc.

360 Users Happy

Many 360 users did in fact do this, and in a recent market research report 360 users said they felt they were ahead of users of unliberated 370s as far as price/performance is concerned. Until August, then, there was no doubt that the liberated 360s from the leasing companies were still going to be an effective part of our computer resources.

After last August, however, the nature of the 370 performance changed somewhat. Virtual storage, of course, is an old effort, but now IBM offers it clear and loud instead of in the quiet way it has been doing since 1965. The virtual 370s even have software.

One thing the new virtual 158 and 168 systems do not have, however, is any official performance figures. The instruction times of the 158 and 168 were still not available last month, some six months after IBM started selling them.

One result of this is that accountants who use the computer reports distributed through the American Institute of Certified Public Accountants in order to evaluate computer inventories find asterisks where performance figures should be, together with a vague extract of an IBM press release.

Virtual systems, the editors of the computer reports commented, often result in increases in hardware costs and degradation in performance.

Computer EKG, of Cleveland, Ohio, measured the virtual storage performance of the 370/147 systems in December 1972. In the notes of the engineer who performed the tests I find a comment that the problem state was approximately doubled when the dynamic address translation (DAT) was in full operation. (See chart) This is certainly important taken in conjunction with the long delay in announcing the timings of the 158s and 168s.

It now looks as though the key characteristic of the new 370 – its ability to use virtual systems – can in many cases effectively nullify the very performance improvements originally offered by the 370 system's internal speed.

As a result, the price/performance situation remains very much where it was before the virtual systems were announced and, if anything, has moved in favor of the 360s.

Performance, Price/Performance

This would greatly help the leasing companies, except for another often overlooked point. Although it is customary to believe that computer procurements are handled on a "price/performance" basis, this is not true. In fact, they are handled on a "performance, price/performance" basis.

The first thing the user wants his computer to do is run the programs he wants, when he wants. That is his idea of performance. Only after this prerequisite has been satisfied does price enter into the picture.

The new 370s do have some performance characteristics that the old 360s do not have. This can be important. For instance, the new 370s will have the capability of running the virtual operating system, and mixes of programs that require virtual operation.

But it is also possible that the liberated 360s may get this capability. I hear it is now possible to have Dynamic Address Translation boxes (the keystone of virtual memory operations) added to 360s.

We already know the 360's internal performance can be drastically improved. We also know there is little difficulty in adding the few additional 370 instructions necessary to run user programs.

So what do we have when a 360 system has been modified so it has the same characteristics as the 370?

As far as I can see, we have a 360 transmuted into a genuine 370. In fact, we may have a 370 that is superior to the IBM offering, because the transmuted 360 is open to still further improvements – at reasonable cost.

And I am not alone in this view. I was recently talking to the president of a large computer market survey firm. In discussing a study on users' reactions to 360s and 370s he pointed to the fact – which really initiated this article – that something that runs 370 programs is a 370. A really updated 360, he said, is therefore really a 370.

Computers – unlike lead – can be transmuted. How should auditors evaluate the DP philosopher's stone?

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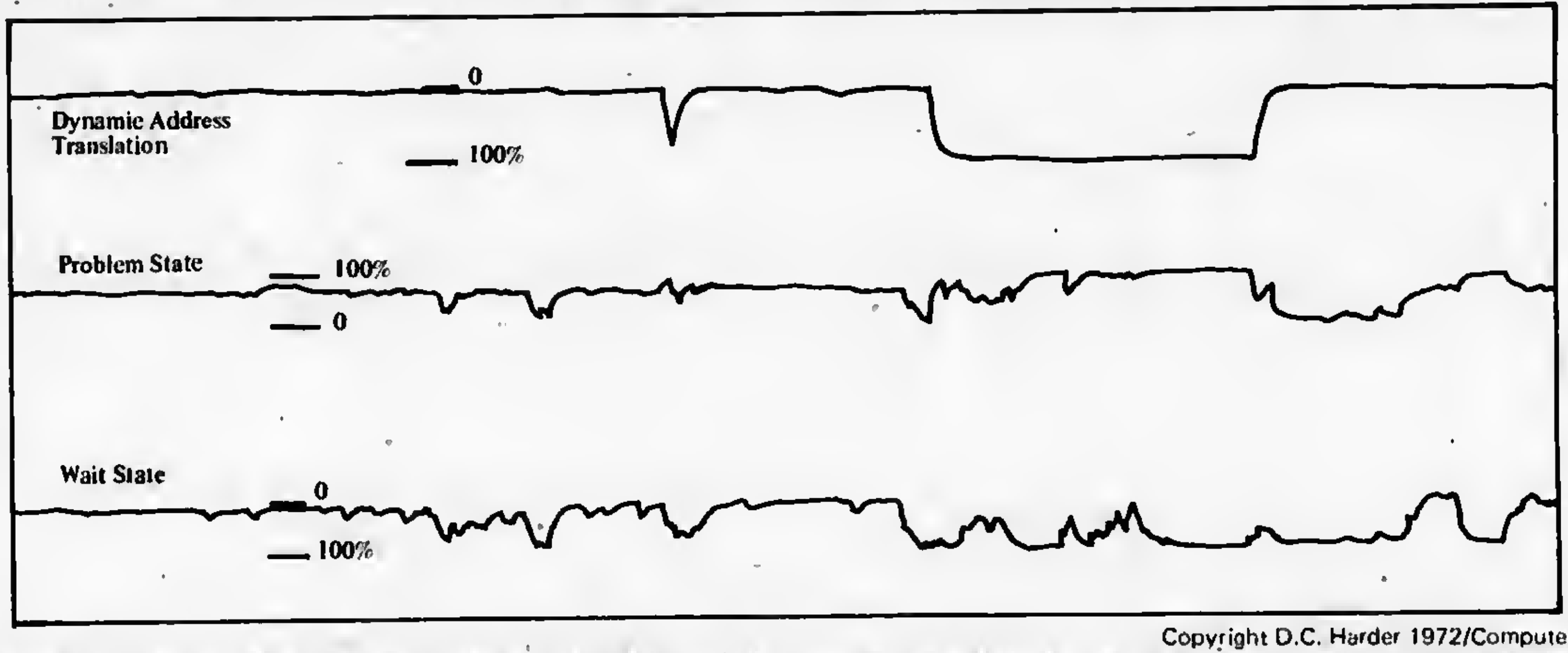

Copyright D.C. Harder 1972/Computer EKG

These traces of the virtual storage performance of an IBM 370/147 were obtained in December 1972 as part of a larger study by Donald C. Harder of Computer EKG, Cleveland, Ohio. The six-hour traces can be considered in two portions – while the Dynamic Address Translation is in operation (the third quarter of each trace) and while it is not.

Letters to the Editor

'Parasitic Competition' Is Free Enterprise

Re: Johnnie Jackson's letter [CW, Feb. 28]. Jackson does not understand the American free-enterprise system. What he calls "parasitic competition" on the part of independent manufacturers of IBM plug-compatible equipment and third-party lessors is a logical outgrowth of that system.

Competition in a free marketplace is the basic and major force behind technological advancement; the major beneficiary of such competition is the end user who gets a more powerful, versatile product at a lower cost.

As such, competition should not be hindered by legislation as Jackson suggests. Instead, the Justice Department should pursue that course of action which ensures free competition – which is exactly what it is doing.

Stuart D. Abramson
Applications Analyst
Control Data Corp.
Dayton, Ohio

Users Foot the Bill

How can Johnnie Jackson rationalize that, when the buyer has paid IBM its *full asking price* for a system once, the buyer has "provided none of the effort that goes with the manufacturing of a computer." Presumably, Jackson intends manufacturing to include the "researching, designing, developing and marketing of these sophisticated systems." Who but the buyers provide the funds for "manufacturing," etc.?

If Jackson is such a sympathetic person, I suggest that sympathy be expended on those other mainframe competitors of IBM who must perform these same functions ("researching . . . ") also at great cost.

None of these competitors was able to capture as much as 10% of IBM's total without acquiring another major competitor's base.

Should the Department of Justice protect IBM from "parasitic competition?" IBM, when it notices the pinprick of the competition, lashes out and effectively squashes it.

And who pays the bill for this success? You, Jackson, and tens of thousands of other users who pay the premium IBM can command because of its effective market monopoly.

Leo J. Higgins
President
Computer Industry Consultants, Inc.
Minneapolis, Minn.

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The Professional's Viewpoint

Which Society Should DPer Join?

By Chris Coddington
Special to Computerworld

I am a programmer analyst maintaining a Cobol compiler for a major computer manufacturer and a CDP holder. I am a member of the DPMA and have been for many years. But there are a number of different organizations, each having essentially the same goal and all aimed at recruiting the same individual.

This is presenting myself and other professionals with a problem as to which we should join. I do not want to be the type of person who joins everything in sight and is then the chronic non-participating member. Where do I belong?

I don't know, but being an analyst, I have analyzed the situation. Here is my analysis giving the pros and cons of each society from my point of view.

- Data Processing Management Association (DPMA) – The leader by age. It has an excellent magazine, but DPMA has high dues, and is not progressive in professionalizing the industry.
- Association of Computer Programmers and Analysts (Acpa) – Could be a good place for me. I program and work extensively with programmers and analysts. But I don't see Acpa doing a lot.
- Society of Certified Data Processors (SCDP) – This should be the place for me. I hold the CDP and the SCDP certainly is active, and it is concerned with professionalism. But, it is only a side-kick to DPMA. The SCDPers should have worked with DPMA when they felt DPMA did not serve the needs of the CDP holder.
- Society of Professional Data Processors (SPDP) – Much the same regarding the SPDP as the SCDP. It is also active and interested in professionalism. However, it exists only because its members could not be members of the SCDP.
- Society of Data Educators (SDE). – The SDE might feel I should join it. I do teach occasionally and am involved in data processing education. But, frankly, I don't find myself interested in it.
- Association for Computing Machinery (ACM) – ACM ranks in age with DPMA. But it also has not been progressive with professionalism and has high dues.

So where do I stand? The analysis does not give me an answer at all. True, it shows that both SCDP and SPDP are interesting to me. However, they will not get my money until they get together. Then I might join and help them be an effective force for improving DPMA and becoming a part of DPMA.

Frankly, that is what I urge. In the interests of the profession, I think Alan Taylor, CW's columnist, could be an important force in accomplishing that end. But in the past, I have been amazed that Taylor has never seen fit to question the credibility gap involved in the existence of so many societies, although he strikes hard at the problem. But he just discusses it, and then totally fails to stick his neck out and say it.

So now I have said it.

Chris Coddington is vice-president and membership chairman for the San Gabriel Valley Chapter of the DPMA.

Letters to the Editor

CP-V Operating System Is Superset of UTS

The recent article [CW, Feb. 21] on CP-V, the new Xerox virtual memory operating system, contained several errors.

The article compares UTS to the IBM DOS/360, and states, "There will be no further development of UTS." The fact is, as the Xerox news release noted, "CP-V is an outgrowth of UTS – a field-proven operating system that not only met all of its original design objectives but, in fact, exceeded its objectives in a number of areas."

Thus, CP-V could be accurately described as a superset of UTS. All programs which have been developed by the numerous installations which now utilize UTS can, as a consequence, be run without change on CP-V.

The article further states that "maintenance of UTS – and XOS as well – should continue to be available as needed and without cost." In fact, because UTS and XOS have been replaced by CP-V, they will no longer be supported products.

However, because CP-V is a follow-on to UTS, customers now employing these programs will be furnished CP-V without cost.

Jerry Packer
CP-V Product Manager
Xerox Corp.
El Segundo, Calif.

RPG II Users Should Form Own Society

Here's another vote for RPG II for DOS [CW, Feb. 7].

How many times have you seen a Cobol programmer struggling with his FDs (we won't even mention the effect of packed fields), while the RPG II programmer has already completed several programs of similar complexity?

In addition to the OPEN and CLOSE verbs so desperately needed, what about communications? Why doesn't IBM implement the same facilities available to System/3 users for us DOS guys? Even products such as CICS do not recognize the sophistication of IBM's simplest compiler.

The professional societies are no better. Being a member of DPMA and Common, I'm consistently disappointed by their lack of endorsement of a language as efficient and easy to use as RPG.

RPG II users should band together and form their own society since no one else seems interested.

E. J. Krayer
DP Manager
New England Petroleum
New York, N.Y.

Some DP Uses Cruel

Anyone who watches TV or reads the newspapers knows the cruelty and suffering to animals caused by the fur business. Now, in the Feb. 28 issue of *Computerworld* we are told that the Fouke Co. is using a computer to make its sealskin business more efficient.

I am sorry to learn that the computer, which has the potential for doing so much good, is being used in such a barbaric business.

David W. Adams
Los Angeles, Calif.

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Book Marks

(This column will appear from time to time to provide snapshots of current books that appear both useful and readable.)

Cobol Support Packages Reviewed

Cobol Support Packages, by Stanley M. Naftaly et al; John Wiley & Sons Inc., New York; 180 pages; $12.95.

This is a revised, updated and hardcover edition of the articles that appeared last year in *Data Processing Digest* edited by Richard G. Canning, who is also one of the editors of Wiley's Business DP Library.

Naftaly and his coauthors review, one at a time, the types of support packages actually available to aid both programming and productivity in a Cobol shop. They make liberal use of comparative charts which are large enough to read comfortably; unfortunately the size of the charts may be responsible for the book's size which is somewhat awkward.

Operating Systems Revisited

Operating Systems, A Pragmatic Approach, by Harry Katzan Jr.; Van Norstand Reinhold Co., New York; 360+ pages; $13.95.

This comprehensive review uses IBM's OS/MFT as the illustration. As a result, readers who operate in that environment gain a new perspective on their system in language that is more "comfortable" than most of the manuals IBM has released on the subject.

The author devotes a fair portion of his text to the concepts and IBM implementations of virtual storage, including specific comments on the file access methods and organizations that are or will be available to the VS user. There are numerous and understandable diagrams throughout.

The makeup and functions of a time-sharing operating system is described in terms of IBM's TSS, which is somewhat unfortunate in view of the vendor's effective abandonment of that project.

A Logical Fortran Primer . . . Plus

Flowcharting and Fortran IV, by Perry Edwards; McGraw-Hill Book Co., New York; 147 pages; $3.95.

This slim, soft-covered book is for beginning programmers but avoids the dreary rehash of DP history and EAM operations so typical of primers.

It jumps right into the explicit step-by-step type of logical approach a programmer must follow to get work done on a computer. Edwards uses Fortran to illustrate his points, but this isn't a Fortran text. He points his readers to vendor manuals and other texts if they want to really know the language.

Each chapter ends with practice exercises and an appendix includes answers so the reader can check his understanding of the subject matter.

Data Bases May Help, but...

DED Seen as Key to Data Management

By Don Leavitt
Of the CW Staff

GAITHERSBURG, Md. – Management generally is very concerned about allocation and control of personnel and equipment in a DP operation, but is just as likely to leave data resources – the basic element in *data* processing – "virtually unmanaged." And this generates problems of data fragmentation, according to Charles J. Bontempo of IBM's Federal Systems Division.

Data base management systems are often cited as solutions to this problem, particularly when there are several interfacing applications, but a data element dictionary (DED), built and maintained manually or on the computer, may be an even better approach, he felt.

Writing in last month's issue of *Data Management*, the analyst said it is "hard to overstate" the impact of the development of multi-application systems on data resources, but the result often is the introduction of data elements on an ad hoc basis.

Fragmentation of responsibility for data may cause two contradictory situations. Programmers or analysts in one area may overestimate the cost in time and money needed to extend their application, because they are unaware the data required is already accessible through another application.

Or, DPers in one area may abandon maintenance of a given series of data fields that is no longer pertinent in their application, without realizing that another application had been depending on that maintenance.

When management has no means of monitoring and controlling the users of its data resources, it is unable to notify the users of anticipated changes in the data. Readily available solutions may be adequate without being the best or least costly in a particular environment, Bontempo said.

The available remedies may provide technical solutions to the fragmentation problem, he admitted, but they don't necessarily provide true management solutions.

Duplicate data, for example, is not always undesirable, he said. There are times when it is desirable to maintain and process duplicate data. What is needed to prevent accumulation of truly redundant data is an "unequivocal, clear description of the data resources and the uses to which the data is put."

If management's real objective is control of the data resources, rather than mere elimination of redundant data, the selection of the method of control must be based on relevant evidence and that, according to Bontempo, is where the DED comes into play.

Conceptually DED is a single authoritative source of information on data elements, their use and their interrelationships, in a standard organization and format.

The DED should be organized into three basic sections to accommodate data element entries for input processing, data base residency and output processing. Unique labels should be used to identify elements even when they appear in more than one section; but a documented list of synonyms and cross-references should be part of the DED.

Bontempo concluded his article with a series of questions that should help interested installations in developing their own DEDs.

'Scope' Test Series Extended To Evaluate Systems Analysts

NEW YORK – Two new multiple-choice tests from Software Sciences Corp. are designed to help DP managers measure proficiency of systems analysts.

These tests are said to produce a detailed and objective profile of the individual analyst's effectiveness in problem definition, data organization and analysis, feasibility report preparation and use, design procedures and system testing and implementation.

About the only area untouched by the tests deals with how well the analyst relates to other people as he pursues his work.

The systems analyst tests are an extension of Software Sciences' System 360/370 Computer Operator, Programmer Evaluation (Scope) test series.

In addition to the analyst's tests, Scope includes programmer-oriented exams on any of the several forms of Cobol, Fortran, PL/I and Assembler Language. Operating System facilities, debugging techniques and telecommunications systems are covered in other tests.

Under Scope, operators can be tested for their knowledge of operator functions, operating system interface requirements and Hasp.

Where appropriate, the tests are available in VS, OS and DOS versions, a spokesman said. The tests can be used individually or combined into a series to for a complete evaluation system.

Scores are charted on profile forms which rate each participant's technical knowledge and compare it with the capabilities deemed appropriate for his position.

Scope is available on a service basis, in which Software Sciences provides the evaluations, or on a licensing plan in which users retain the evaluation materials on their own premises. Under either plan, the company periodically reviews and updates the test questions.

Scope license fees start at $2,000 per individual test, but users may acquire the rights to any nine tests for $11,000, or to all tests now in the Scope library for $20,000.

The firm is at 888 Seventh Ave., 10019.

360/20 Utility Costs $100

EDMUNDSTON, New Brunswick – A parameter-card-controlled utility program that provides IBM 360/20 users with a wide range of gang-punching/reproducing options for card I/O is now available for $100 from the developer, Franz L. Papst.

Using at least two, but no more than four specification cards, the program can reproduce any number and combination of columns. Alternatively, it can be used to gangpunch specified data into or "erase" data from any columns, Papst said.

Other capabilities include the offset-reproducing of any field up to 15 columns long, from any position in the original data cards into any position in the cards being generated. New data can be gangpunched into the columns on the new cards from which the offset field was taken.

Papst's program can punch as many as 999 duplicates of each original card and punch consecutive four-digit numbers into columns one-to-four of the duplicates.

Any of the possible operations can be carried out simultaneously, provided they are not mutually exclusive.

Control cards may be interspersed through the deck of cards to be processed, allowing a variety of jobs to be done in a single run.

The program is written in RPG and has been implemented on a 16K disk-oriented 360/20. Papst indicated he will modify the logic to work on a card system.

For $100, a user is provided with an object deck of the program and a supply of the specification card-coding sheets which double as the only generally available documentation.

Papst works at Fraser Companies Ltd., Rice St., but can be reached through RR3, also here in Edmundston.

For MMS General Ledger Users 1973 Will Be A Happy Year.

Since January, 10 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the $800 million class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

So they chose the MMS General Ledger. A software package – for companies with champagne tastes and beer budgets.

The reasoning is simple: it costs less to use a proven package (more than 60 users have installed it in the past three years). And it fits your needs rather than the other way around.

For MMS General Ledger users, 1973 will be a happy year. Call or send in the coupon today. Then get ready to join the celebration. Cheers!

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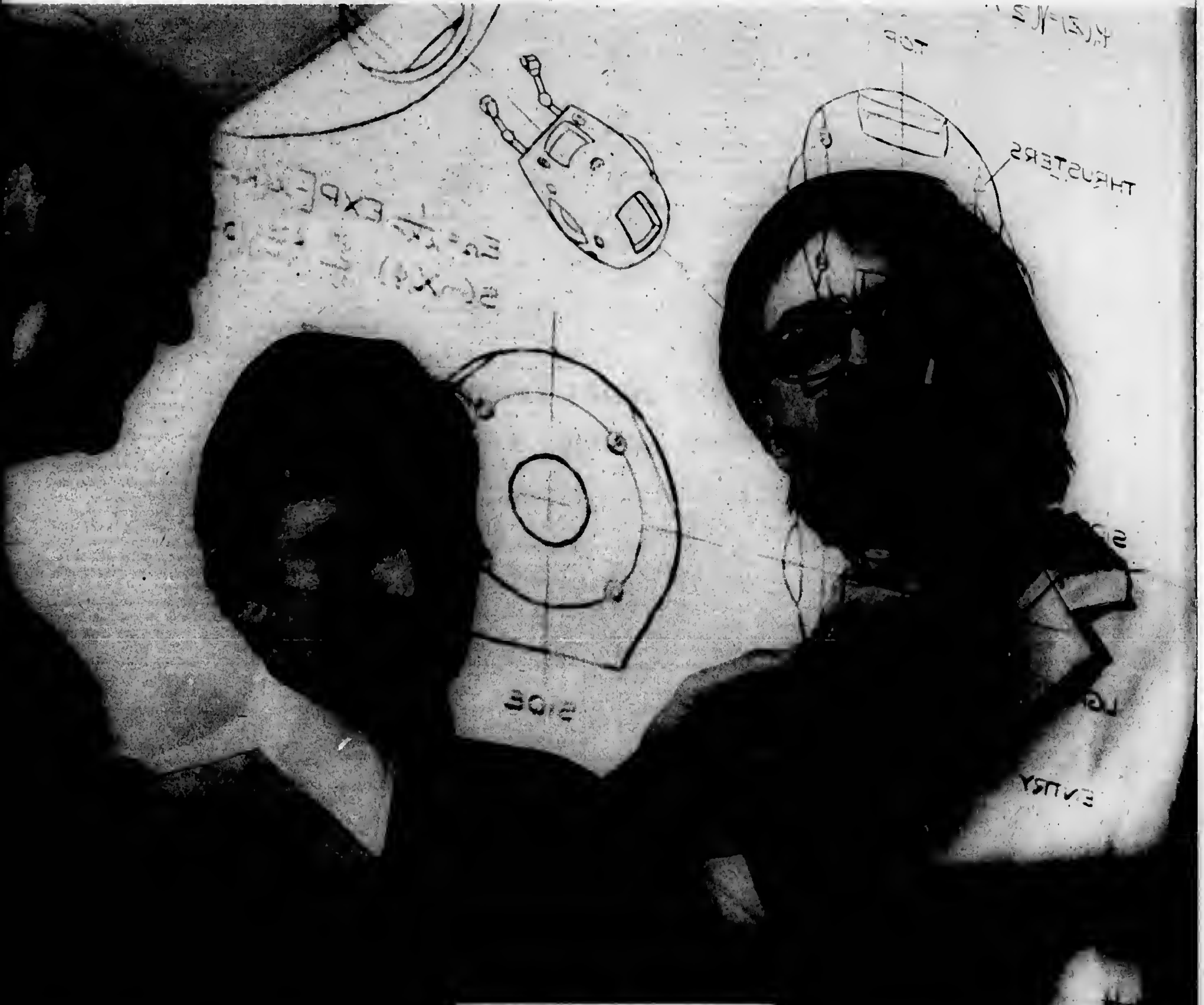
People who think this far ahead are thinking BASF/2000A.D.



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Data Briefs

Hazeltine Terminal Users Offered Impact Printer

GREENLAWN, N.Y. – An impact printer for users of the Hazeltine 2000 Video Display Terminal is available from Hazeltine Corp.

The unit comes in two configurations: the Model 1200 operates at 120 char./sec with 80- or 120-column carriage width; the Model 300 prints 30 char./sec on carriage widths of 80 or 118 columns.

Forms control options include horizontal tabulation and selective vertical tabulation.

The Model 300 leases for $113/mo on a one-year contract including maintenance, or can be purchased for $3,400. The Model 1200 rents for $141/mo on a similar contract or costs $3,995.

Communications Week Theme Set

WILMINGTON, Del. – "Data and Voice Communications User Selection Techniques" will be the theme on the 1973 National Communications Week.

Sponsored by the Communications Systems Management Association, the "roving" one-day seminars will be held June 25-29 in New York, Philadelphia, Washington, D.C., Chicago and San Francisco.

Seminar topics will include defining system objectives and cost requirements, hardware selection, vendor evaluation and final system implementation.

The seminar costs $85 for CSMA members and $95 for nonmembers. However, for registration forms received after May 1, 1973, both fees go up another $10. Further information is available from CSMA, 1102 West St., Suite 1003, 19801.

CRT Terminal Replaces TTY

SOUTHFIELD, Mich. – The Model 3001 CRT communications terminal from International Terminals Corp., a subsidiary of Bendix Corp., is designed as a direct teletypewriter replacement.

The unit displays 80 char./line on a 16-line field. The characters are 25% to 50% larger than those of comparable terminals, the firm said.

The terminal operates in full- or half-duplex mode and standard features include blink, automatic key repeat, addressable cursor and switch-selectable send rates.

The Model 3001 costs $2,300 from the firm at Bendix Center, 48076.

Terminal Guide Published

LEXINGTON, Mass. – GML Corp. has published a guide to single-station remote terminals.

The *Terminals Review* guide includes cost and technical data on printing and non-printing terminals. The publication is issued quarterly and costs $28/year. The firm is at 594 Marrett Road, 02173.

For PDP-11 Use

PHI Adds Concentrators

By Ronald A. Frank
Of the CW Staff

TEWKSBURY, Mass. – PHI Computer Services has added a remote concentrator software package to its 3700 telecommunications processing system. The 3700 system provides the necessary software to use a DEC PDP-11 for the same functions as an IBM 270x, 3704 or 3705.

The concentrator capability handles messages at more than one remote terminal and transmits the concentrated data to a front end at the central site over one high-speed line.

The concentrator package can run on the PDP-11 models 10, 20, 40 and 45 and the system can support most major IBM terminals that can run with an IBM line controller. The 3700 system can operate with both 360 and 370 host CPUs.

Loader Feature

Three other communications packages are available as part of the 3700 system. The 270x emulator package allows users to connect their PDP-11 directly to the multiplexer channel of a 360/370 to perform the function of an IBM line controller with more features at less cost, the firm said. The emulator costs between $6,000 and $10,000.

Used with the front-end communications software package, the PDP-11 performs polling, error recovery, code conversion and replaces IBM Btam and other access methods. This software, ranging from $20,000 to $38,000, allows the PDP-11 "front end" to operate with software written in Cobol, PL/I and BAL.

'Intelligent Emulator'

The third package is an "intelligent emulator" that takes larger transient Btam routines and shifts these functions into the PDP-11 front end. While similar to the emulator package, this software contains additional features including an "interface" to IBM's CICS system.

In network configurations the mini together with the appropriate PHI software costs about 10% to 40% less than comparable front ends, a PHI spokesman said. The mini-based system also costs less than an IBM 3704 for networks with 15 or more lines.

Another capability of the communications software allows users to operate with dual PDP-11s to perform both emulation and front-end line control functions, a spokesman said. When used at a central site, the concentrator package demultiplexing software can handle data up to 50 kbit/sec using a synchronous line discipline.

PHI supplies only the communications software packages. The firm is a division of Wang Laboratories and is at 836 North St., 01876.

Datran Is Ready But Rates Aren't

VIENNA, Va. – Datran has told prospective users it is ready to begin specialized common carrier service in some cities late this year. The service is scheduled to be initiated in eight cities [CW, March 7] but proposed tariff rates were not available.

Datran will not be able to begin service until its rates are filed and approved by the Federal Communications Commission. The carrier will not be ready to make an official statement on its proposed rates until September 1973, a spokesman said.

Initial services will be private-line facilities operating at 2.4-, 4.8- and 9.6 kbit/sec and a "special" offering at 1.344 Mbit/sec, Datran said. Although the Datran network design provides for switched digital service, the first customers will be provided with nonswitched lines similar to other private-line carriers including AT&T and MCI.

"We are ready to begin working with customers now," the spokesman said.

Bell Protection Plan Suspended, FCC May Hearing to Decide Need

WASHINGTON, D.C. – The Federal Communications Commission has suspended AT&T's plan to install equipment for the prevention of harm on the lines of private-line customers.

Originally scheduled to take effect Feb. 15, the protection plan was set for a hearing because AT&T has not made a "persuasive showing" that protection is required "in all cases where customer equipment is connected directly . . . to private-line facilities," the FCC said.

The telephone company does not propose to add protective measures to the lines of customers who use carrier-provided equipment even though such equipment may be similar and "equally likely to cause the same kinds of alleged harm," the FCC said.

"It would appear that if there is a real danger of such harm, all services should be protected," the commission said.

The reasonableness of AT&T's plan is in doubt because Bell has said it cannot specifically identify instances of past interference from private-line users, the FCC said. The commission implied that past experiences should provide proof of the harm that AT&T said can arise from customer-provided equipment.

In justification of its protection proposal AT&T told the commission that private line facilities share common Bell System facilities such as "local distribution cables, carrier systems and mainframes, [all of which] are subject to harmful voltages, line inbalance and excessive signal levels."

But the commission questioned why AT&T did not plan to put protective equipment on all facilities instead of specifying only those which use noncarrier equipment. It also questioned why the plan limited protection to customers who install equipment after Feb. 14, 1973. Presumably all customer-provided equipment, regardless of installation date, could be "subject to the same types of harm," the FCC said.

The protection plan was suspended until May 15, 1973, pending the outcome of hearings on the proposal.

Audio-Response Unit Enhanced To Accept Touch-Tone Inquiries

MOORESTOWN, N.J. – Applied Information Industries has expanded the capabilities of its VSC-8000 audio-response system which combines the functions of an IBM 7770 system with the features of an IBM 270x or 3705 controller.

The VSC-8000 can attach directly to either the multiplexer or selector channel of an IBM 360/370 system. The system can accept Touch-Tone inquiries from telephones, generate answers back to the phone or send frequency shift keying tones to produce a hardcopy on a printer or characters on a display.

The VSC-8000 is plug-compatible with the IBM 7770 response system and most programs can be converted directly to the Applied Information system. A synchronous data port capability allows the VSC-8000 to emulate the IBM bisynchronous adapter, enabling the system to handle IBM 3270 CRTs.

The system, which includes built-in modems to allow the user to replace Bell 403, or equivalent data sets, uses a Data General Nova mini with 8K words of storage (which can be expanded depending on the user's configuration). The audio-response vocabulary is expandable in 36- and 72-word increments to a maximum of 288 words.

The system costs from $50,000, depending on configuration.

On a three-year lease/purchase plan, the system could save users almost $7,000 compared with a comparable IBM system, the company said.

IT TAKES A SMART DP MANAGER TO PICK AN INTELLIGENT TERMINAL.

And the reason is surprisingly simple.

Once you lease a communications terminal for a specific job, you'll be asked to use it for other applications, as well.

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Our Intelligent Sycor 340 has 8K bytes of programmable memory that gives you the flexibility to accept those additional tasks. Simple, non-intelligent terminals don't.

With them, what you lease is what you get.

And there are other reasons to choose our 340.

Like an additional 8K bytes of firmware to get you started right away.

Like sophisticated binary synchronous communications procedures to catch transmission errors and retransmit data automatically.

The advantage of unattended communications. To let you send, process and receive data overnight.

And a wide choice of peripheral equipment, including a selection of printers from 30 cps to 300 lpm.

So before you lease a terminal, check with Sycor. We already have more than 6,000 intelligent terminals in use in 33 countries.

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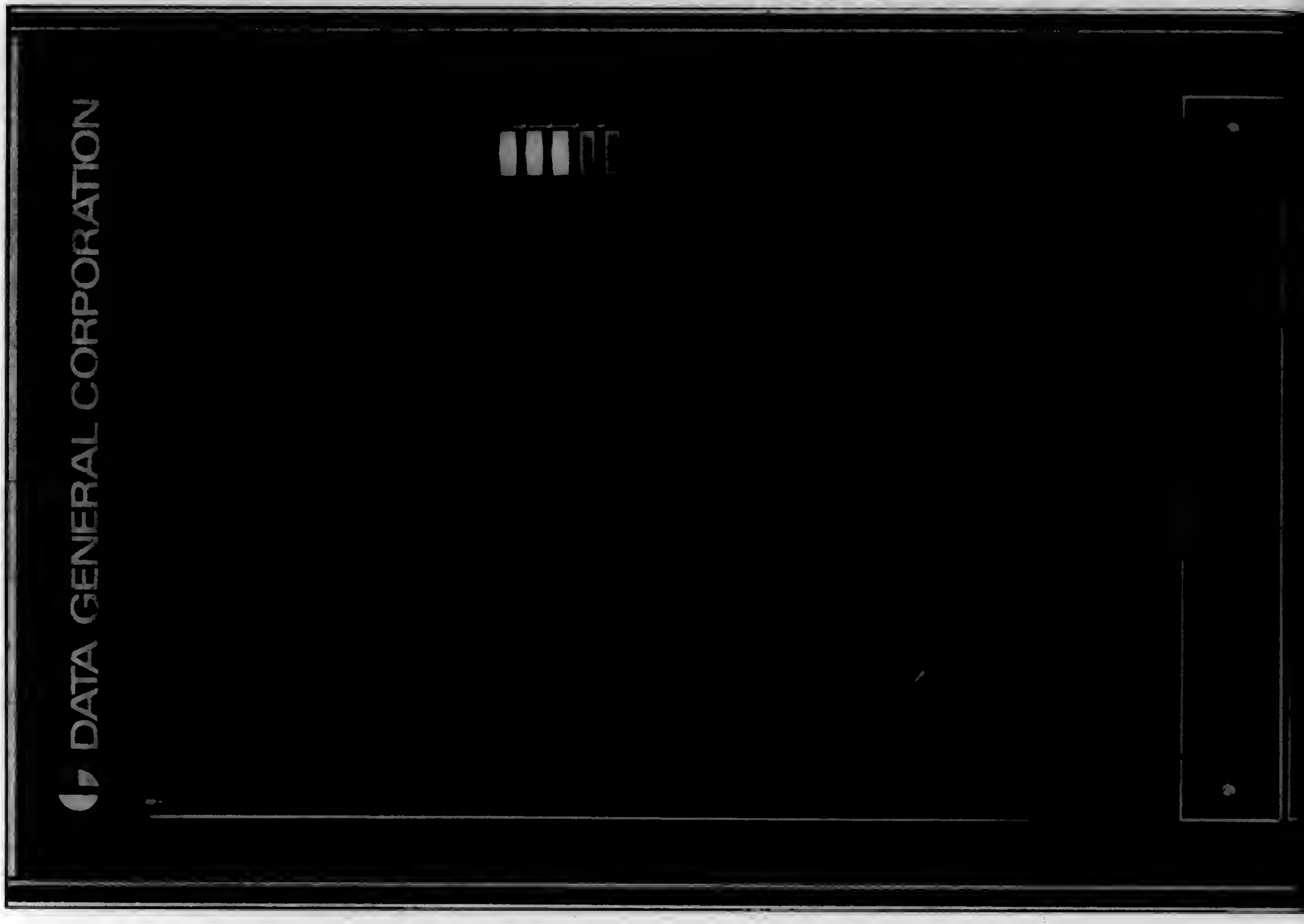


DATA GENERAL INTRODUCES THE LOADED NOVA.

The loaded Nova is the new Nova 840 and the most comprehensive set of software/hardware capabilities ever available with a Data General computer.

It comes with a built-in Memory Management and Protection Unit that lets you expand main memory to 128K 16-bit words. Base price with 16K of memory is $16,530.

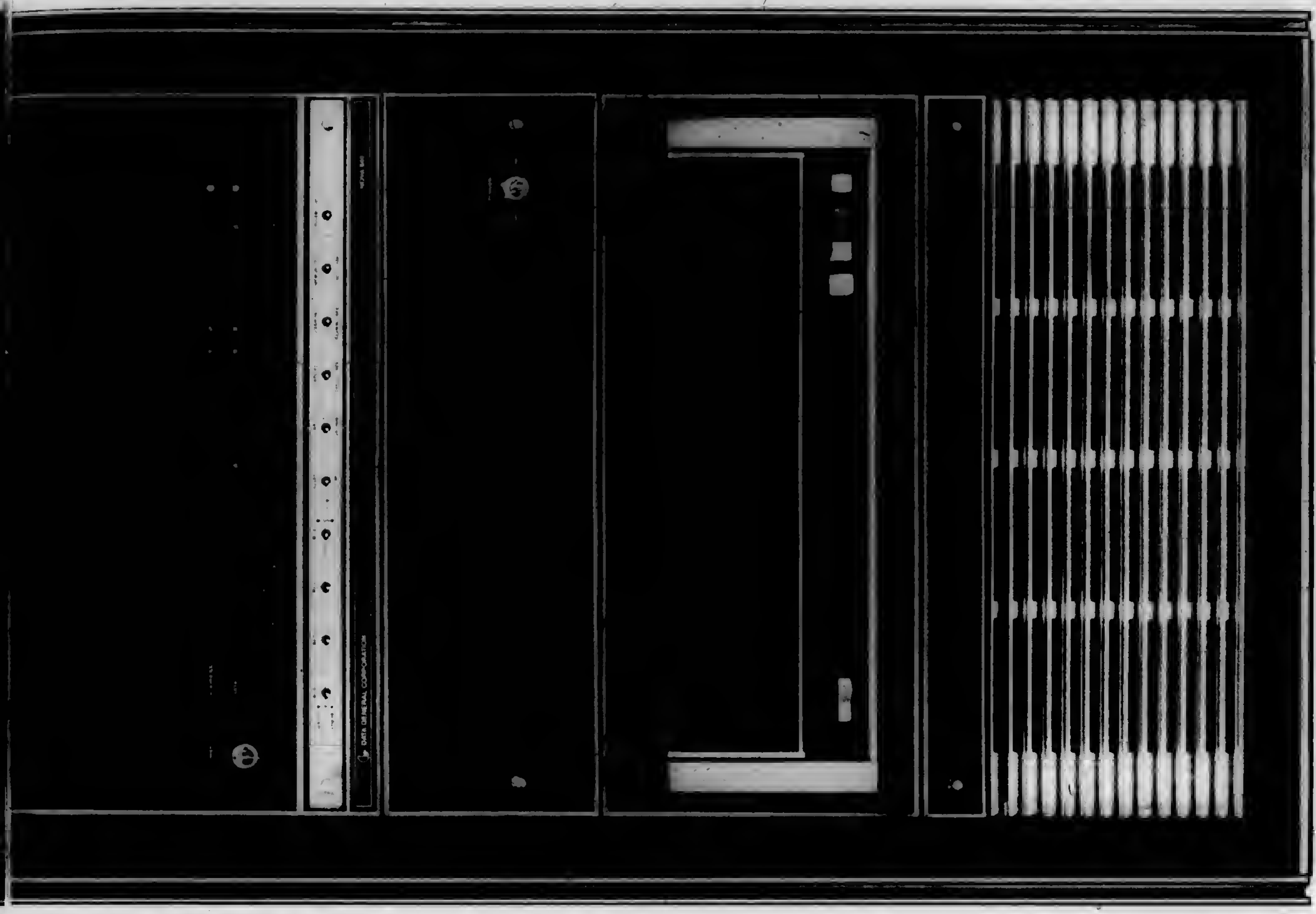
Nova 840 runs a comprehensive Real-time Disc Operating System (RDOS) for dual programming operations.

A new BATCH executive lets you pick your I/O devices, load your jobs, and walk away.

It has our new Fortran 5, Extended ALGOL, Extended Timesharing BASIC, and a whole library of proven Data General software; proven software that we can deliver now.

And our Remote Job Entry software can let the 840 double as a high-powered terminal to a big computer someplace else.

With the right kind of configuration (like the one shown), all that software is available free.



ON YOUR DOORSTEP IN UNDER 90 DAYS.

The Nova 840 in the picture has a central processor with 32 to 64K of main memory, a high-speed Floating Point Processor, hardware Multiply/Divide unit, fast-access disc storage, and 9-track mag tape.

The picture doesn't show lots of the other things you can get with Nova 840: line printers, card readers, Novadisplay terminals, fixed-head Novadiscs, moving-head discs, Nova Cassette tape, communications interfaces.

Nor could we show you the applications and service experience we've developed in the course of building, installing, and supporting over 6,000 Nova computer systems all over the world.

If you're looking for more throughput than you could ever get with a minicomputer, for better access to system resources, at a lower price, call Data General.

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Bits & Pieces

Device Turns Oscilloscope Into Graphics Terminal

HARBOR CITY, Calif. – For $1,095, Data General Nova minicomputer users can obtain an interface that turns any X-Y oscilloscope or larger X-Y display into a full graphics display terminal, according to Megatek Corp.

The BP-721 is equipped with an internal refresh memory which enables the user to plot points, lines, alphanumerics and real-time dynamic displays.

Software is supplied for programming with Basic language commands.

The units are available from 1526 W. 240 St., 90710.

IBM-Type Disks for PDP-15 Users

SUNNYVALE, Calif. – Xebec Systems Inc. is offering IBM-type 2315/5440 disk drives in moving head disk systems for the PDP-15 and PDP-9.

The Xebec 6000 series moving head disk systems are available with a removable disk pack or a fixed cartridge. The series features an average access time of 35 msec and track-to-track access time of 9 msec. Storage capacity per drive ranges from 2.5M to 10M 8-bit bytes.

The Xebec moving head disk systems, including couplers and formatters, will work with any 2315/5440 cartridge drive. Various makes of drives may be mixed within the system in any combination.

Prices for complete moving head disk systems range from $9,975 to $15,850. The firm is at 566 San Xavier Ave., 94086.

Text System Costs $375/Mo

CHATSWORTH, Calif. – The Videotype-I from Lexitron Corp. is a standalone text preparation system consisting of a keyboard device tied to a video display screen.

As text is typed it appears on the display screen to permit editing before hard copy preparation. For example, "edit," "delete," "insert" and similar command keys permit insertion of new phrases or sentences, transposition of paragraphs within pages or to different pages, spreading out text from single to double spacing, justification or right margins, etc., the developer said.

Once edited, hard copy is produced through a command key on the console.

Text data can also be recorded on cassette tape. Each cassette holds up to 30 pages of copy which can be loaded for future applications.

The system sells for around $16,000 or can be leased for about $375/mo from Lexitron Corp., 9600 De Soto Ave., 91311.

Unit Converts Graphic Data

ROCKVILLE, Md. – The Model PF-10D Pencil Follower, a servodriven, free-cursor digitizing system, is available from Computer Equipment Corp. (CEC).

According to CEC, the Pencil Follower converts any graphic data into digital form for computer processing.

Priced from $12,250 to $19,650, each Pencil Follower operates as an off-line digitizer but is supplied with a software support package which can run on most computers with a Fortran IV compiler. Delivery is 30 days. The firm is at 14616 Southlawn Drive, 20850.

Avco Installs MTI Add-On

STRATFORD, Conn. – Avco Lycoming Division has taken delivery of a 1M byte semiconductor memory from Memory Technology Inc. to replace 1M bytes of its IBM 370/155 main core memory.

The MTI-755 Semiconductor Memory Systems are plug-for-plug equivalent to the IBM 3360 Basic Storage Module used on the IBM 370/155, a Memory Technology spokesman said.

For 360s and 370s

STC Offers 6,250 Byte/In. Drives

LOUISVILLE, Colo. – Storage Technology Corp. (STC) has announced a series of magnetic tape subsystems with capabilities identical to IBM's recently announced 3420 tape subsystems [CW, March 14].

Both IBM 360 and 370 users can take advantage of the STC systems.

The IBM and STC systems feature increased data rates and faster access time. The high density and reduced Interblock Gap (IBG) result in triple the storage capacity per reel of tape. New techniques allow packing of data at a density of 6,250 byte/in.

IBM Allows for 360 Users

Following the announcement of STC's tape subsystems an IBM spokesman said "under certain circumstances the new units [IBM 3420s] can be used with IBM System 360 Models 50 through 195.

"The data rates of even the slowest new tape drive – the 3429-4 – exceed the allowable channel rates for CPUs below the Model 50.

"To prevent channel overload in Systems 360/50 and higher, consideration must be given to the other high-speed I/O devices attached to the system, to channel priorities and total aggregate data rate.

"Upon request, IBM will evaluate the user's 360 configuration to determine the feasibility of attaching the new tape units."

The IBG is the length of blank tape needed between data records. The STC tape units use a gap of .3 in. as compared with the previous standard of .6 in. on IBM-compatible tape drives. This reduction is identical to the reduction in IBM's new 3420 tape subsystems.

The IBM drives were announced as being limited to users of System 370/135 and up because of the need for a 3803-2 controller.

For 360 Users

Two models within the STC 3600 series, however, provide a dual-speed capability under program control. This feature allows 360 users to take advantage of the higher 6,250 byte/in. density recording for slower speeds, with the standard 1,600 byte/in. capability available at normal speeds.

Within the STC series, the higher density is offered across six models – 75, 100, 125 and 200 in./sec and the two changeable units. Data rates range from 470 kbyte/sec to 1.25M byte/sec.

Lease prices for the STC 3600 tape system range from $490/mo for the Model 3630 to $715/mo for the Model 3670.

Model	Cost/mo 1 yr. lease	Density (byte/in.)	Data Rate (kbyte/sec)
STC3630*	$540	6,250	470
IBM 3420-4*	$570		
STC 3640*	$595		625
STC 3650*	$620		780
IBM 3420-6*	$660		
STC 3670*	$635		1,250
IBM 3420-8*	$731		
STC 3675	$735	1,600/ 6,250	320/ 625
STC 3685	$855		400/ 780

* For about $20 additional rental, both IBM and STC will provide combination 6,250 and 1,600 byte/in.

Comparison of IBM and STC 6,250 Byle/In. Density Tape Drives

Cost comparison (see chart) indicates the STC units are about 15% cheaper than comparable IBM tape subsystems while operating specifications appear to be identical.

All STC units attach to the STC 3800-4 control unit. This controller can attach up to eight 3600 or the older 3400 tape units. The 3400 line can be field-upgraded to equivalent 3600 models, STC said.

The STC 3800-4 controller leases for $940/mo on a one-year lease which is $100 cheaper than the IBM 3803-2.

Deliveries will start in the fourth quarter of 1973 from 2270 S. 88th St., 80027.

Mini Allows Users to Write Own Instruction Sets

By Michael Weinstein
Of the CW Staff

OCEANPORT, N.J. – A new computer from Interdata incorporates a user-alterable Dynamic Control Store (DCS) which allows the user to write his own instruction sets, special algorithms or application functions.

The Interdata Model 85 is a 16-bit computer with an interleaved MOS/LSI solid-state memory providing a 270 nsec average main memory cycle time.

Capacity is 16K bytes expandable to 64K bytes. Standard features include 16 general registers, 15 of which can be used with index registers; hardware multiply and divide and floating point; direct addressing; 255 I/O interrupts with automatic service routine and 131 user level instructions.

The DCS contains 1,024, 32-bit words of 60 nsec bipolar read-write memory that can be used to produce instructions extending the general purpose instruction set.

Later, these user-written instructions can be modified dynamically without hardware modifications. Instructions are entered in much the same way as standard code – from paper tape, console keyboard, etc.

Standard Software the Same

All existing Interdata and customer software programs now being used on any of the company's New Series processors may also be used with the Model 85.

Interdata 85

This includes the standard Interdata Operating Systems: Basic Operating System (BOSS), Disk Operating System (DOS) and a Real-Time Operating System (RTOS).

Additionally, there are two software packages for direct support of the Dynamic Control Store: Microassembler and Microloader/debug programs.

With these programs no simulator is required since routines can be checked out through the DCS and debugged without hardware modifications of any kind, a spokesman said.

Microprograms in the Model 85 are typically three to 10 times faster than user level software for the same function, the spokesman asserted.

Options for the basic Model 85 include memory parity, memory protect, power fail/auto restart, and a line of peripherals and special modules including dual cassette and a 4,000-channel digital I/O multiplexer.

The Interdata Model 85 will be available in June, 1973. With 16K bytes of memory, built-in teletype interface and DCS, the unit will carry a price tag of $22,800.

The firm is at 2 Crescent Place, 07757.

Univac Adds to 9000 Series

BLUE BELL, Pa. – Univac has added the 9480 to its 9000 series of computers which can be attached to the Univac 8424 disk subsystem. The disk capability has also been added to the older 9400 system.

Operationally, the 9480 is the same machine as the 9400 but the 9400 uses core memory while the 9480 is the first commercial Univac computer to use semiconductor memory.

The use of semiconductor memory makes the 9480 about 10% cheaper than the 9400, Univac said.

The 9480 is available with main storage ranging from 65K to 262K bytes and upgrades come in 65K byte increments. Cycle time is 600 nsec for each two-byte word.

Up to 64 full-duplex communications lines – or 128 half-duplex – can be connected to the central processor. These are connected through one to four data communications subsystems, each subsystem accommodating one, four or 16 duplexed lines.

Operating software is the standard 9400 DOS which allows users to run priority processing of up to five programs concurrently, the firm said.

Also included in the software is the Information Management System (IMS) which is built around DAM, SAM and Isam. The advantage of IMS is that it allows users to take programs from other machines and run them on the 9480 with no programming modifications, a spokesman said.

The Univac 8424 disk subsystem is a large capacity subsystem with about twice the capacity of IBM 2314s, Univac said.

Each 8424 cabinet contains two spindles with 58,352K byte/spindle. The average access time is 42.5 µsec and the data transfer rate is 2.5M byte/sec.

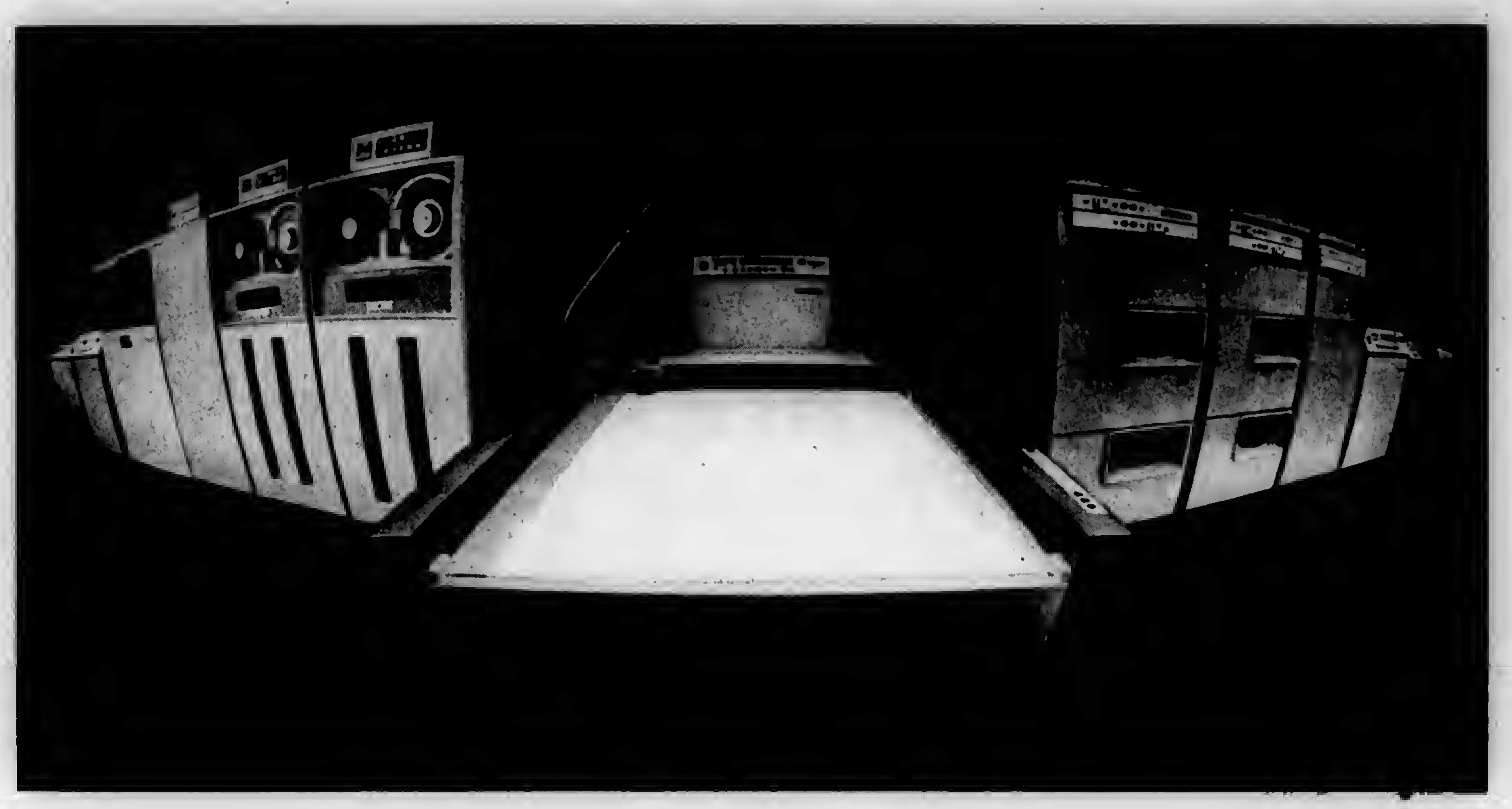
Up to four cabinets – a total of eight drives – can be attached to a 9480 or 9400 system.

The 9480 configured with 8424 drives appears to offer users an alternative to the IBM 370/125 and the lower end of the IBM 370/135.

One major difference between the IBM and Univac machines is in their treatment of simultaneous multijob streams. IBM emphasizes "virtual memory" and paging while Univac stresses a memory management system of segmentation.

Lease price for the Univac 9480 – 65K byte CPU, 2 8424s, reader, printer and punch – starts at about $8,000/mo. on a five-year lease.

A comparable Univac 9400 would lease for about $9,000/mo over the same lease period.



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Disk memory equipment. This was our second area of concentration. In a remarkably short time, we have become the leading independent supplier.

Tape systems. We've recently begun to concentrate on tape. The result is that our new 1040 Tape Drive combines the features of others with our own experience. We intend to be a leader in this field.

The point is we have not grown by accident. Thirteen years after our beginning, we have become a leader in computer peripherals.

For information on peripheral products, call your local CalComp office, or contact California Computer Products, Inc., CW-M3-73, 2411 West La Palma Avenue, Anaheim, California 92801. (714) 821-2011.

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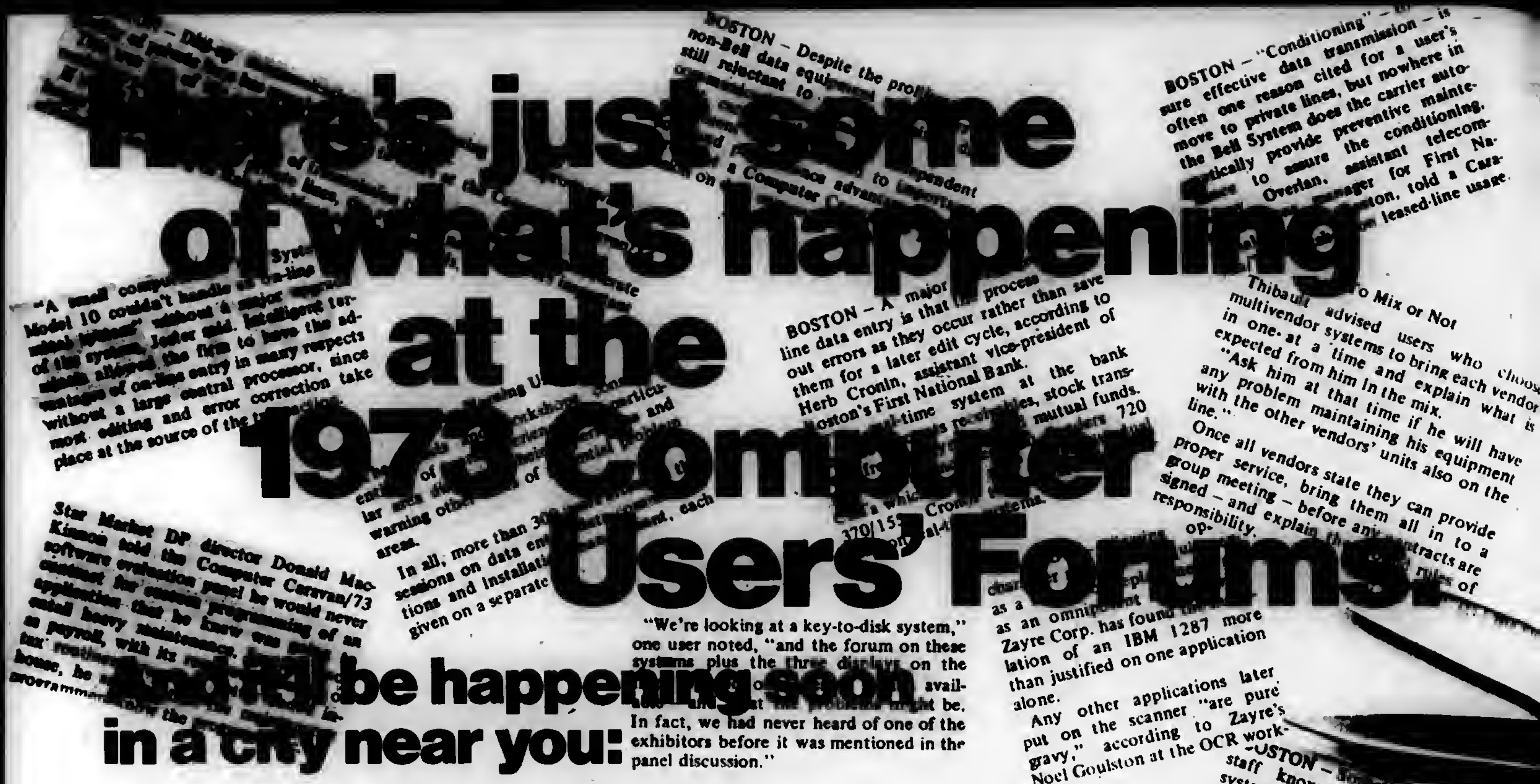

Here's just some of what's happening at the 1973 Computer Users' Forums.

BOSTON – "Conditioning" – [illegible] sure effective data transmission – is often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning, Overlan, assistant telecommunications manager for First National [illegible] Boston, told a Caravan [illegible] leased-line usage.

"A small computer [illegible] Model 10 couldn't handle an on-line [illegible] without a major upgrade of the system," Jester said. Intelligent terminals allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

BOSTON – A major [illegible] process line data entry is that [illegible] out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank.

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never contract for custom programming of an application that he knew was going to entail heavy maintenance, such as payroll, with its [illegible] tax routines [illegible] house, he [illegible] programmers [illegible] the [illegible]

In all, more than 30 [illegible] sessions on data entry [illegible] tions and installation [illegible] given on a separate [illegible]

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the [illegible] avail- [illegible] be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

Thibault [illegible] To Mix or Not [illegible] advised users who choose multivendor systems to bring each vendor in one at a time and explain what is expected from him in the mix. "Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain the [illegible] rules of responsibility.

[illegible] as an omnipotent [illegible] Zayre Corp. has found the installation of an IBM 1287 more than justified on one application alone.

Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

[illegible] USTON – [illegible] all the in-house staff knows – even after a packaged system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

And it'll be happening soon in a city near you:

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: Anaheim. And here are some of the panelists who will be there: Jim Feeley, Philco-Ford; Roger Pelot, United California Bank; Frank Oliver, Hughes Aircraft; Leslie Luvy, Gibralter Savings & Loan; Tom Wilson, Walt Disney Productions; Robert Campbell, Sunkist Growers. ---

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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Computer Users' Forum Registration

Name____________________

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1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other: __________

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other: __________

2. Please check the appropriate city:

___ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
___ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
___ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
___ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
___ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
___ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
___ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

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For additional registrations, copy this form – or write for extra copies.

Compatibility, Software Attractive

User Inventory Turnover Increased, Costing Improved

The Small Systems User

Special to Computerworld

ELKHART, Ind. – Increased inventory turnover and more current, accurate product costing are the major benefits now being achieved through the use of a small computer system at Crown International, a manufacturer of professional tape recorders and hi-fi components.

"We are using the computer system to increase our inventory turnover from 1.3 to four times a year," explained Glen Ryman, vice-president of production and data processing manager.

"We are also using the system to maintain actual, up-to-date costs for all items in inventory," Ryman stated.

Two Solutions

Previously, Crown handled its data processing half manually and half through an outside service bureau. However, with growth, a need for faster, more automated processing developed.

The company studied a number of different types of computers and also investigated the possibility of getting more out of its existing service bureau or using other types of service bureaus.

Based on these analyses, an NCR Century Series 50 computer system was installed last May. Costing $1,750/mo, the system includes a central processor with 16K characters of memory, a dual-disk memory unit capable of holding more than 8.4M characters in disk storage, a 200-line/min printer, a card reader and an input/output writer.

Flexible System

According to Ryman, whose data processing staff includes a systems analyst, a keypunch operator, secretary and several clerks, the system was selecfed not only because of its low cost but because of its general software concept and upwards compatibility.

"The system's software packages are modular, making it possible to pull out parts and use them in other ways," he pointed out. "Furthermore, the system's Neat/3 programming language is easier to use and less complex than other languages. In addition, the system gives us complete upwards compatibility which will enable us to grow in the future without having to change a single program or disk pack."

5,000 Items

Using NCR's Material Requirements Planning package, Crown now maintains inventory, bill of material and "where used" master files in which information is contained for each of the company's 5,000 raw material, work-in-process and finished goods items.

The company has also customized the package's inventory master file so it includes labor and material costs pyramided by level of assembly for each item.

"The system takes a unique approach in that pyramided costs are linked into the inventory master file," Ryman explained. "This enables us to have on-line inventory costing providing actual, current cost of sales in addition to perpetual inventory control for each of 5,000 items."

To operate the system, finished goods or zero level unit requirements based on sales forecasts are input. The system explodes requirements down to the requisition level – as many as 30 levels – and writes material parts requisitions on a daily basis.

Labor distribution data in terms of time and costs and inventory transactions in terms of units are also entered daily. Then, periodically depending on need, the system produces a variety of reports.

Perpetual Inventory Report

"We produce a perpetual inventory report on all 5,000 items once a month," Ryman stated. "But, on a request basis, we can get the status of any particular item or line at any time.

"We produce a variance report every two weeks which compares materials actually used to projected usage," he related. "We also use the system to control unscheduled usages of material over and above requirements. In addition, a production scheduling report is generated every four weeks.

"Bill of material listings can be run for any product at any time," he added.

"With the Material Requirements Planning package, we can go both ways," he explained. "We can increase or reduce requirements and see what the results of these adjustments are. A system is only as good as its capability to handle exceptions and exceptions are very easily handled with the package. Therefore, we are able to adjust inventory at any time to bring it into line with sales forecast parameters.

"Another program we are running is purchase modeling," he stated. "This program enables us to do a better job of buying custom parts which must be ordered on an annual basis.

"The system is also a tool which engineers can use to achieve greater standardization and eliminate part duplication," he emphasized. "For this purpose, we have developed unique codes which can be used to produce material catalogs and detail parts lists."

According to Ryman, the system will also be used to process payroll, receivables, payables and sales analyses, all of which will be tied along with Inventory and cost of sales data into the general ledger.

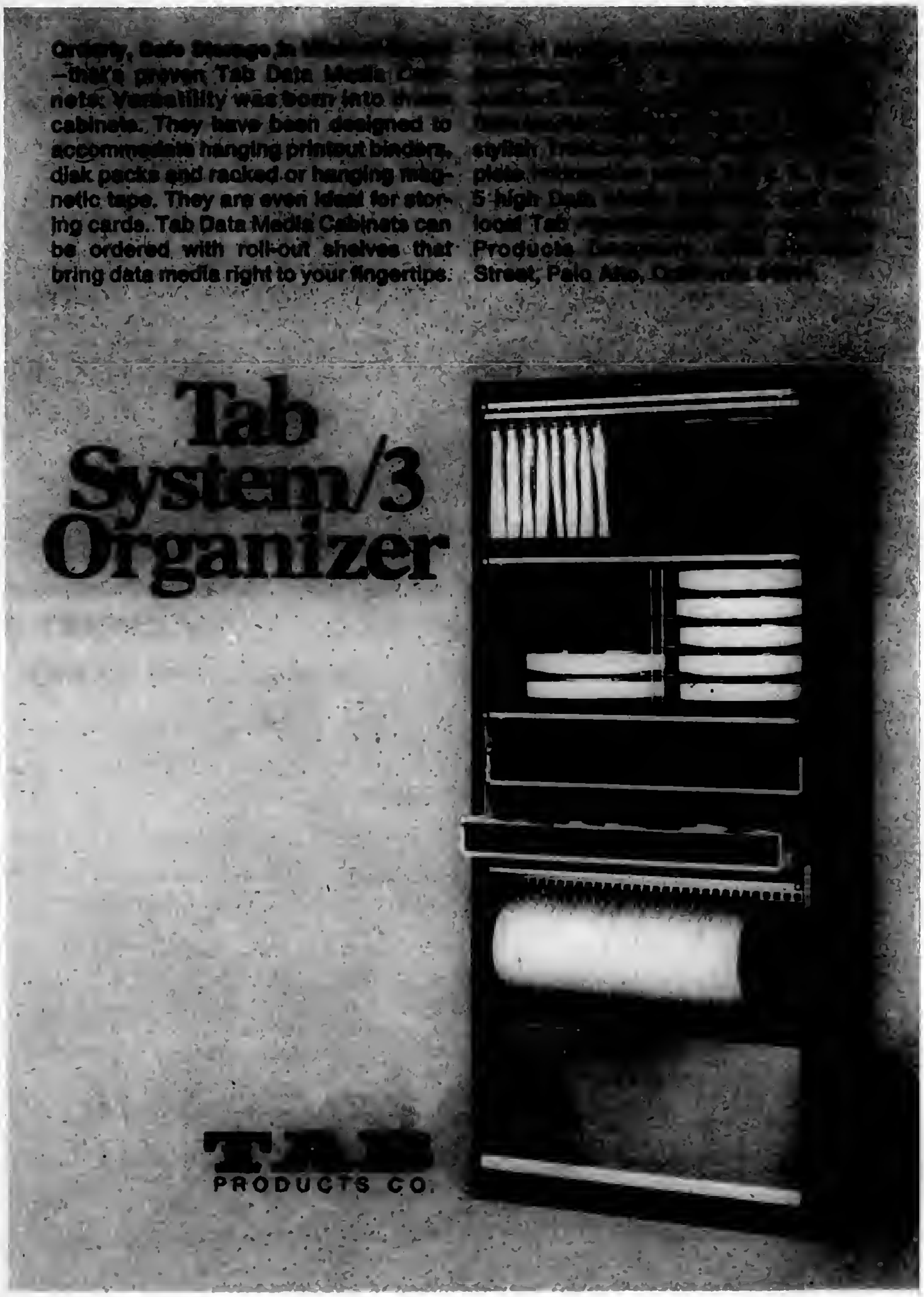
A manufacturer of tape recorders and hi-fi components such as amplifiers, preamps and speakers, Crown International supplies amplifiers to performing groups such as Jefferson Airplane, Rolling Stones and the New York production of Jesus Christ Superstar.

PDP-11 Disk Subsystem Is DEC DOS-Compatible

SAN DIEGO – PDP-11 users can obtain a disk subsystem with DEC DOS compatibility, a spokesman for Pacific Micronetics, Inc. stated.

The PMM-11 system – which includes controller – is a plug-to-plug replacement for the DEC RF/RS11 disk and control, the spokesman said. Capacity of the system ranges from 262K to 1M 16-bit words.

Prices for the disk subsystem range from $8,500 to $12,100 from 5037 Ruffner St., 92111.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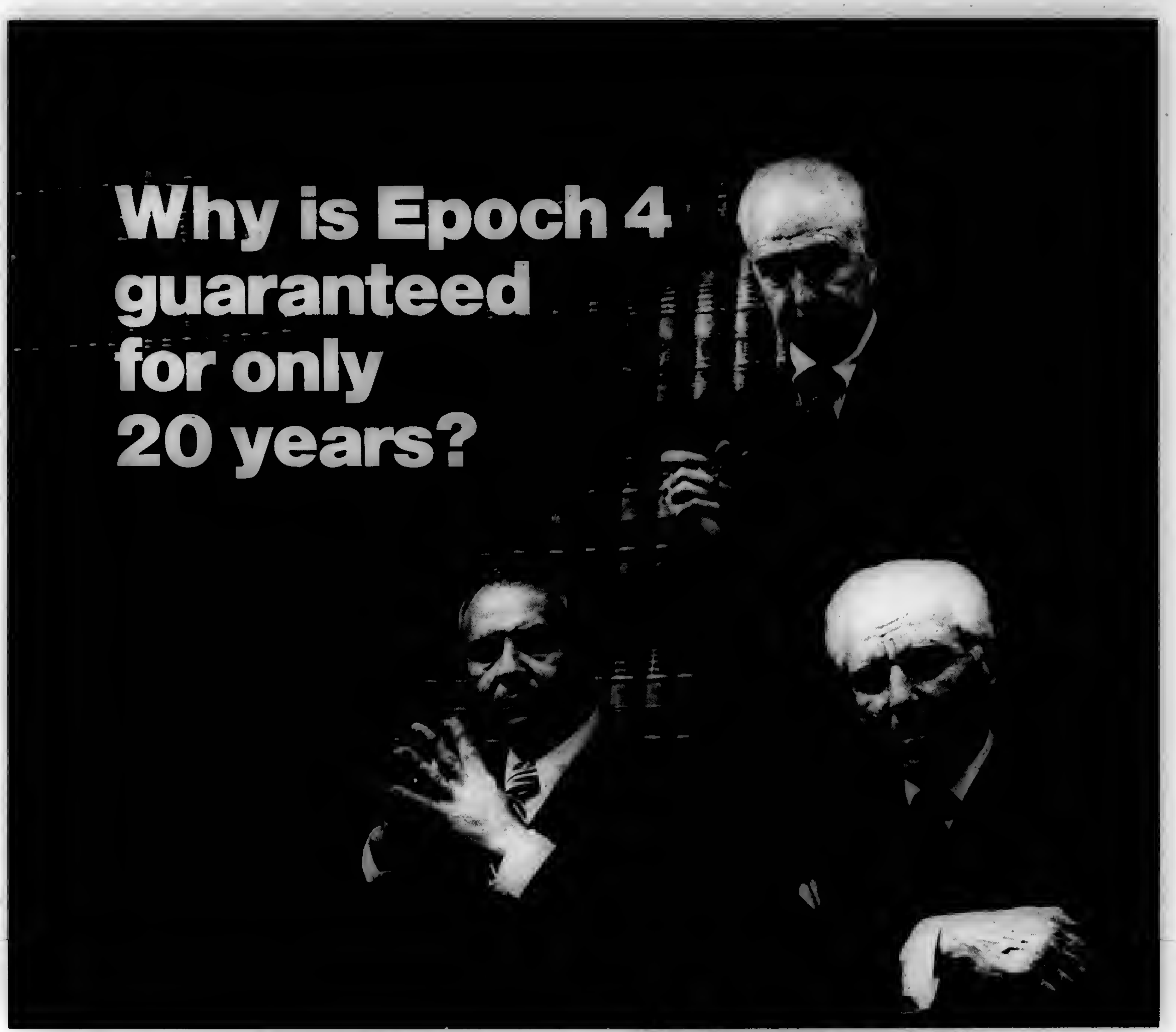
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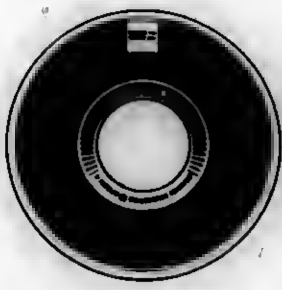

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Bruning Has Three Card Duplicators

SCHAUMBERG, Ill. – A complete line of aperture card duplicators is available from the Bruning Division of Addressograph-Multigraph Corp.

Designed for firms requiring verification of their copy cards, the OP-37 produces up to 800 duplicate aperture card/hr in variable quantities, each deck individually addressed for distribution.

The OP-35, featuring automatic operation, is capable of producing over 1,100 diazo copy/hr.

The semi-automatic OP-60 produces duplicate aperture cards from either a positive or a negative master in approximately five seconds. An optional OP-61 add-on module enables the operator to dial up to 99 copies from one master without pressing the copy button, the firm said.

All three machines have sealed anhydrous ammonia systems which require no venting, and include safety interlocks on top covers and front doors.

Bruning is at 1834 Walden Office Square, 60172.

Digitizer Uses Mag Cards

PLACENTIA, Calif. – A graphic data digitizing system incorporating digital display of the X-Y coordinate values and a stylus to digitize the points is available from Elcomp General.

X-Y coordinate data from graphs, patterns, layouts, X-ray negatives, photographs, templates and drawings is recorded on a magnetic stripe on standard tab cards.

The magnetic card system has read/write capability and can be interfaced to minicomputers by a 26K-bit buffer. This allows variable transfer rates up to 4,800 bit/sec, a spokesman said. An automatic card feed system has a capacity of over 200 cards, he added.

Price of a complete system is $6,995. The economy model with only teletype and RS-232 outputs is $3,600 from 1937 Kilmer Drive, 92670.

DEC Adds PDP-11 Interface

MAYNARD, Mass. – The M1801 16-bit relay output interface from Digital Equipment Corp. is designed to allow PDP-11 users to control programmable instruments, display lamps, and power relays in applications which require isolation between the TTL-compatible computer signals and external power signals.

Each bit of the PDP-11 data word controls one of the 16 reed relays mounted on the module with relays operated at rates up to 80 actuation/sec, a spokesman said.

Price for the M1801 is $350.

Station Added to LC-720

CHERRY HILL, N.J. – An electronic data station from Logic Corp. for the LC-720 key-to-disk data entry system has a non-integral keyboard and display unit. The display contains a 64 character set with IBM 029-compatible layout.

Hardware Roundup

The panel utilizes light emitting diodes (LED) for both four-character alphanumeric and three-character number display. A 30 position field definition display is also part of the panel along with various status indicators.

Further information is available from the firm at 21 Olney Ave., 08034.

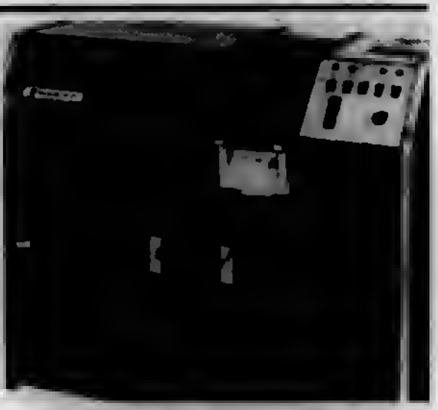
UPS Serves Dual Computers

WILLOUGHBY, Ohio – Availability of an Uninterruptible Power System (UPS) to serve dual redundant computers or other uninterruptible loads was announced by Cyberex, Inc.

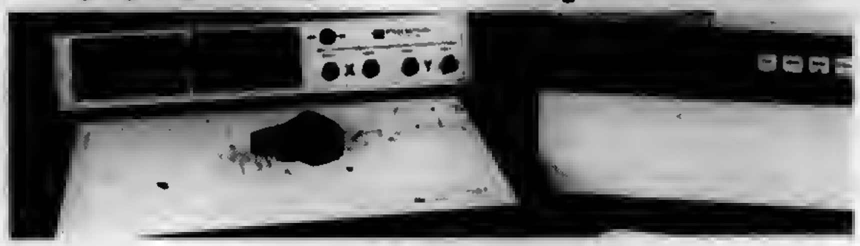
The system is offered in ratings from 10 KVA single phase to 250 KVA three-phase and is designed so at least one of the redundant loads is maintained regardless of any single system failure, the firm said.

Cyberex is located at 4399 Industrial Parkway, 44094.

DEC M1801 Interface



Bruning OP-37 Card Reader



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Intercon '73 Presents Feast of 57 Technical Sessions

NEW YORK – IEEE Intercon, March 26-30, will focus on eight technical areas featured in 57 sessions at the Hotel Americana here.

The session areas range from computers and information to communications and data transmission to marketing. Also included are: energy utilization and control, electromechanical technology, electro-optical technology, solid state and instruments and instrumentation.

The technical sessions begin on Monday afternoon with seven sessions running concurrently each morning and afternoon, ending Friday at noon.

"Computers in Public Systems" on Monday highlights a New York City highway project, evaluation of transportation systems and the legal considerations of computer use in public systems. The session is part of the technical area "Computers and Information."

This technical area also features sessions on "Computer Applications in the Manufacturing Environment" and "The Evolution of Large Government Computing Systems," both on Tuesday morning, and "Minicomputers: Boon or Blight" in the afternoon.

Minicomputer session organizer Ivan Flores said the session will critically examine minicomputer applications, hopefully drawing examples from the audience.

Wednesday morning the session "State of Computing Outside the U.S." will provide an overview of world market development and will forecast 1973-77 utilization of computers, comparing U.S. industry patterns and the positions of major international suppliers.

Patrick J. McGovern of International Data Corp. will assess these aspects of the world computer market. In addition, representatives of two major users in Europe and Japan will examine different approaches to system implementation, and Bolt, Beranek and Newman, Inc. representatives will discuss computing in the People's Republic of China.

Nobel laureate William Shockley, co-inventor of the transistor, will participate in the panel session "The Transistor – Yesterday, Today and Tomorrow" on Wednesday afternoon.

On Thursday and Friday there will be four separate sessions on different aspects of computer-controlled test systems and automatic test equipment control.

A products exposition at the New York Coliseum will open March 27 with more than 400 display-demonstrations sponsored by both U.S. and overseas manufacturers.

The conference expects over 30,000 attendees. All registration will be at the door of either the Hotel Americana or the New York Coliseum.

Further information on the conference is available by writing to IEEE Intercon, 345 E. 47th St., 10017.

Calendar

March 23, Philadelphia – Communications Systems Management Association Data Communications seminar. Contact: CSMA, 1102 West St., Suite 1001, Wilmington, Del. 19801.

March 26-28, Ottawa, Ont. – Data Processing Institute annual data processing conference and trade show, Conference/73. Contact: Data Processing Institute, P.O. Box 2458, Ottawa, Ont., Canada KIP 5W6.

March 28-30, Los Angeles – Profit Workshop on Manufacturing Management Systems Symposium sponsored by Informatics Inc. and the American Production and Inventory Control Society. Contact: University of California, Los Angeles Extension, Los Angeles, Calif. 90024.

March 28-29, Chicago – The First Project Control/70 Users' Conference. Contact: Robert P. Wolk, Vice-President, Marketing, Atlantic Software Inc., 912 Lafayette Building, Fifth and Chestnut Sts., Philadelphia, Pa. 19106.

NCC Is 'Conference Within Conference'

MONTVALE, N.J. – Over 90 sessions on DP applications and computer technology are being planned for attendees of the 1973 National Computer Conference & Exposition to be held June 4-8 in the New York Coliseum.

"The heart of the program will consist of more than 90 sessions and panels divided into two basic areas – Methods & Applications and Science & Technology," Chairman Harvey L. Garner explained.

"Each constitutes a 'conference within a conference' and will give the attendee the opportunity to pick and choose among an extraordinarily wide variety of concurrent sessions," he added.

The Methods & Applications program is headed by Robert W. Bemer, who was program chairman of the 1970 ACM National Conference.

"In contrast with past conferences, which have centered primarily on high technology, the 73 NCC Methods & Applications sessions will focus on those day-to-day techniques essential for the effective utilization of computer power within business, government and industry," Garner said.

Sessions in the Science & Technology program, headed by Carl Hammer, will examine aspects of development of new technology and the state of the art in areas of concern to the computer scientist and the DP user.

More than 100 papers, as well as panel discussions are scheduled. Topics up for review and analysis include systems, software, computer hardware and architecture, communications and data base management, simulation, computer graphics, education and foundations of computer science.

The NCC, the successor to the semiannual Joint Computer Conferences, is sponsored by the American Federation of Information Processing Societies, 210 Summit Ave., 07645.

Societies/ User Groups

Interdata Users Gather for Seminar

GAITHERSBURG, Md. – A technical seminar sponsored by Interchange, the Interdata users group, will feature presentations on topics ranging from languages to configuring a network, April 2-3 at the National Bureau of Standards here.

The group will also hold a membership meeting and open forum; and hear the latest news from Interdata.

One Monday session is entitled "Operating Systems – the economics of minicomputer buying has changed; or what you save on the merry-go-round you can lose on the swings."

R. Crosson from NBS will discuss "Making the Universal I/O Module Universal."

Topics on Tuesday include a look at Mimic and Extensive Basic.

Interchange is at 2 Crescent Place, Oceanport, N.J. 07757.

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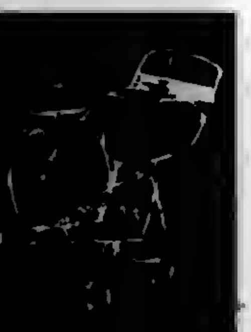

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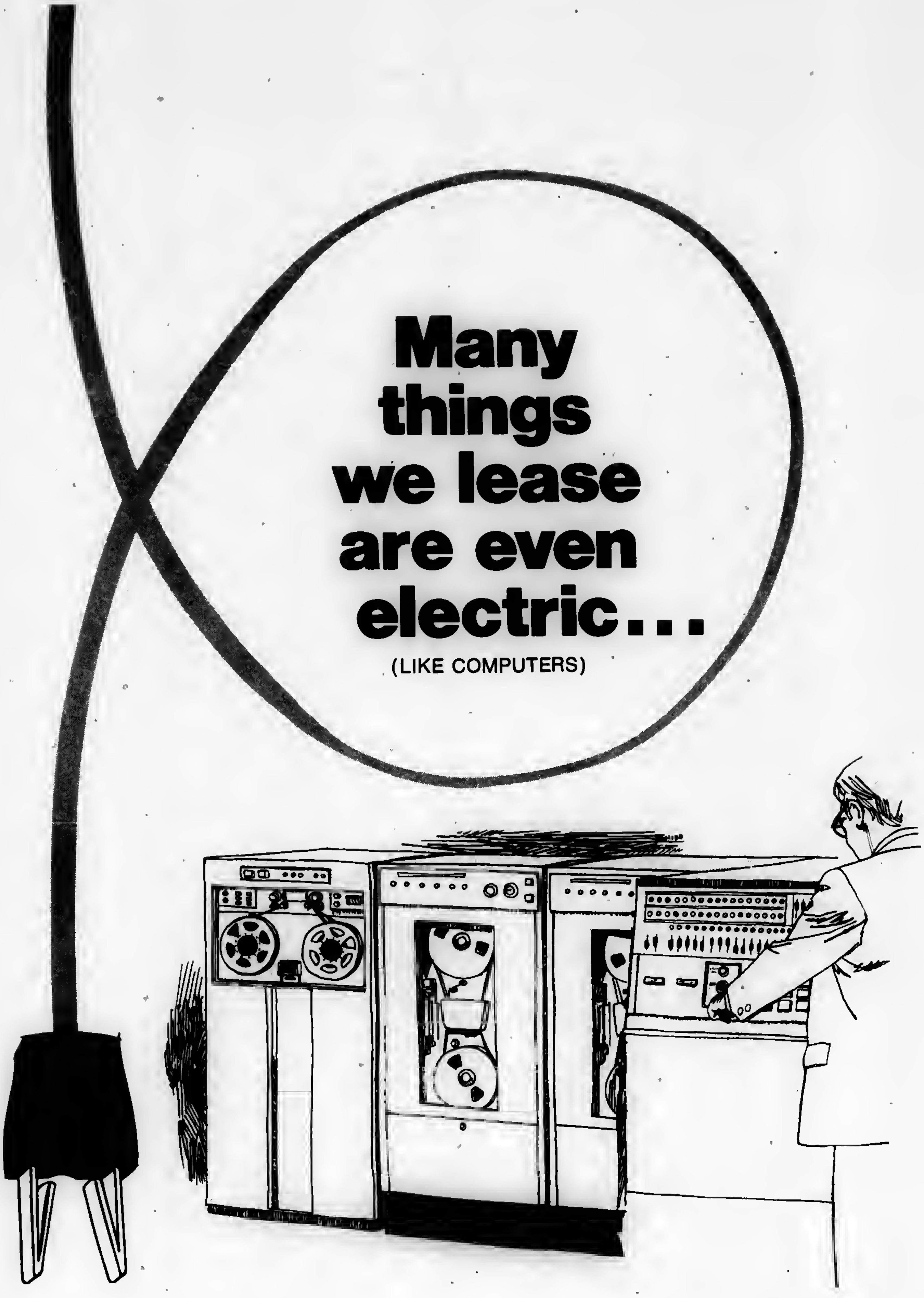
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Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, Zero-Un Informatique. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures		$1.48 billion
Projected increase for 1972	8.1%	(1.6 billion)
Projected increase for 1973	14.5%	(1.83 billion)

Submarket projections:

Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

Data Communications Terminals and Control Equipment expenditures are expected to go up 40% in 1973 to a total over $27 million.

Independent Peripheral Equipment expenditures are expected to increase markedly in 1973, partially as a result of newly expanded marketing operations.

If you're marketing in Europe — or if you want to be — "La Caravane" is a sales tool you shouldn't pass up. If you'd like the details, just send in the coupon or call Neal Wilder at (617) 332-5606.

French Market Caravan Schedule

Dates	City	Site
May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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Please send me more details — including market facts and brochure — on The European Computer Caravan's which I have checked.

☐ French Market Caravan (May 2-June 7)
☐ English Market Caravan (Sept. 4-Oct. 18, 7 cities)
☐ German Market Caravan (Oct. 30-Nov. 30, 5 cities)

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Uncapher Heads USC Unit

Institute Strengthens Academic-Application Links

By E. Drake Lundell Jr.
Of the CW Staff

Education

MARINA DEL REY, Calif. – "There is a growing interest in relating computer science to application areas through more systems-oriented work," according to Keith Uncapher, former Afips president and director of the Information Sciences Institute at the University of Southern California (USC).

Because of this, the new institute has been structured so researchers, faculty members and graduate students will have a great deal of exposure to applications areas and so the institute will have the right type of people and enough resources to operate effectively in that area, he said.

The institute was started just nine months ago by Uncapher who left Rand Corp. to set it up and at the same time retired from his Afips post to devote more time to the project.

To carry out the goals of the Institute, Uncapher is hiring basically systems-oriented people as staff members and augments this professional staff with faculty from the university and with graduate students.

The trade-off with faculty in other parts of the university is particularly useful, he said, because it provides a vehicle for experts in certain application areas, such as medicine, engineering, business and so forth, to have a voice in the development of computer systems

In addition, Uncapher said, the training the graduate students receive will be particularly useful in their later careers. "I think that part of any graduate student's education in the computer sciences area should be in the applications and systems area," he stated.

The institute, he said, will be staffed 60% by full-time professional staff members and 40% drawn from the faculty or graduate student ranks.

After the institute obtains a broad base in the computer sciences and its application to particular areas, Uncapher wants to expand the research into multidisciplinary areas such as the economy, ecological problems or medicine.

"There are exciting opportunites for us in the field of medicine," he noted, because "USC has one of the world's largest hospitals" which can be used to test computer systems developed by the institute and which can contribute knowledge about the problems computers can help solve in the hospital environment.

Another area of early concern for the institute will be in the field of digital communications and Arpa-like networks.

In this area, the institute, which sports an electronics laboratory and small mechanical laboratory in addition to its computer systems, is developing and designing CRT terminal-based systems for use in the business environment, he said.

These hardware and software systems would be designed specifically for particular business users which would allow those users a better option for handling their paperwork than is currently available, he added.

In addition, Uncapher noted, the institute has a major effort underway to study the security of operating systems from both intentional and unintentional intrusion.

Uncapher is also convinced the institute can make "some progress" in another research area, that of automatic programming, which would allow someone to state his problem to a system and have the system automatically convert the problem to computer code.

Uncapher also indicated research into socially oriented issues would grow in the near future, but noted that to date computer people have not proven the case for the use of their systems in dealing with pressing global problems.

"When we can demonstrate how effective we can be, then there will be a more positive response" from both funding agencies and the general public at large, he stated.

But many of these problems will take a commitment on the part of computer users to help in the solution, he said, and he predicted some day almost every company would have a line officer familiar with or trained in computer science who would be able to show management effective ways of dealing with problem areas.

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Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld*'s editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.

The Staff of Dempa Computerworld Inc.

Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.

Don't you always celebrate a birth with a cigar?

Shukan Computer hopes for best of both.

As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempa Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"

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CI Notes

Calif. Rejects IBM Bid

Special to Computerworld

SACRAMENTO, Calif. – The state Finance Department has rejected a bid by IBM for a planned $40 million state computer center but plans to reopen bidding again after modification of the RFPs.

Rejection of the IBM bid came a week after a bid by Univac was turned down. The two firms were the final bidders on the project.

A spokesman said that IBM's bid was turned down on the advice of counsel because a clause in IBM's response indicated it was not a firm bid.

The new center is part of a $150 million centralized computer system planned by the state over a five-year period.

NCR Sets Biggest 280 Order

DAYTON, Ohio – NCR has received an order for 11,000 additional 280 point-of-sale units from Montgomery Ward.

In the next several years, Ward expects to install 16,000 units, including minicomputers and associated equipment.

The combined order represents "not only the largest order ever received for the firm's 280 equipment, but the largest single order ever written with any customer," according to President William C. Anderson.

The units are part of Ward's $60 million program linking stores to local NCR 725s, which then communicate with one of four DP centers throughout the country.

Wema Exits Wescon

SAN FRANCISCO – With the withdrawal of Wema as cosponsor of the Western Electric Show and Convention, plans are under way to formulate a new trade show management organization to operate Wescon, according to Fred J. MacKenzie, chairman of the Wescon board of directors.

Wescon is scheduled Sept. 11-14 in Brooks Hall here.

Autotransaction Newsletter Ready

NEWTON, Mass. – International Data Corp. (IDC) is launching a biweekly newsletter, called *Autotransaction Industry Report*, to report on trends and investment opportunities in a computer market sector described as "growing twice as fast as the computer industry generally."

"Last year, users in the U.S. spent over $700 million on information appliances (such as special financial terminals, point-of-sale devices and ticketing systems) and computer service networks that automate the transacting of business," Patrick J. McGovern, president of IDC, stated.

The annual subscription rate for 26 issues, scheduled to start in mid-April, is $85.

A $70 prepublication annual rate is currently available from 60 Austin St., Newton, Mass. 02160.

Supershorts

Datatype Corp. has granted to Addressograph Multigraph Corp., Varityper Division, certain rights to market Datatype's DFR-300 Optical Reader for printing applications in the graphic arts industry.

– – –

Exhibitors at the New York Caravan reported booking orders over $3 million.

– – –

Datapoint Corp.'s South African distributor, Computer Advances (PTY), Ltd., has received orders valued at $2.5 million from three major customers for Datapoint 2200 dispersed data processing systems and Datapoint terminals.

– – –

System 2000 has been registered as a trademark for a data management system by MRI Systems Corp.

Letter to Justice

CLA Rips 'Anticompetitive' IBM Lease

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The Computer Lessors Association has blasted the new IBM 48-month term lease plan in a letter to the Justice Department citing the "anticompetitive" aspects of the plan.

The letter said the new plan, in addition to IBM's earlier fixed-term lease plan and extended-term lease plan, "locks out competition and strengthens IBM's ominous hold on the industry.

"As a monopoly, IBM should be required to abandon these plans," according to the letter sent to the assistant attorney general for the Antitrust Division.

'Competition Locked Out'

The discount incentive on purchase and waiver of extra user charges "effectively makes it impractical for installed customers to look to other suppliers for 48 months – competition is locked out," the letter said.

The association has complained about other IBM actions in the past in letters to the Justice Department, particularly about the fixed- and extended-lease plans as well as IBM maintenance price increases for purchased equipment.

But, the new letter noted, none of these complaints has stopped IBM from "using its power to the detriment of the computer industry."

The group noted Justice was the one government agency capable of putting pressure on IBM for changes in its policies toward the competition in the industry, since it was presently suing IBM. "We implore you to take action," the letter said.

The new IBM plan applies to popular models of the 370 line, and not to all IBM computer equipment currently available, the group noted in its letter.

Because of the stiff cancellation penalties in the new IBM plans, the user who tries to take this route will be effectively tied into IBM for the next 48 months, according to the association, making him unavailable as targets for sales efforts of the association's members.

In the past, leasing companies have been able to combat the fixed- and extended-lease plans of IBM by offering to pay the users cancellation charges on such plans and by amortizing the cost of those penalties over the life of the new lease.

Those plans covered only peripherals so the cancellation charge, while steep, was not on the entire system, but just on part of it and could be absorbed in the new lease rather easily.

Longer-Term Plan Locks In User And May Prove IBM Overreacted

By Ronald A. Frank
Of the CW Staff

NEW YORK – IBM's recent announcement of a four-year lease plan on its mainframe systems gives some interesting insights into the company's marketing strategies.

By urging customers to sign up for longer-term leases, IBM is launching a major effort to blunt the trend to system purchases. On the other hand it seems to favor later deferred system sales by offering customers the 50% credit at the end of four years.

Analysis: IBM Lease Strategy

The message comes through that IBM wants rental revenue now – when the 370s are new and desirable – and four years from now it wants to unload the systems as they approach the twilight of what IBM has determined will be their life cycle.

Some observers see 1977-80, when a period of high incidence of 370 purchases will be encouraged, as the time for IBM to clear the decks for a new generation of machines.

One of the company's current problems is the large amount of 360s being returned from long-term monthly rental customers who are now switching to 370s. While some of these systems are being "rehashed" and reportedly introduced as terminal and other newer system components, IBM still has a problem with returned machines. It is reportedly destroying many of these systems rather than allowing them to find their way back into the market. So the "rent now, buy later" impetus of the 48-month lease seems aimed at eliminating a large 370 turn-in period.

A longer-term lease plan seems to be part of a recent IBM marketing trend to lock in the user for longer and longer periods. Under the 1956 Justice Department Consent Decree, IBM was prohibited from offering long-term deals, according to legal experts. But the decree regulation ran out after 10 years, and lately IBM has been pushing further into the type of extended leases pioneered by the leasing companies. It may be an attempt to see how far IBM can go before legal roadblocks develop.

But in trying to lock in the user for a four-year period, IBM may have structured the plan too rigidly for even the most ardent IBM site. It could have been expected that customers would have to pay a penalty for altering their leased systems with downgrades or a shift to independent memories.

But the provision that levies a penalty on upgrades within the same system seems a radical departure from previous IBM policy. The company had usually encouraged system enhancements that meant additional revenue.

It may be that IBM is trying to isolate its customer from any non-IBM equipment enticements by putting him in a system straightjacket for four long years. It remains to be seen whether the customer wants to be boxed into such limited flexibility. And all this for no reduction in monthly rental, but only the elimination of overtime charges. IBM may have over-reacted.

85,000 People Expected

Caravan to Globe-Trot 28 Cities

BOSTON – "The Computer Caravan/73 will be the largest computer show in history before it is finished, visiting 28 cities in eight countries before the end of the year," according to Patrick J. McGovern, president of *Computerworld*, the show's sponsor.

In all, McGovern estimated more than 85,000 people will visit the exposition before it ends its tour. And next year promises to be even larger, he said, since a Japanese Caravan will be launched in 1974 to join those in the U.S., France, Belgium, England, Germany and the Scandinavian countries.

"The secret of the Caravan," he said, "is that it is basically a local show where local users can discuss common problems and solutions and can meet with local salesmen from the various exhibiting companies.

"But that should not hide the fact that the Caravan is also a truly international show with parts held in most major computer-using nations this year. Next year it will tour all of the major computer-using nations in the free world with the addition of Japan to our schedule," he noted.

He said the 52 companies currently showing almost 300 products in 68 booths will not travel the whole circuit necessarily.

'Pick and Choose'

"Many firms aren't yet ready to penetrate one or another market that we cover," according to David Sudkin, marketing manager for the European Caravans. "But with our tours to different market sections they can pick and choose their particular markets."

Some firms on the U.S. Caravan will tour with the rest of the Caravans in Europe, he said, but they will also be joined by a large number of manufacturers that only do business in Europe or are subsidiaries of U.S. companies that market primarily in Europe.

Sudkin said the European Caravans were being sponsored by *Computerworld* and the leading computer publications in the local areas they serve. For example, he said, *Zero Un Informatique* is cosponsoring the show in France and the French-speaking countries and *Computer Management* is the cosponsor for the English-speaking portion of the tour.

After the Caravan completes its 10-city U.S. tour on April 26, it will leave for France where a six-city tour begins on May 2 in Paris.

Then the Caravan will open its UK stand on Sept. 4 in Manchester and complete its four-city trip in London on Sept. 27. The third tour goes to Scandinavia and The Netherlands.

The final 1973 tour is in Germany.

Test Instrument Usage Rising

PALO ALTO, Calif. – The test instrument industry is rebounding strongly from a two-year decline, and is expected to increase from $806.5 million last year to $1.3 billion by 1977, according to a report issued by Creative Strategies, Inc., a research and consulting firm here.

In addition, the market is showing strength in different areas than previously, the report noted. Whereas the principal area for test instrument usage was R&D, use is currently growing more rapidly in manufacturing, according to CSI.

With decreased government spending in 1970 and 1971, when the total market fell from $770 million in 1969 to $743 million in 1971, test instrumentation companies were forced to become more customer oriented rather than technologically oriented, the report observed.

The Federal Government now accounts for about 40% of all U.S. sales, down from 50% in 1969, the report added.

Foreign sales of test instruments are expected to grow at a slightly faster rate than domestic sales during the next five years due to an expanding electronics industry abroad, the firm said.

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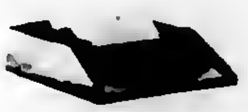

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Firm's Market Goal Is Common Carriers

By E. Drake Lundell Jr.
Of the CW Staff

LOS ANGELES – Among all the firms serving the data communications industry, Computer Transmission Corp. is something of a unique entity: its real goal is to sell to the common carriers and not to end users.

The firm "is something of an odd company," admitted President Ray Sanders, "since it is really designed to be a vendor to the common carriers" in the long run.

But "there is a great deal of difficulty in selling equipment and services to the common carriers," he added, and therefore the business of the firm today is rooted in meeting the needs of end users.

Today the entire data communications market is in its infancy, he explained, but is basically divided into three areas: the black box makers who sell modems, front ends, etc. to end users; systems houses that attempt to configure entire nets for those users; and the common carriers who offer the basic networks.

The problem with the common carriers is that the development and implementation cycle is too long, he said, which hinders the ability of the end users to use the network effectively and efficiently.

Let Outsiders In

Therefore, the large common carriers should open up their development cycles to outsiders who can react innovatively and quickly to the emerging needs of users, he added.

Even the newly emerging specialized common carriers might get too big to be able to react quickly to new ways of doing things that could best serve their users, Sanders said.

In addition the new digital nets will open up many "new opportunities" to firms that are in a position sell to users of that type of system.

The experience Computer Transmission is gaining today in the end-user market. however, should be a help with its ultimate goal of serving the common carrier market, he said.

"A company needs the knowledge it can gain in serving end users in order to tell the common carriers what they should do to serve the end user better," he said.

Company Profile

The common carrier market is hard to sell to, Sanders indicated, because the ground rules for dealing with the carriers change often and the firm selling to one of them has to be extremely adaptive.

But even if the firm does not reach its goal of serving the common carriers,. Sanders indicated there was a place for his firm.

"If the carriers follow a restrictive policy of dealing with outside firms, then we will find our major market in the end user business, just like it is today," he said, noting "there are unique opportunities in structuring large end-user data communications networks."

The future for Computer Transmission, he indicated, is in the market of selling entire systems for end users. To do this, the firm will not produce all of the necessary equipment in-house, but will purchase certain equipment from other vendors if it meets the end user's requirements better or less expensively than Computer Transmission's equipment.

The firm is currently looking at entering the European market, he said, both to offer service to European firms and U.S. firms with branches in Europe.

Executive Corner

- Dr. John E. Bertram and Dr. Ralph E. Gomory have been elected vice-presidents of IBM Corp. Bertram is IBM's director of engineering, programming and technology; Gomory is director of research. Each continues in his present position.
- Barry M. Harder, cofounder of Entrex, Inc., has been elected chairman of the board, and cofounder David Barber becomes president and chief executive officer.
- Fred C. Ihrer, an original founder and recent president of Comress, has been named chairman of the board.
- Alvin S. Brown has been elected president and chief executive officer of General Computer Service, Inc. He will also serve on the boards of GCS General Computer Service, Ltd., Canada, and General Computer Service, U.K. Ltd.
- Samuel G. Johnson has been named president of Syncom Business Systems, Inc., of Cleveland, Ohio, a wholly-owned subsidiary of Syncom Inc.
- Paul F. Seckendorf has been elected to the newly created position of vice-president, OEM marketing, at California Computer Products, Inc.
- Paul B. Arnstein has joined General DataComm Industries, Inc. as vice-president, operations.
- Robert M. Scheinfein has been elected vice-president, sales, of Data Precision Corp.
- E.A. Joakimides has been named a vice-president of Remote Computing Corp. in charge of the Technical and Operations Division.
- Samuel M. Thomas, Jr. has been named vice-president and general manager of Potter Data Products Service, Inc., a subsidiary of Potter Instrument Co.

CII, Siemens Agree on Consortium

PARIS – An agreement toward the creation of a European consortium was finally signed by France's Compagnie Internationale pour l'Informatique (CII) and Germany's Siemens Corp., but an originally slated participant, Philips, only looked on.

The agreement provides for the division of Europe into marketing areas, with Siemens taking over CII's German subsidiary, and CII assuming Siemens' interests in France. Other areas will be serviced by "whichever company is the strongest, or potentially the strongest, there," according to *EDP Europa Report*.

The plan also calls for coordination of product lines, with the objective a unified system compatible with third-generation machines to compete with IBM.

The delay in signing the agreement, announced a year ago, was caused largely by the philosophical differences between the two firms and Philips, the newsletter said.

Philips plans to continue development and support of the P .1000 series which, EDP Europa Report said, Siemens believes "has no place in the proposed common range of machines."

Rotating Seminars Begin

CHICAGO – The first in a series of rotating management seminars sponsored by the Association of Data Processing Service Organizations (Adapso) will be held here March 22-23, at the Marriott Motor Hotel. The topic of the meeting is business aspects of systems design and programming.

Directed toward operational personnel, "these seminars will concentrate on the business aspects of specific functions of the computer services industry . . . ," observed J.L. Dreyer, executive vice-president of Adapso.

The meeting costs $50 for members and non-members. Adapso is at 551 Fifth Ave., N.Y., 10017.

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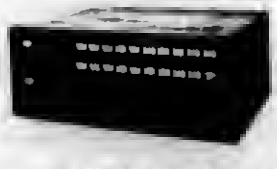

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Current Policy Detailed

OEM Import Orders Could Bypass Japan Restrictions

By E. Drake Lundell Jr.
Of the CW Staff

Although Japan's import policy on computer equipment is likely to be liberalized in 1977 [CW, March 14], the following article analyzes the current policy.

TOKYO – A look at Japan's current rules for the import of computer equipment shows opportunities both for end user suppliers and OEM suppliers, even though those on the OEM side of the business might have less trouble getting their equipment into Japan.

The rules, as promulgated last year, indicate that Japan – in order to help bring its imports from the U.S. more in line with its exports – promised to expand the import limit so the U.S. share of the computer market could rise to 50% from its 46% share at that time.

The government said it would have no objection to increased imports, as long as they did not exceed this 50% figure on an annual basis.

Computer Makers Unrestricted

However, a recent U.S. report from the executive office of the President noted "the six Japanese electronic computer manufacturers will be permitted to import without restriction upon application computer peripheral equipment . . . for original equipment manufacturer (OEM) purposes.

"Under this arrangement," the government report indicated, "Japanese computer manufacturers will be able to buy U.S.-made peripherals and parts for incorporation into Japanese computer systems without item-by-item review by the Japanese government."

The items imported by the Japanese computer makers will not be included in the 50% limit placed on American imports, the Japanese government specifically confirmed later.

However, according to International Data Research, an industry research firm here, foreign computer equipment only accounted for 41.2% of the deliveries of computers in Japan last year, not the 46% estimated by the government.

More Imports This Year

Because of this, the firm said, the Japanese commitment to allow for expansion of imports will result in permitting more than $103 million more in imports this year than was permitted last year.

Therefore, in addition to the $480.5 million worth of equipment purchased last year by Japanese users from U.S. companies, U.S. firms will be able to sell an additional $103 million worth of equipment this year.

However, it should be noted that a large part of this market is controlled by IBM-Japan which will be counted in the imports allowed from the U.S. even though it manufactures in Japan and is more than 50%-owned by foreign investments.

On the other side, the future could be bright. Any U.S. firm that can land an OEM contract with a Japanese computer maker could make unlimited shipments to that mainframer without having to go through the problems associated with obtaining import permission from the Japanese government.

Analysis

However, one area of the Japanese government's aid to domestic manufacturers was not changed at all in the liberalization last year – the "buy Japan" policy of the government.

Even though the government did relax this policy in several other areas of the economy, it stated "wherever possible" all governmental computer needs would be met by Japanese-owned domestic sources. It also stated for the record that IBM-Japan would be considered as a foreign firm in this category also.

This "buy Japan" policy not only applies to government agencies, International Data Research noted, but also to "large segments of the user market where Japanese government control is exercised or where direct government subsidies are received."

Examples of the industries expected to follow a "buy Japan" policy, the report said, include the public utilities; rail and air transportation; telephone communications; educational institutions; and government-owned industrial firms.

Foreign Orders & Installations

The University of Rome, Italy, has ordered a Univac 1110 1x1 for scientific and technical applications in engineering, physics, chemistry and mathematics. Installation is scheduled for April 1974.

A Datacraft DC 6024/3 digital computer has been shipped to France as part of the first OCR system to be used in a postal letter-sorting application in Europe. The computer was supplied through an OEM agreement with Recognition Equipment.

The New South Wales Department of Public Works has ordered an interactive graphics system from Varian Data Machines. The system, which includes two Varian 620s, will be used by government architects for large-scale building projects.

Nettingsdorfer Papier und Sulfatzellulose-Fabrik AG, an Austrian papermaker, has ordered a Measurex control system.

The Atmospheric Environment Service of Canada has ordered a Control Data Corp. Cyber 70 Model 76 to upgrade its weather forecasting facilities throughout the country.

The British Steel Corp. has ordered two Honeywell Model 716 systems as front ends to an IBM 370/145 in a production control system at its Llanwern strip mills.

The Skofja Loka Computer Center, Yugoslavia, has ordered a Univac 9700 for production control, scheduling and accounting. The center serves a manufacturer, a weaving plant and an agricultural cooperative.

Instrumentation Engineering has delivered a System 390 to Standard Telefon Og Kabelfabrik, an ITT affiliate in Oslo, Norway. It will be used to test components in electronic switching systems.

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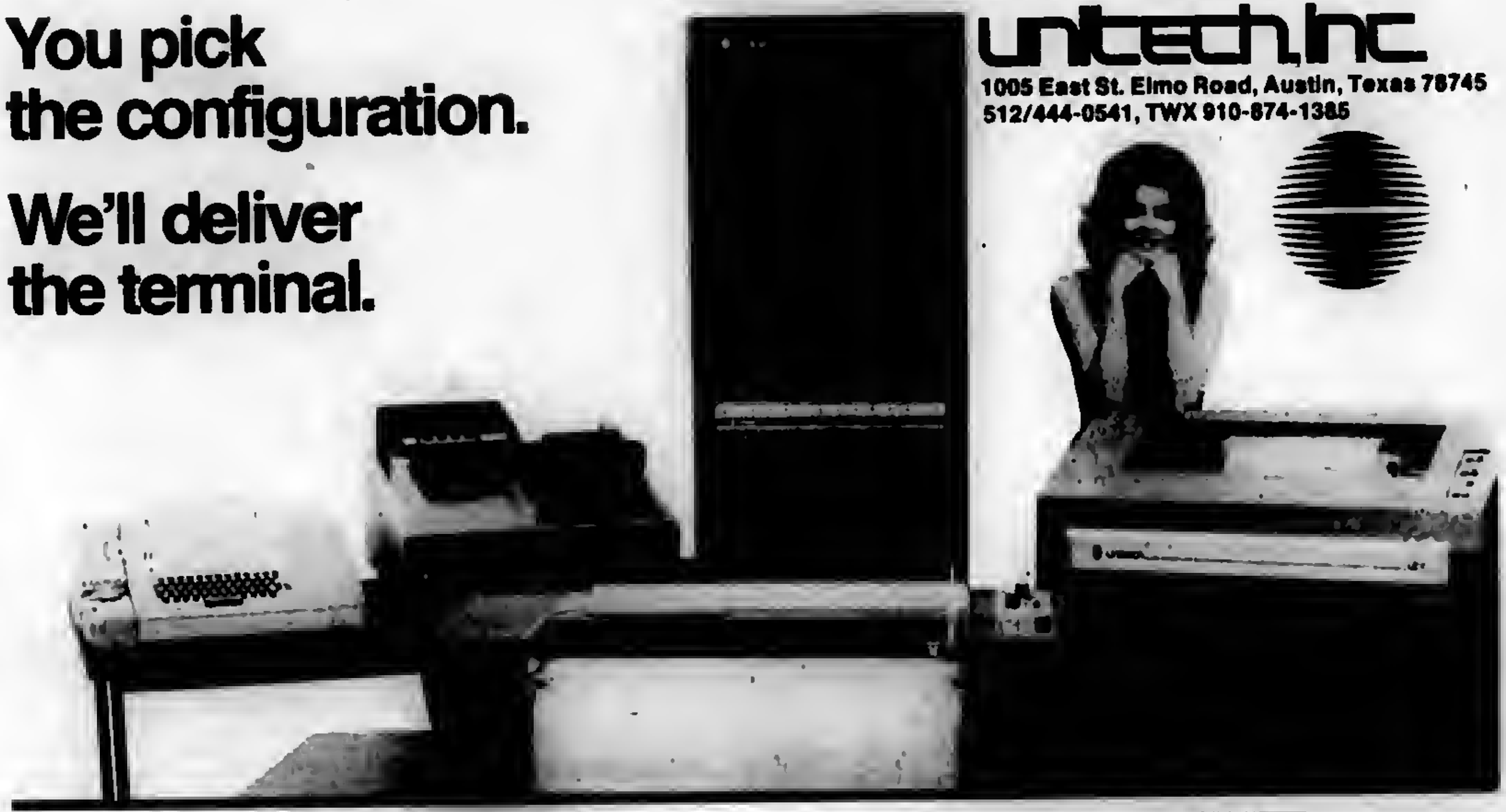

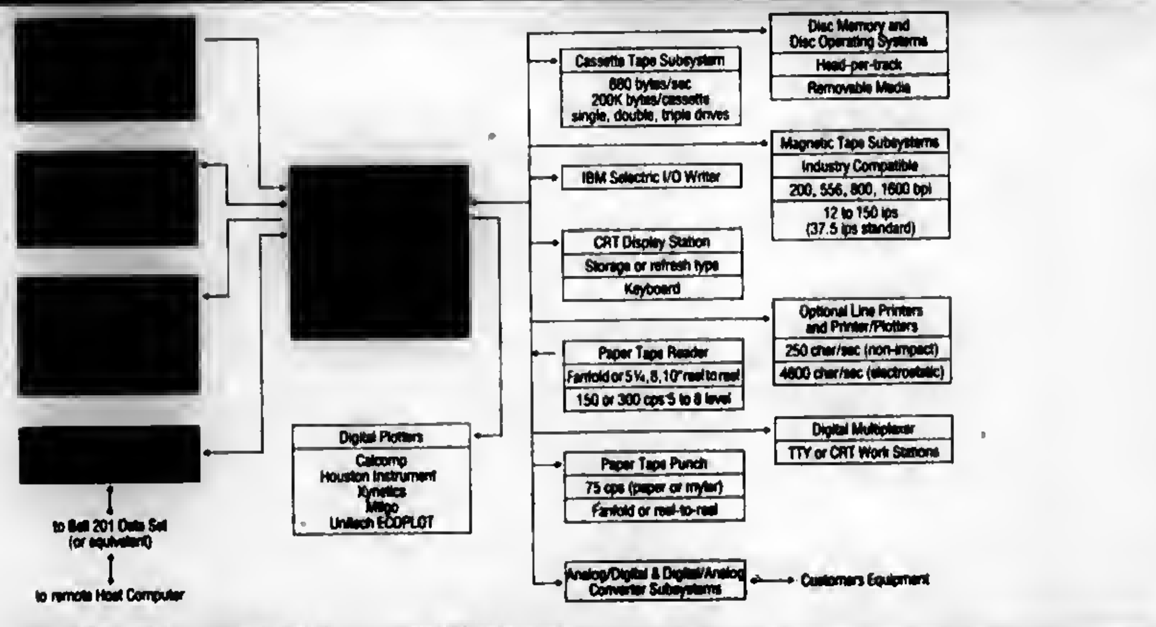

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Price Drop Coming In 'Truly Elastic' Memory Market: AMS

MOUNTAINVIEW, Calif. – The memory market is a truly elastic market, according to Bob Lloyd, president of Advanced Memory Systems here.

Whenever the price of memory is cut in half, he explained, the size of the potential market more than doubles for the firms in the business.

And in the next few years, Lloyd said, the price of memory should drop considerably from its present levels, which some have indicated are already extremely low.

But even though there will be significant reductions in the price of memory devices over the next few years, Lloyd believes the units will not improve drastically in speed over the same time period, even though there will undoubtedly be some improvements.

The reason for the large price drops in the memory areas will be the significant reductions in manufacturing costs, he indicated.

Presently, he said, chips make up around 60% of the cost of a large memory box, but they are becoming larger and larger components of the entire system, so in a few years 90% of the cost of a big system could be in the silicon chips and the remainder in software support.

The production of the chips is still an art to a large extent, Lloyd indicated, but he said it is approaching the state of a science and the industry is working hard to get the art out of the production process.

Contracts

Logicon, Inc. has been awarded a $14.5 million contract by the Army Corps of Engineers on behalf of the U.S. Post Office to design and install a system for mechanization, routing control and vehicle control systems at 21 bulk mail centers. The centers are now being established throughout the U.S. and are expected to be operational by 1975. The centers will utilize a total of 180 minicomputers in the handling of second, third and fourth class mail in bulk form and parcel post as individual pieces.

Sperry Rand Corp. has been awarded a $4.6 million Navy contract for AN/UYK-7 computer systems and a $2.5 million Navy contract for navigation computers and related equipment.

Auto Tell Services Inc. has contracted to provide computer accounting services for James-Kingsley Oldsmobile, Lancaster, Pa. and Chinetti-Garthwaite Inc., Ferrari dealer, Rosemont, Pa.

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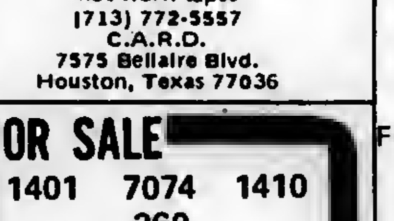

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$82 Million Loss Totaled By UCC With 3 Writeoffs

DALLAS – Although University Computing Co. announced an $82.8 million loss for 1972, the company is "currently operating at a profit" and expects to report earnings for the first quarter and for 1973, according to Chairman Sam Wyly.

Of the $82.8 million, $32 million represents losses in a terminal subsidiary sold during the year to Harris Intertype Corp.

There was a $33 million writedown of goodwill, and $29 million in writedowns and accelerated depreciation on computer equipment, mostly on lease to others by Computer Leasing Co., another subsidiary.

Wyly said the writedowns, losses and charges conclude a two-year program of debt reduction, disposition of unprofitable or inappropriate businesses, and the structuring of UCC into strong, separately managed companies.

Revenues for the year declined to $101 million from $109.7 million in 1971, when the firm earned $2.3 million.

In January, subsidiaries Computing Utility Co. and Gulf Insurance Co. operated at a profit, and the company as a whole was profitable with no capital gains, Wyly said.

The insurance subsidiary earned $11 million in 1972, up from $4 million in 1971. Gulf also realized $14.4 million of capital gains, most of which occurred in the first quarter.

University Computing has cut its indebtedness by $56 million in the last two years, Wyly said, and has increased its investment in the Data Transmission Co. subsidiary to $18.5 million.

Nickels & Dimes

Scan-Data has obtained $17 million in financing arrangements from Alanthus and the First Pennsylvania Bank. Scan-Data agreed to sell Alanthus up to $5 million of leased data entry systems for the next three years, and will issue five-year warrants to Alanthus to purchase up to 180,000 shares at $3/share.

The agreement with the bank provides for a $2 million revolving credit line through March 31, 1974.

$$$

Entrex had its first profitable month in December, and anticipates profitability throughout 1973. The firm is about to become No. 3 among key-to-disk makers in terms of number of stations installed, it said.

$$$

About two-thirds of the $187,000 year loss at **Computer Dynamics** resulted from acquisition-related program development and conversion costs early in the year, according to the firm.

$$$

Earnings at **TEC** more than tripled for the eight months ended Feb. 28, totaling $384,075 or 56 cents a share compared with $111,371 or 16.3 cents in the same period a year ago. Revenues rose to $4.4 million from $2.9 million a year ago.

$$$

Name changes: Shareholders of **Comperipherals** voted to call the firm Facit-Addo; at the end of March **DPA** is expected to become Pioneer Texas; although the DP subsidiary will continue to use the DPA name; and **Management Data Corp.** has changed its moniker to MDC.

$$$

The $35 million multicurrency financing agreement between **Mohawk Data Sciences** and the First National Bank of Chicago has been signed [CW, Feb. 9].

West Coast Scene

Three Minimakers Post Rising Earnings

Three West Coast minicomputer makers, General Automation, Inc., Microdata Corp., and Hewlett Packard, all reported strong increases in recent periods.

General Automation in Anaheim saw its first-half earnings before taxes exceed results for the full fiscal 1972, with record results in the second quarter.

In the half, earnings, including a $586,000 tax credit, totaled $1.5 million or 68 cents a share for the period ended Jan. 31. This compared with earnings of $611,000 or 36 cents a share, including a $302,000 special credit for the first half of 1972.

Revenues rose to $12.1 million from $6.5 million in the previous year's period.

Quarter Up Also

In the second quarter, sales rose 70% to $6.2 million from $3.6 million a year ago. Earnings rose to $726,000 or 34 cents a share compared with $402,000 or 23 cents in the year-ago period.

At Microdata, based in Irvine, first quarter earnings doubled to $238,580 or 18 cents a share compared with $114,820 or 9 cents a share in the year-ago period ended Nov. 30.

Revenues rose 67% to almost $2 million from $1.9 million.

Backlog at the end of the period was at a record high, and prospects for record sales during the second quarter are excellent, according to President Donald W. Fuller.

Better at HP

Earnings for the first quarter at Hewlett-Packard were even better than previously announced, because of the discovery of a $1.4 million overstatement of marketing expenditures.

For the quarter ended Jan. 31, the firm earned $8.7 million or 33 cents a share, a 31% increase over the $6.6 million or 25 cents a share earned in the first quarter of fiscal 1972.

Revenues totaled almost $127 million compared with almost $98 million for the same year-ago quarter.

CSC Adds $9 Million Writeoff, But Still Sees Profitable Year

LOS ANGELES – Computer Sciences Corp. is taking a $9.3 million downward adjustment in addition to the previously announced $2.3 million writeoff from cancellation of the New York City Off-Track Betting Corp. contract.

But thanks to a $16.8 million gain from the sale of Commonwealth Services Inc. subsidiary, the company said it "anticipates positive net earnings" for its fiscal year ending March 30.

The firm will write down $6 million on its computer leasing portfolio, while a $3.3 million charge results from establishment of reserves for potential contract losses, government contract audit adjustments and other miscellaneous items.

Net Book Value

With the $6 million charge, the IBM 360s owned and leased by Computer Sciences will have a current net book value of $11.3 million. The original purchase cost was $26.1 million.

The company said it will depreciate the $11.3 million over a five year remaining life with a salvage value of 10% of the resultant net book value.

The charge does not affect the firm's other computer equipment, primarily Univac 1108s.

Terminal Equipment Expects '73 Profit

POMPTON LAKES, N.J. – With steadily decreasing losses, Terminal Equipment Corp. expects to show a profit in 1973.

Revenues for the year ended Sept. 30 climbed 10 times from last year's base to $764,399, and losses were cut to $83,689 or 16 cents a share compared with $552,115 or $1.35 a share last year.

The company expects revenues in the first half of 1973 to exceed the total for all of 1972.

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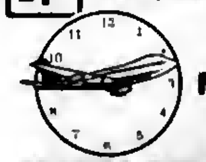

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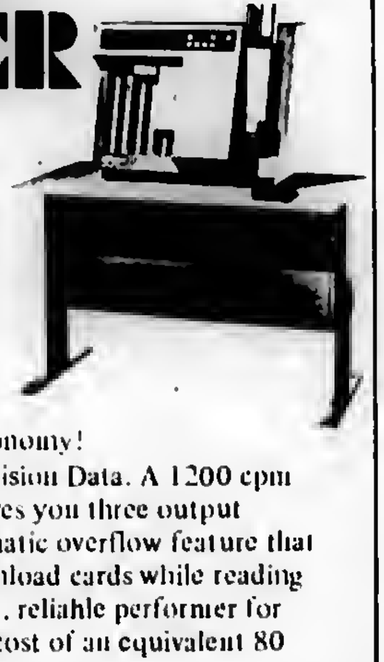

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TRADE QUOTES

Computerworld Stock Trading Summary

All statistics
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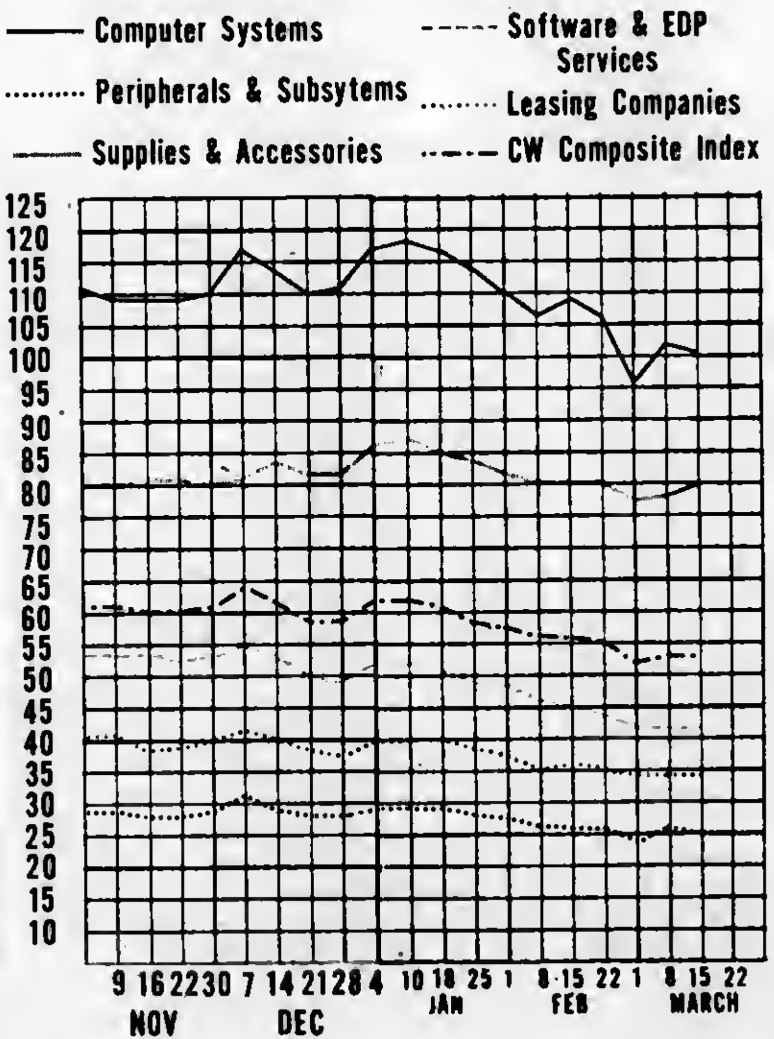
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, MARCH 15, 1973

EXCH		PRICE			
		1972-73 RANGE (1)	CLOSE MAR 15 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EOP SERVICCS				
O	AOVANCFO COMP TFCH	1- 3	1 3/4	+ 1/R	+7.6
A	APPLIEO OATA RES.	3- 7	3 1/2	0	0.0
O	APPLIEO LOGIC	1- 4	2 1/2	0	0.0
N	AUTOMATIC OATA PROC	66- 99	68 1/4	- 1/2	-0.7
O	BRANOON APPLIEO SYST	1- 2	5/8	0	0.0
O	COMPUTER OIMENSIONS	3- 14	3	0	0.0
O	COMPUTER OYNAMICS	1- 4	7/R	0	0.0
O	COMPUTER NETWORK	2- 7	2	0	0.0
N	COMPUTER SCIENCES	4- 10	4 1/8	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 3/8	- 1/8	-R.3
O	COMPUTER TECHNOLOGY	2- R	3	+ 1/4	+9.0
O	COMPUTER USAGE	6- 14	5 3/4	- 3/4	-11.5
N	COMPUTING & SOFTWARE	9- 2R	8 3/4	- 7/8	-9.0
O	COMRESS	1- 3	3/4	0	0.0
O	COMSHARE	5- 10	6 1/2	- 3/8	-5.4
O	OATATAB	4- 9	2 7/8	- 3/8	-11.5
O	EOP RESOURCES	1- R	1 5/R	0	0.0
A	ELECT COMP PROG	1- 5	1 3/8	- 1/8	-R.3
N	ELECTRUNIC OATA SYS.	43- 65	49 1/2	-2 1/2	-4.R
O	INFORMATICS	3- 11	4	+ 3/R	+10.3
O	I.O.A. OATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
U	KEYOATA CORP	7- 13	9	+ 3/R	+4.3
O	LOGICON	4- 9	5 5/R	0	0.0
A	MANAGEMENT OATA	3- 10	3	0	0.0
O	NATIONAL CSS INC	8- 41	36 3/4	-1 3/4	-4.5
O	NATIONAL INFO SRVCS	1- 5	1 3/4	- 1/R	-6.6
P	ON LINE SYSTEMS INC	5- 19	15 7/8	- 3/4	-4.5
N	PLANNING RESEARCH	4- 17	4 1/8	+ 3/R	+10.0
O	PROGRAMMING METHOOS	20- 25	22 7/R	- 3/4	-3.1
O	PROGRAMMING & SYS	1- 2	7/8	+ 1/8	+16.6
U	RAPIDATA INC	5- 27	19 1/2	- 1/2	-2.5
O	SCIENTIFIC COMPUTERS	1- 4	1 1/2	0	0.0
O	SIMPLICITY COMPUTER	1- 5	2 1/8	- 1/4	-10.5
O	T8S COMPUTER CENTERS	3- 6	3	- 1/4	-7.6
O	TCC INC	1- 3	1/4	0	0.0
O	TYMSHARE INC	7- 12	8 3/R	0	0.0
O	UNITEO OATA CENTER	5- R	5 3/4	+ 1/4	+4.5
N	UNIVERSITY COMPUTING	7- 26	10 1/8	+1	+10.9
A	URS SYSTEMS	6- 10	6 1/8	+ 1/2	+8.R
	PERIPHERALS & SUBSYSTEMS				
N	AODRESSOGRAPH-MULT	23- 49	22 3/4	-1 1/4	-5.2
O	AOVANCEO MEMORY SYS	12- 23	18 1/2	+ 1/4	+1.3
N	AMPEX CORP	5- 15	5 5/8	- 1/4	-4.2
O	ANOERSON JACOBSON	4- R	6 1/4	+ 1/2	+R.6
O	8EEHIVE MEOICAL ELEC	1- R	R	+1	+14.2
A	ROLT,BERANEK & NEW	5- 21	10 1/2	- 1/2	-4.5
N	RUNKER-RAMO	7- 14	6 3/4	- 1/R	-1.R
A	CALCOMP	9- 25	12 1/8	+ 3/R	+3.1
O	CAMBRIOGE MEMORIES	9- 15	11 3/R	+ 1/R	+1.1
O	CENTRUNICS OATA COMP	6- 2R	22	+1 1/2	+7.3
U	COOEX CORP	6- 25	14	0	0.0
O	COGNITRONICS	1- 5	1 5/R	+ 1/8	+R.3
O	COMPUTER COMMUN.	1- 7	2 5/8	+ 1/4	+10.5
A	COMPUTER EQUIPMENT	2- 4	2 1/4	0	0.0
O	COMPUTER MACHINERY	7- 13	11	0	0.0
O	COMPUTER TRANSCEIVER	2- 9	2 3/4	+ 1/R	+4.7
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	25 1/8	+ 7/R	+3.6
A	OATA PROOUCTS CORP	3- 7	3 1/2	+ 1/R	+3.7
O	OATA RECOGNITION	1- 5	2 1/2	0	0.0
O	OATA TECHNOLOGY	2- 5	3 5/R	- 1/4	-6.4
O	OI/AN CONTROLS	3- R	3 1/4	- 1/R	-3.7
N	ELECTRONIC M & M	3- R	3 1/2	- 3/R	-9.6
O	FABRI-TEK	2- 5	3 1/2	+ 1/R	+3.7
O	GENERAL COMPUTER SYS	6- 16	8	- 1/2	-5.R
N	GENERAL ELECTRIC	59- 74	67 5/8	- 5/R	-0.9
N	HAZELTINE CORP	7- 13	7 3/4	+1	+14.R
O	INFOREX INC	14- 36	15 1/4	-2 3/4	-15.2
O	INFORMATIUN OISPLAYS	1- 5	5/8	0	0.0
O	INFORMATION INTL INC	8- 25	11 1/4	- 1/4	-2.1
A	LUNOY ELECTRUNICS	6- 14	6 5/R	- 1/2	-7.0
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	20	-1	-4.7
N	MOHAWK DATA SCI	8- 27	7 5/8	- 5/R	-7.5
O	OOEC COMPUTER SYST.	3- 12	4 1/2	+ 1/4	+5.R
O	OPTICAL SCANNING	2- 16	4 3/4	+ 1/2	+11.7
O	PERTEC CORP	5- 17	6 1/2	+ 1/4	+4.0
O	PHOTON	3- 15	4	- 1/2	-11.1
A	POTTER INSTRUMENT	6- 21	6	- 1/2	-7.6
O	PRECISION INST.	2- 13	4	0	0.0
O	RECOGNITION EQUIP	5- 15	5 3/4	0	0.0
N	SANOERS ASSOCIATES	11- 21	11	- 5/R	-5.3
O	SCAN OATA	3- 13	2 3/4	- 1/R	-4.3
O	STORAGE TECHNOLOGY	17- 39	24 1/2	+2	+R.R
O	SYCUR INC	7- 11	9	0	0.0
O	TALLY CORP.	8- 15	10 1/8	+ 1/2	+5.1
N	TEKTRUNIX INC	34- 64	42 1/R	+ 1/8	+0.2
N	TELEX	4- 15	4 1/2	- 1/2	-10.0
D	WILTEK INC	10- 26	13	-2 1/2	-16.1
	SUPPLIES & ACCESSORIES				
O	RALTIMORE BUS FORMS	5- 9	7	+2	+40.0
A	RARRY WRIGHT	9- 14	9 3/4	+ 1/2	+5.4
A	OATA OOCUMENTS	17- 26	18 3/8	- 1/R	-0.6
O	OUPLEX PROOUCTS INC	8- 16	9 1/4	0	0.0
N	ENNIS BUS. FORMS	6- 10	6 3/R	+ 1/4	+4.0
O	GRAHAM MAGNETICS	15- 27	17 3/4	+ 1/4	+1.4
O	GRAPHIC CONTROLS	11- 15	10 3/4	- 3/R	-3.3
N	3M COMPANY	76- 88	86	+1	+1.1
O	MOORE CORP LTD	42- 59	58 3/4	+3 1/4	+5.R
N	NASHUA CORP	48- 62	52 5/8	- 7/8	-1.6
O	REYNOLOS & REYNOLO	37- 77	49 5/8	- 1/8	-0.2
O	STANOARO REGISTER	14- 20	16 1/2	-1 1/4	-7.0
O	TAB PROOUCTS CO	14- 23	18	- 1/2	-2.7
N	UARCO	20- 2R	20 1/R	- 3/4	-3.5
A	WABASH MAGNETICS	6- 11	6 1/4	+ 1/R	+2.0
N	WALLACE BUS FORMS	21- 26	23 5/8	+ 1/8	+0.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-244	238 1/4	- 1/R	0.0
N	COLLINS RAOIO	14- 27	24 1/4	- 1/R	-0.5
N	CONTROL OATA CORP	43- 78	46 1/R	- 1/4	-0.5
O	OATA GENERAL CORP	39-131	44 1/4	- 1/4	-0.5
O	OIGITAL COMP CONTRUL	3- 25	4 1/2	+ 1/2	+12.5
N	OIGITAL EQUIPMENT	72-105	R4 1/2	-3 3/4	-4.2
N	ELECTRONIC ASSOC.	6- 13	6 5/8	0	0.0
A	ELECTRUNIC ENGINEER.	6- 14	10 3/4	+1 1/2	+16.2
N	FOXBORO	23- 41	29 3/4	+ 1/4	+0.8
O	GENERAL AUTOMATION	13- 55	38	-5	-11.6
O	GRI COMPUTER CORP	2- 5	1 7/8	0	0.0
N	HEWLETT-PACKARO CO	46- 94	91	- 1/8	-0.1
N	HONEYWELL INC	106-170	116	+6 1/4	+5.6
N	18M	333-451	444	+3 1/2	+0.7
O	INTEROATA INC	R- 16	9 3/8	- 1/4	-2.5
N	MEMOREX	10- 38	9 7/8	- 1/4	-2.4
O	MICROOATA CORP	5- 10	R 1/4	0	0.0
N	NCR	27- 38	31	+2 7/8	+10.2
N	RAYTHEON CO	27- 47	29 1/4	-1 5/R	-5.2
N	SPERRY RAND	30- 50	41 5/8	-1 3/4	-4.0
A	SYSTEMS ENG. LABS	4- 16	5	- 3/4	-13.0
N	VARIAN ASSOCIATES	14- 22	14 3/4	- 7/R	-5.5
N	WANG LARS.	21- 61	21	-2 5/R	-11.1
N	XEROX CORP	121-172	16R 1/8	+3 7/R	+2.3
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 1R	3 1/R	- 5/R	-16.6
U	BRESNAHAN COMP.	1- 3	1 1/4	0	0.0
O	COMOISCO INC	3- 1R	12 5/8	- 3/4	-5.6
O	COMMERCE GROUP CORP	5- 11	4 5/R	- 1/R	-2.6
O	COMPUTER EXCHANGE	1- 3	5/R	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4 5/R	+ 1/4	+5.7
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	OPF INC	5- 13	7 1/2	- 1/4	-3.2
M	OATRONIC RENTAL	2- 4	2 1/R	- 1/8	-5.5
A	DCL INC	2- 10	2 1/R	0	0.0
A	OEARBORN-STORM	16- 26	17 7/8	-2 7/8	-13.R
A	DPA, INC.	5- R	6 3/R	0	0.0
A	GRANITE MGT	5- 11	5 1/8	+ 1/4	+5.1
A	GREYHOUND COMPUTER	5- 11	5	0	0.0
A	ITEL	7- 12	R 1/8	+ 1/R	+1.5
N	LEASCO CORP	12- 24	12 1/2	-1 1/4	-9.0
O	LEASPAC CORP	6- 15	5 3/4	- 1/4	-4.1
O	LECTRO MGT INC	1- 4	1 1/R	0	0.0
A	ROCKWOOO COMPUTER	2- 7	2 3/R	+ 1/2	+26.6
O	SYSTEMS CAPITAL	3- 20	9 1/2	- 7/R	-R.4
N	U.S. LEASING	19- 35	25 3/4	- 5/R	-2.3

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-RALT-WASH
O-T-C PRICES ARE 810 PRICES AS OF 3 P.M. OR LAST 810
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

SANOERS ASSOCIATES
Three Months Ended Jan. 26

	1973	1972
Shr Ernd	$.24	$.12
Revenue	43,095,000	36,601,000
Tax Cred	318,000	133,000
Earnings	1,094,000	559,000
6 Mo Shr	.46	.22
Revenue	81,789,000	66,157,000
Tax Cred	617,000	237,000
Earnings	2,113,000	1,019,000

SYSTEMS ENGINEERING LABORATORIES
Six Months Ended Dec. 29

	1972	1971
Shr Ernd	$.20	$.23
Revenue	7,563,017	7,082,080
aSpec Cred	349,709	201,832
Earnings	539,390	581,212

a-Tax credit and gain from sale of building and land.

LOGICON
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.09	$.14
Revenue	3,011,261	2,703,648
Earnings	77,890	124,309
9 Mo Shr	.40	.42
Revenue	9,176,514	8,099,022
Earnings	349,272	365,579

CONTROL DATA
Year Ended Dec. 31

	1972	1971
Shr Ernd	$4.06	$2.37
Revenue	664,000,000	571,187,848
Spec Cred	1,892,000	72,801
Earnings	62,398,000	35,780,891

GREYHOUNO COMPUTER
Year Ended Dec. 31

	1972	a1971
Shr Ernd	$.95	$.88
Revenue	46,918,000	51,090,000
Spec Chg	.....	b614,000
Earnings	4,107,000	3,807,000
3 Mo Shr	.21	.16
Revenue	11,327,000	12,688,000
Spec Chg	.....	b614,000
Earnings	901,000	694,000

a-Restated. b-Loss on settlement of litigation.

INFORMATICS
Nine Months Ended Dec. 23

	1972	1971
Shr Ernd	$.23	$.19
Revenue	13,273,000	12,733,000
Disc Op	.....	(112,000)
Earnings	349,000	296,000

INTEROATA
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.45	$.09
Revenue	12,814,900	8,762,500
Tax Cred	349,700	110,600
Earnings	894,900	155,800
3 Mo Shr	.09	.09
Revenue	3,544,900	2,528,200
Tax Cred	.....	110,600
Earnings	200,200	158,100

SINGER
Year Ended Dec. 31

	1972 (000)	a1971 (000)
bShr Ernd	$4.60	$3.73
Revenue	2,217,492	2,099,454
Earnings	87,465	71,544
b3 Mo Shr	1.65	1.40
Revenue	608,943	596,051
Earnings	30,972	27,056

a-Restated. b-Fully diluted.

COMPUTER HORIZONS
Nine Months Ended Nov. 30

	1972	1971
Shr Ernd	$.14	$.12
Revenue	1,556,630	967,615
Earnings	84,460	43,869

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Each drive has a waist-high slide-back cover, for quick and easy 3336 disk change. All internal components are easily accessible. And average access time is just 27 milliseconds.

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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Boston, Mass., and additional mailing offices

year

March 28, 1973

Vol. VII, No. 13

NEWSPAPER

NEWS IN BRIEF

Southern DP Centers Escape Recent Floods

CHATTANOOGA, Tenn. – DP centers remained high and dry recently throughout the worst floods to hit the Tennessee, Alabama and Mississippi areas in the last 50 years. However, the massive storm did manage to produce two close calls in Chattanooga and Huntsville, Ala., the cities hit hardest.

In Chattanooga, the Tennessee River crested just three feet below and 80 feet away from the computer room in Beyter Hall at the Chattanooga State Technical Institute. Pete Clark of the computer center said, "We weren't too worried because the predicted flood crest was two feet below us. However, we were standing by and could have moved all hut a few pieces of equipment to the upper floors."

At Prestolite Division of Eltra Corp. in Huntsville, the river crested within four feet of the danger level. Carl Terry of the DP department said the floods hadn't affected operations.

"We didn't make any preparations in case the river crested higher than predicted," he added when asked if the firm had prepared for a situation similar to what occurred in Wilkes-Barre, Pa., early last summer.

Bombing Suspect Charged With Arson and Murder

MADISON, Wis. – A plea of innocent was entered on behalf of Karleton Lewis Armstrong, one of the men sought in the Aug. 1, 1970, bombing of Sterling Hall at the University of Wisconsin here in which a physics researcher was killed and several computers destroyed.

Armstrong, 26, remained silent in Dane County Court here to charges that included four counts of arson and first-degree murder. Judge William C. Sachtjen entered the plea for him.

On the Inside This Week

GAO Claims Costs Of CCH Unknown –Page 2

Ansi Reopens Standards Unit For OS Control Languages –Page 15

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Systems/Peripherals 21

Domestic Satellite Scene Heating Up

E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Two recent actions have moved the domestic use of satellites for data communications users closer to reality.

Last week Western Union Telegraph Co. (WU) proposed new rates for its planned domestic satellite system which could cut current user rates by more than 50%. And American Satellite Corp. announced plans to have a system operating later this year for U.S. users.

For details of WU's Westar service see **Page 19**

Western Union, the only firm to have Federal Communications Commission approval at the present time for the con-

(Continued on Page 4)

New Restrictions

Mixed-System Support Policy Redrawn by IBM

By Alan Taylor
Special to Computerworld

ARMONK, N.Y. – The maintenance arrangements involved when IBM and non-IBM equipment are mixed, and by which IBM continues to maintain its part of the equipment, were again changed by IBM in letters to users last week.

The new arrangements, explained in a reissue of the IBM Multiple Supplier System Bulletin, added:

- Charges for costs of maintenance calls resulting from additions and alterations.
- Inspection by IBM local and laboratory personnel of altered and restored equipment.
- Provision for increased charges for maintenance contracts

(Continued on Page 6)

Solons Upset At Operations Of Computers

Exon Puzzled By Criticism

Carpenter Asks Bids Be Rejected

Carpenter Calls in the Experts

Exon Says IBM 'Is Pressuring' State Senators

Carpenter, Alone, Plans Costly Study

Omaha World-Herald
Midlands News
OMAHA, NEB., WEDNESDAY, FEB. 21, 1973

Gov. Exon Says Pressure by IBM Delayed New Bids

FASTER THAN ONE MAN SPENDING $50,000 OF THE TAXPAYERS' MONEY...
MORE POWERFUL THAN
ABLE TO ARRANGE COMPUTER STUDIES IN A SINGLE BOUND...
CARPENTER

Nebraska daily press gave the issue substantial coverage.

Nebraska Wins Fight for Open Bidding

By Michael Weinstein
Of the CW Staff

LINCOLN, Neb. – "I will not be frightened off by their (IBM) actions and conversations they have had with legislators and legislative staff." – J. James Exon, governor of Nebraska (Feb. 20, 1973).

This stand, and the accusation that IBM was using pressure to "hold a stranglehold on the computer market in this and other states," followed alleged state senate and local IBM efforts to halt the process of public bidding for computer equipment after seven years of a no-bid arrangement with IBM – a contract presently estimated at over $1 million a year.

The controversy began over a year ago when the governor said he wanted "to see if the same service and equipment could be obtained for less money."

Acting under the governor's orders the director of the Department of Administrative Services, Dr. Gus Lieske, began investigating other potential suppliers.

But before the evaluation could be completed, Lieske reported he was being pressured by local state senators – led by Sen. Terry Carpenter – together with local IBM personnel.

Carpenter and the other senators charged the state with "embarking on a course of changing computers when they had no long-term growth plan."

However, the state had one of the best computer operations in the nation, according to Carpenter, and he could see no reason to change it.

One senator related how a "reliable source" had told him that IBM made the best equipment and other equipment was "second generation."

"I wouldn't disrupt a smooth-flowing operation for the saving of a few dollars," Carpenter told the senate.

Senators then began to bombard Lieske with copies of a *Wall Street Journal* article in which a private financial analyst stated he would not invest in one of the other computer manufacturers the state was considering.

Don't Switch?

Joining the senators, according to

(Continued on Page 6)

New Lease Avoids IBM Penalties

By a CW Staff Writer

STAMFORD, Conn. – Users interested in IBM's latest 48-month leasing agreement now have an alternative from Computer Investors Group (CIG) which saves the user money and avoids the strict penalty clauses used by IBM.

Over a 48-month period, users opting for the CIG plan can save from $153,168 for a 370/135 to $926,208 for a 370/168 over the IBM plan.

While the IBM plan allows users to build up purchase credits to approximately 50%, CIG users can build credits up to around 60%.

Subleasing Possible

IBM does not allow the user to sublease his system while the CIG plan allows users to sublease, assign or transfer.

IBM will not allow trade-in of installed 360 or 370 systems – the CIG plan will allow for trade-ins.

(Continued on Page 2)

★ Special Report: The Non-IBM World – Page 29 ★

GAO and Rap Sheets – Part II

Cost to Develop Operational System 'Not Determined'

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Will the benefits of a national Computerized Criminal History system be worth the huge costs to develop it?

Apparently no one knows, according to the General Accounting Office, because neither the FBI nor the Law Enforcement Assistance Administration (the two main proponents of the system) have bothered to determine what a national system will cost the taxpayers, even though they are both pushing for its development.

Already, the congressional watchdog agency said, LEAA has awarded "grants totaling about $4 million for developing a prototype of such a system and to enable 20 states to participate when it becomes operational."

GAO noted, however, "substantial additional funds "will be needed to develop the national system, and said LEAA and state officials estimated a minimum cost of at least $100 million.

"But," GAO stated, "the cost to develop a fully operational system has not been determined," even in the face of the LEAA and state "guesstimates" about the total costs.

"Therefore, federal, state and local governments cannot determine whether they will be able or willing to meet the financial requirements of developing and operating the system," GAO charged.

GAO urged the Justice Department to "determine the total cost of developing and operating the criminal history exchange system" before "authorizing substantial additional expenditures" for the system.

"Without an accurate forecast of all system costs . . . the Federal Government is entering an open-end commitment; it has no assurance that the participants will be able to meet the financial requirements of the system," GAO said.

To participate in the system, it noted that each state will need necessary hardware, software, personnel and intrastate communication lines, "as well as the ability to convert arrest and disposition data to the standardized NCIC format and to identify fingerprints. . . The states, assisted by LEAA, will pay these costs."

The agency also stressed that local police and other criminal justice agencies will have to purchase terminals for use with the system to be able to query it. Approximately 38,500 terminals more than the ones presently hooked into the National Crime Information Center will he needed, GAO reported, all to be paid for by the local jurisdictions.

"We believe . . . that sound financial management of a project of this magnitude requires at least an estimate of the costs of the project."

At present, GAO reported, the FBI and the LEAA are to some extent squabbling over who should develop the cost information for the system, with both saying the other should be responsible.

Even though GAO noted that users of the system were "not sure that we are in a position to justify the cost involved to implement a criminal history exchange system," it added that LEAA had said that a cost-benefit analysis would be "inappropriate because of the many intangible benefits to be derived from the system."

GAO indicated, however, that "we believe . . . that sound financial management of a project of this magnitude requires at least an estimate of the costs of the project.

"Otherwise neither the sponsoring federal agencies nor the Congress can determine whether they will be able or willing to meet the financial requirements of the system."

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DPer-Lay Pastor Brings Gospel Of Automation to Help Churches

By a CW Correspondent

LOS ANGELES – A former IBM executive and lay pastor is now bringing the gospel of the computer to churches.

Jim McKeever, 42, president of Triversal Industries International, offers software systems tailored to help churches and Christian organizations with their bookkeeping, management and fund-raising.

Triversal expects to have a volume during its current fiscal year of $1.5 million and 50% to 75% will come from churches and religious organizations.

There are three divisions: computer services, business services and management services.

The software systems include a receiving and management system for charitable organizations which does mailing list maintenance, contribution income accounting, receipting for donations and management reports on fund-raising.

Another system offers financial and budget services for charitable organizations.

"We probably have $1.5 million in software which we can put to work for small organizations or churches."

In addition to religious clients, Triversal also has software for physicians, retail stores and convalescent hospitals.

It has an IBM 370/135 at a computer center in San Bernardino and an IBM 360/20 in Wheaton, Ill.

McKeever worked for IBM for 10 years and was programming systems requirements in Poughkeepsie, N.Y.

McKeever, who still teaches Bible studies in Los Angeles, said the reaction of clergy to the computer depends on their age. "Many churches have young progressive people," he said.

Churchmen telephoning Triversal are given a gentle introduction to the computer age when they are put on hold and a tape plays a hymn-like tune.

CIG Plan Avoids IBM Penalties

(Continued from Page 1)

IBM does not allow for a mainframe change within the term of the lease. This means a user cannot sign up for a 145 for the first two years to be replaced by a 158 for the remaining two years. But users can include a mainframe change clause in the CIG agreement with no incurred penalties.

The IBM agreement includes penalties for field-installing mainframe upgrades.

IBM 48-month subscribers either lose price protection, extend the entire system lease commitment for 48 months from the time of the feature upgrade, or they lose price protection and pay a 115% standard rental for the feature or upgrade.

Price-Protected

The CIG plan allows users to add field-installable features while retaining price protection and paying normal rental for the term of the lease remaining.

Users of the IBM 48-month plan pay stiff penalties for a field model downgrade – e.g., going from a 370/145 to a 370/135. These penalties include the forfeiture of price protection and payment of 12-1/2% of the net rental difference times 48 months or 25% of the net rental difference times the number of months remaining in the term.

IBM lessees pay the same penalties for feature removal and non-field installable upgrades.

In these cases, CIG said, it will retain price protection with the rental reinvoiced to reflect the number of months involved.

In the case of non-field installable features, users can include in the contract options with no incurred penalties.

Finally, an IBM user who lets his 48-month lease expire cannot renew while the CIG user has unlimited renewal options.

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DP Hiring Opens Up, but Managers Want Experience

By Toni Wiseman
Of the CW Staff

BOSTON – The employment situation in the data processing field is a little rosier these days. In the past six months, employment rates have moved upward and observers feel the trend will continue for some time.

An improvement in the business economy and a move toward automation by small- and medium-sized companies are credited with reversing the DP employment slump of the last few years.

In a random survey by *Computerworld*, data processing managers across the country agreed the marketplace is opening up. "We've lost a few good people recently," M. Shanahan of Metropolitan Life Insurance Co., San Francisco, noted, "and it's the first time in several years this has happened."

Better Paying Jobs Available

Shanahan speculated this loss of personnel was due to the availability of better paying jobs, an unusual situation in the past few years, he added.

F.R. Sullivan of the Gillette Co. in Boston felt that "in recent years the big companies were held down, but now they have a more liberal budget and are hiring again.

"The problem at present," he said, "is with the available labor pool. There are a lot of people out there, but they don't have hands-on experience. The quality of personnel available isn't what it should be."

John Bennfield of the First National Bank and Trust Co., Tulsa, Okla., agreed. "It's difficult to find qualified people now, despite reports of unemployment." Bennfield felt that experience was what counted, not a college degree.

Senior-Level Hiring

"The small companies, and many of the larger ones, don't have the facilities to train personnel," Robert Hackert of Stationers Corp., Los Angeles, added, "so they have to hire people who are capable of coming in on a senior level."

Even though A.T. Hayes of Casco Bank and Trust, Portland, Maine, preferred to train his own senior people and bring in new personnel in junior positions, he agreed the job market is "pretty good right now – particularly if the person has some real experience to offer."

Though lack of experience was the most often cited obstacle to employment, "overspecialization" was also mentioned.

"It's the big guys, the ones with B.S. or M.S. degrees who will have problems," predicted George Marra of Fishkill National Bank, Beacon, N.Y. "The openings are in the smaller businesses and they can't afford the salaries big degrees command, nor do they generally need that kind of expertise in their shops."

The majority of the new wave of hiring apparently is being done by medium-sized companies. Many of the DP managers contacted said they were looking for personnel with two to five years' experience, mainly in systems analysis. DP personnel with manufacturing or banking experience are also in demand. Openings in the scientific field are less numerous.

Education Commissioner a DPer?

WASHINGTON, D.C. – Computer-assisted instruction may get a boost under President Nixon's new nominee for commissioner of education, Dr. John R. Ottina, since his background consists largely of DP experience.

Before he joined the Department of Health, Education and Welfare, Ottina was chairman of the board and president of Worldwide Information Systems, a subsidiary of King Resources Co. Concurrently with that position, he served as executive vice-president of the Computer Systems Division of the parent company.

Before going to Worldwide, Ottina was a vice-president of Systems Development Corp., where he served for almost 10 years.

While with the government, Ottina served as deputy commissioner for education for development in HEW until last year when he was made deputy commissioner of education for planning, evaluation and management.

Focal Mechanism Program Focuses on Earthquakes

BOULDER, Colo. – Two geophysicists with the Earth Sciences Laboratories of the National Oceanic and Atmospheric Administration here are involved in computer studies of last December's disastrous earthquake in Managua, Nicaragua, calculating its precise direction of motion.

Hopefully, results will aid in predicting earthquake-caused tidal waves and the extent of damage of the earthquakes themselves.

William H. Dillinger and Sam T. Harding plan to add the results of their focal-mechanism program to the computer routine now used operationally to find and describe global earthquakes.

"Once the program enters operation use, it will give us an early view of the strike and dip of the faults that cause an earthquake and tell us something about the energy content of the earthquake," Harding said.

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9:00 a.m. . . . . Data Entry
2:30 p.m. . Data Communcation Planning

Day 2:
9:00 a.m. . . . . Data Communications
2:30 p.m. . . . . Software Evaluation Panel

Day 3:
9:00 a.m. . . . . . Installation Management
2:30 p.m. . . . . .Small Systems Panel

*Entry to the morning sessions is $25 per day, which includes all workshop materials, luncheon, and admission to the Exposition Hall (see pre-registration form on page 28). Afternoon sessions are open to all – free of charge.

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Approach With 'Caution'

Numerics an OCR Problem

By Ronald A. Frank
Of the CW Staff

HOUSTON – Handprinted numeric input to OCR systems must be approached with "caution and control" by the user. This type of application should be implemented only in cases where high volume source documents with limited formats are used, according to Don Larson, marketing manager at OCR Services, Inc.

Speaking at a Computer Caravan/73 session on data entry techniques, Larson told users that adequate preparation and "quality programming" of OCR devices are essential to operating an effective scanning installation.

One of the major problems with handprinted numerics is the readability of documents, users agreed. One attendee urged careful attention to education for those who will handprint numbers onto the OCR forms.

"When you want users to write legibly for the machine, you have to provide a quality platform, according to George Jordan, an OCR user. A significant improvement in handprinted input can be achieved by providing a comfortable "platform" for those entering data, Jordan said.

Individual numbers should occupy 75% of the inner box to be scanned, and they should be printed in clear, legible formats, the attendees agreed. Among the "problem numbers" are "5s" and "8s" while the number "4" was described as easy to recognize by OCR equipment.

One attendee who had implemented an OCR operation said it takes about three days to properly train those who have to handprint numbers. And proper formation of the numbers can be aided by "controlling" the area where the forms are written.

One suggestion for improvement that can be made easily by users was that the writing area be above the operator's waist, and the surface be slightly tilted toward the individual.

Although rejection rates for handprinted forms can be as high as 10% with new operators, simple education on entering the numbers can drop this rate to only .75% on "established users," one attendee said.

Most OCR installations scan alphanumerics, Larson said. Mark-sense scanning has limited use in educational areas such as exam scoring or surveys, and handprinted numerics should be used only when there is no feasible alternative, the attendees said.

Larson said his installation selected a Control Data medium-scale page reader with programmable CPU because it offered the most flexibility. OCR is a "more complex" medium but with careful software and standardization wherever possible, it can be made cost-effective, he said.

Data Entry Needs Vary With Each Site

HOUSTON – The need to replace or upgrade a keypunch or other data entry installation varies with each site.

At the Texas Commerce Bank, a keypunch operation was eliminated in favor of an Inforex data entry system with significant results, according to Phil Rossiter, manager of corporate stock transfer. The switch improved throughput by 25%, the user estimated.

The bank's stock transfer system needed modernization because the latest transactions were not being keypunched fast enough. This was not primarily a consideration of hours or dollars, but execution of transactions was being delayed because immediate data was unavailable, he said.

"There is no magic formula for updating an entry system," according to Don Larson, marketing manager at OCR Services, Inc. Most vendors recommend that a user with eight to 10 keynunches think about a faster entry system, but this is not a definite requirement. Instead, an upgrade should be considered whenever there are problems, Larson said.

One way to allow for continually increasing needs is through the use of intelligent terminals, said Jack Thompson, systems manager at Texas A&M University. These devices may "stretch your imagination," but they allow the user to operate with both off-line and on-line applications, he said.

In-House Programming Can Be Rewarding 'Chore'

HOUSTON – Sooner or later users must choose between vendor-supplied software packages and in-house-developed programs.

In-house programming can be a "tremendous chore," according to Jack Thompson, computer systems manager at Texas A&M University, but it is the only way the user can realize the full capabilties of his equipment.

Bank's System

Among the in-house systems developed by panelists attending a Caravan session was a teleprocessing monitor described by Sam Beard, supervisor of systems development at the Bank of the Southwest. The monitor handles Bankamericard transactions, a stock transfer system and similar financial applications.

The teleprocessing system can operate on either of two 370/145 CPUs at the bank, Beard said. And in case of CPU failure, the monitor can be switched to the second mainframe.

Whenever the on-line system goes down, everyone in the bank "gets very excited," Beard said. But despite some remaining "quirks in the system," current downtime is not enough to "establish an average," he said.

The on-line banking system replaced a card-oriented data entry system at the bank. Commenting on the importance of the new system, Beard said: "The data is gone, I don't have the card to fall back on anymore. The data is entered into the system and it has to be reliable."

Uncomplicated?

Built into the monitor is the ability of users to do development work in Cobol without knowing complicated communications considerations, Beard said.

Using the teleprocessing software, the bank can process a Bankamericard transaction in "three to four seconds" on a 4,800 bit/sec line.

In portions of the system, the bank has installed its own wire, thereby eliminating line rentals to the local phone company. In addition, shorter links in the system are operating at the relatively high data speed without modems.

Attendance Reaches 14,800

HOUSTON – Total attendance for five cities visited by Computer Caravan/73 reached 14,800, with about 2,300 persons attending the Caravan here. The three-day conference/exhibit will be in Anaheim March 27-29.

WU Sets Rates, American May Piggyback Telesat

(Continued from Page 1)

struction of a domestic, commercial satellite system, plans to launch its system in April 1974.

Under the proposed rates, a user would be able to rent one coast-to-coast private voice-grade circuit for around $1,000/mo, compared to the present charge for a private-line circuit from Bell, which is $3,000/mo. The firm said it planned to offer discounts to users who would rent circuits in bulk with the discounts starting for the user renting 60 or more circuits.

The Westar service will be much like the Telesat system now in service over Canada in that the satellite will have 12 transponders.

WU said its rate structure was not yet finalized, but noted it would have to be submitted to the FCC for approval before it could be official.

If American Satellite Corp.'s proposal to piggyback on the Canadian Telesat system is approved by the FCC, U.S. users will be able to take advantage of the communications satellite this fall. And U.S. users will have their own satellite system in operation approximately one year later if the firm's plans are cleared by the FCC.

The firm announced it had received commission clearance to issue contracts for some of the equipment in the proposed system. The commission vote does not necessarily mean the FCC will eventually approve the entire system, but it at least allows the firm to begin work now, American said.

12 Transponders

Under phase one of the American Satellite plan, the firm has already contracted with the Canadian Telephone System to use two or three of the 12 transponders on the Telesat system for U.S. customers.

During this part of the operation, the firm will build ground stations in New York, Dallas, Chicago and Los Angeles to serve the U.S. users.

While the final rate structure for this service is still to be determined by the commission, the firm added that the rates would be very competitive with the present Bell private line and Telpack rates.

American said data rates of 240K bits would not be the maximum that it could provide, but noted those were the highest any users had discussed with it to date for direct computer-to-computer communications.

Phase Two Contract

The firm also announced it had awarded a contract to Hughes Aircraft Co. for three satellites to be used in phase two of the project when American Satellite launches its own system in late 1974.

Presently the firm has already received a commitment from the National Aeronautics and Space Administration to launch the first of the domestic satellites in the third quarter of 1974, and has made a down payment of approximately $600,000 for the first launch by Nasa, it said.

During phase two the firm will also construct four additional ground stations near Washington, D.C., Atlanta or Miami, Seattle and San Francisco or Boston depending on the pattern of traffic.

Phase Three

The firm also announced plans for phase three of its proposed system by awarding a contract to Fairchild Space and Electronics Co. for the development of a 24-transponder satellite that would probably be launched in four or five years – doubling the capacity of the satellites to be used in phase two of the project.

The project is a joint venture of Western Union International and Fairchild Corp.

DP Firm Official Slain

By E. Drake Lundell Jr.
Of the CW Staff

FALLS CHURCH, Va. – Sam Shaulis was shot and killed here last week while trying to protect two women employees of General Computer Systems from a would-be robber.

Shaulis, 41, was shot four times by the gunman and died on the way to the hospital.

Shaulis was working over the weekend (March 17) with a part-time secretary and a systems analyst to get some proposals ready for a Monday morning presentation as part of his job as Washington, D.C., sales manager for General.

The part-time typist was working in the office of the building owner, which was next to the General Computer Systems office here, when the gunman entered and ordered her to open the other offices in the building.

She said she could not do that since she was a part-time employee. The robber then tied her up while "waiting for your boss."

Shaulis, noting the silence in the adjoining office, went to check. The gunman demanded he open the other offices, mistaking Shaulis for the building owner.

The systems analyst went into the adjoining office to check on Shaulis.

The gunman shot at her but Shaulis wrestled him to the floor before being shot in the stomach.

The gunman then started after the fleeing analyst, but Shaulis managed to chase him down the hall, where he was shot three more times before the killer fled.

Shaulis joined General Computer Systems just last month after a sales career with Honeywell's data entry operations in the Washington area.

He is survived by his wife and four children.

Police said there were no suspects as yet.

Local police have asked that the names of the analyst and part-time secretary not be released for fear that the still unknown gunman would try to kill the remaining two witnesses to the crime.

Pilot Program to Test DP As Collective Bargaining Aid

NEW YORK – The ability of the computer to be an effective helper in collective bargaining will be tested soon in a pilot program recently begun by the American Arbitration Association, Adelphi University and the Adelphi Chapter of the American Association of University Professors.

The three groups will feed data on collective bargaining issues into a central negotiating bank. "We hope to test whether agreement on information can help promote the resolution of conflicts in collective bargaining," said Donald B. Straus, president of the Research Institute of the Arbitration Association.

Built Mark I

H. Aiken, Computer Designer, Dies

ST. LOUIS – Dr. Howard H. Aiken, responsible for the first large-scale computer (the Mark I) died at the age of 73.

Aiken, emeritus professor of applied mathematics at Harvard University, worked in conjunction with engineers at IBM to build Mark I in 1944.

During World War II the computer was used to solve technical and secret wartime problems.

Possibly because of the early uses of his designs, Aiken became concerned with the computer's role in society.

At a testimonial dinner given for him in 1961 he voiced concern for applications chosen for computers and stressed a hope that data processing would be used for the benefit of mankind and not to its detriment.

Time and again he stressed that the computer was not an "easy answer machine" and its ability did not preclude the need for computer users to think.

"The only advantage of computers is greatly increased speed. But they can only act on information fed into them," he said in one effort to demystify computers and their usage.

Born in Hoboken, N.J., on March 8, 1900, he graduated from the University of Wisconsin in 1923 as an electrical engineer.

After spending 10 years as a professional engineer he returned to Harvard, received a Ph.D. in 1939, and remained as a professor until 1961.

Italian Courts Access Laws in Real Time

ROME – The Italian Supreme Court of Cassation has inaugurated a real-time information retrieval system to make legal "case books" available to courts throughout Italy.

By the end of the year about 100 visual display terminals will be installed and linked to a computer center here. The system will provide instantaneous information on the precedents of the court of Cassation (similar in function to the U.S. Supreme Court), the dates of judgments of the Constitutional Court and the contents of most important law tomes.

One problem in setting up the system was defining the data and creating a computer-based index for Italian case-law. The designers discarded the conventional "key word" approach and adopted a "concepts" system of document classification.

In operation, a complete text of each of 60,000 maxims is contained in the computer file. Using predetermined criteria, the computer breaks down the maxim texts, removing all insignificant words. Each remaining word is compared against a special thesaurus held in storage.

The thesaurus, composed of about 40,000 words, was reduced to language "seeds" compiled in a special index.

To retrieve information, the inquirer enters a random combination of language seeds. The computer then selects the maxims containing all the words entered by the inquirer.

The system is based on a Univac 1106 CPU linked to Olivetti display terminals equipped with printers. These are located in various offices of the Supreme Court in Rome and in Courts of Appeals in Milan, Turin, Florence, Bologna, Naples and Palermo.

Codasyl Committee May Incorporate

Special to Computerworld

PITTSBURGH – The Codasyl Planning Committee, one of the five standing committees of Codasyl, is moving to incorporate itself as a separate body.

The draft incorporation papers produced by Chairman Warren Simmons have as a primary aim the protection of the position of committee members who are not able to physically attend meetings. This is particularly necessary for the planning committee because many of its members are societies with small travel funds, and some are situated overseas. Planning committee meetings in the past have taken place only irregularly and with small attendance.

At the February committee meeting Simmons produced what he called a "straw man" constitution developed mainly from the constitution of a user group. The plan would have resulted in the direct appointment of task force officers, with little actual power being held by the members of the committee themselves.

During the discussions several changes were agreed to which protected the power of committee members to obtain information, and have some influence on appointments. Disagreement still remained on admitting the public to meetings. In the straw man constitution the public was excluded from planning committee meetings.

In the current Cobol constitution one of the purposes of the conference is to perform all its work in public. But the majority of those present voted against admitting the public.

The February meeting was attended by representatives of the Burroughs Users' Group, the Association for Data Service Bureau Operators, Adapso and the Society of Certified Data Processors, as well as the committee officers. Membership is open to any organization interested.

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*EDP Analyzer, October 1972, That Maintenance "Iceberg," P.1. (Send for complimentary copy.)

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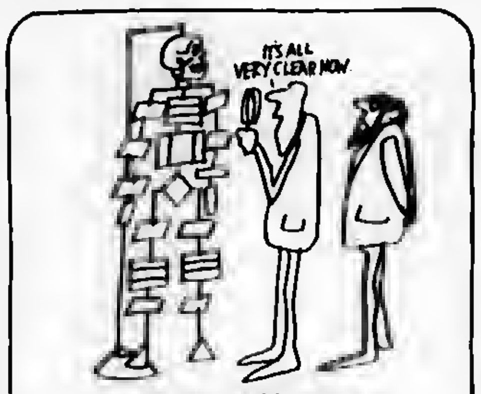

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IBM Letter Tells of Revisions in Maintenance Policy

(Continued from Page 1)

"to cover costs" where the costs of maintaining have been significantly increased by the addition of alterations.

The bulletin also places new restrictions upon the additions and alterations which can be connected, over and above the older restrictions laid down in the 1956 Consent Decree.

Alterations must now conform to specific IBM rules (all parts and wiring shall be made clearly distinguishable, full descriptions of all alterations and their maintenance documentation must be made available, microcode alterations and displacements must be identified, etc.). However, despite the requirement that users provide maintenance documentation applicable to the maintenance of the altered equipment, the IBM bulletin said that the maintenance will be performed using the maintenance documentation for the unaltered equipment.

IBM disclaims any blame for future damage from following these procedures.

Another new area involves changes in warranties affecting unaltered equipment.

Previously IBM has accepted that maintenance responsibilities for machines which have not been altered in any way did not change the warranty involved.

Under the new agreement, unaltered machines – and ones not directly connected to non-IBM equipment – can have their warranty affected if "an alteration or attachment impacts any maintenance dependancy of one IBM machine upon any other IBM machine." The case apparently dealt with here involves the use of altered IBM processors in the maintenance procedures for other independent units, such as tape drives, communication terminals, etc.

While the new bulletin contains many much more explicit provisions than older versions of the bulletin, it still contains a number of undefined terms which make it impossible for a user to explicitly determine in advance how they are going to be applied, or whether their application is in conformity with the contractual obligations assumed by IBM.

One particular omission concerns the mention of what is to happen when maintenance is "practical," but where it still may involve some practical modification of IBM's maintenance methods for the unaltered machines.

In the maintenance procedures spelled out, the IBM field engineer will only give the user the option of removing the alteration, or having the service organization responsible for operation of the alteration or attachment ensure that such parts are operating properly.

If they are so operating, and yet the IBM procedure is no longer strictly followable, the process appears to lead to an undefined situation.

IBM Data Unavailable

Another problem facing the user is in determining the IBM diagnostics, maintenance procedures and other maintenance documentation to be used.

While these are supplied to the IBM maintenance forces, they may not be supplied to the user, although he is responsible for checking that his attachments are effectively transparent to the IBM procedures. Moreover, no provision is made in the bulletin for providing customers with notices of changes in maintenance procedures, even though these may be changed by IBM.

User charges under the bulletin also appear to need further clarification. The IBM charge philosophy is stated to be to recover "additional costs," but no provision of allowing users to determine what the actual cost of IBM maintenance currently is, or by how much it may have increased, is provided.

In the past IBM has stated that such maintenance costs are considered as being proprietary information, and it appears unlikely that its position will be reversed at this time.

A more likely IBM position appears to be that users will be expected to pay whatever IBM selects as the additional costs, without being permitted to verify that the charges are correct.

IBM's maintenance philosophy is further stated in the bulletin to be the recovery of only those additional costs incurred by IBM *as a result* of the attachments or alterations, and is further restricted to cover only such service charges so identified at the time of the actual service call. This provides users with some protection both for frequency of additional charges, and for the amount of any specific charge.

Data Logger Checks Furnace

MELBOURNE, Australia – Victorian State Electricity Commission has installed a data logger to monitor the operation of an experimental furnace at the commission's Central Scientific Laboratory.

The data obtained is recorded on paper tape and processed and checked by computer to provide values for a number of parameters which describe the performance of both the radiative and convective heat transfer surfaces in the furnace.

The experimental furnace is used to evaluate the combustion and fouling characteristics of brown coals. These tests could aid in the selection of future open cut sites for optimum furnace performance.

Nebraska Wins Fight for Public DP Bidding

(Continued from Page 1)

Lieske, were IBM's local sales personnel who began to state openly that the problems of switching to another vendor could endanger the state's entire operation. Lieske reacted by adding a guaranteed conversion clause to his request for proposal.

As an enticement to stay with IBM, Lieske said, the local IBM staff then outlined features of "virtual memory."

The IBM contention was that two 370/145s using "virtual memory" could outproduce the present configuration of a 370/145 and 370/155 at less cost. "Further, IBM said they could have this "virtual memory" operation up and going over a weekend.

"My response was to say fine, and I gave IBM a weekend in December 1972 on which I would like to see their system up and running," Lieske recalled.

Despite the pledge of weekend service, Lieske noted that three months later IBM still did not have the "virtual memory" configuration up. The state did, however, change its specifications – once.

IBM's explanation, Lieske claimed, was that while IBM could have the system up over a weekend it required a great deal of preplanning.

Further, IBM indicated it had found it difficult to find an additional 370/145 for the configuration, Lieske said.

Lieske said that soon after, he began to notice similarities in the complaints of the local IBM representatives and the arguments of the state senators.

While there was nothing on paper or documented, the similarity of IBM questions and state denouncements became "predictable," he said.

About this time, Carpenter and the senate reversed their stand. Now they charged that the state's operation was weak and required independent study.

Carpenter – on his own – arranged for the study which would cost the state $100,000 "to determine the real problems within the state's DP operation."

This proposed study, coupled with Lieske's allusions to possible IBM-senate collusion, brought the local press into the conflict with a series of articles and cartoons deriding the senate position.

Governor's Statement

Trying to restore some order to the situation, the governor issued a public statement that (1) it was not the state's position to "turn IBM out" and that IBM had an equal chance to be the successful bidder, but (2) it was the administration's goal to reduce costs, and if another vendor could be found which supplied equal or better service at lower costs, so be it.

When this statement did not seem to ease the situation, the governor called a press conference to state he would "not be frightened off . . ."

This position brought quick response from IBM, which dispatched Ralph A. Pfeiffer Jr. – president, data processing division, and IBM vice-president – and Jack E. Guth – midwest regional manager and DPD vice-president – to Nebraska.

Their goal, Lieske believed, was to show the state, through two meetings – first with the governor and then with Lieske – that IBM had been completely ethical and any feeling by the state as to pressures was "merely a misunderstanding."

Pfeiffer contended that IBM had investigated the situation and found no wrongdoing by IBM or any of the firm's personnel, according to Lieske.

Lieske was not so sure, but a main problem appeared to be centered in interpretations and misinterpretations on exactly what "unhooking" and "preannouncements" are.

Preannouncement or Unhooking?

According to IBM, its "preannouncement" policy, one of the rules all salesmen are supposed to follow, is "not to divulge or speculate on unannounced equipment, programs, education, services or plans prior to official announcement."

"Unhooking," according to IBM, "is that from the date IBM learns of the commitment [to another vendor] until the date the products are installed or services have commenced IBM representatives will refrain from efforts to sell substitute products or services."

Lieske claimed once in the past a local school had chosen another vendor over IBM.

In this earlier case, according to Lieske, and in the present controversy the state senate had been drawn into the situation. He pointed out that time and again questions asked by the senators supported current IBM arguments even though the senators had no background in data processing.

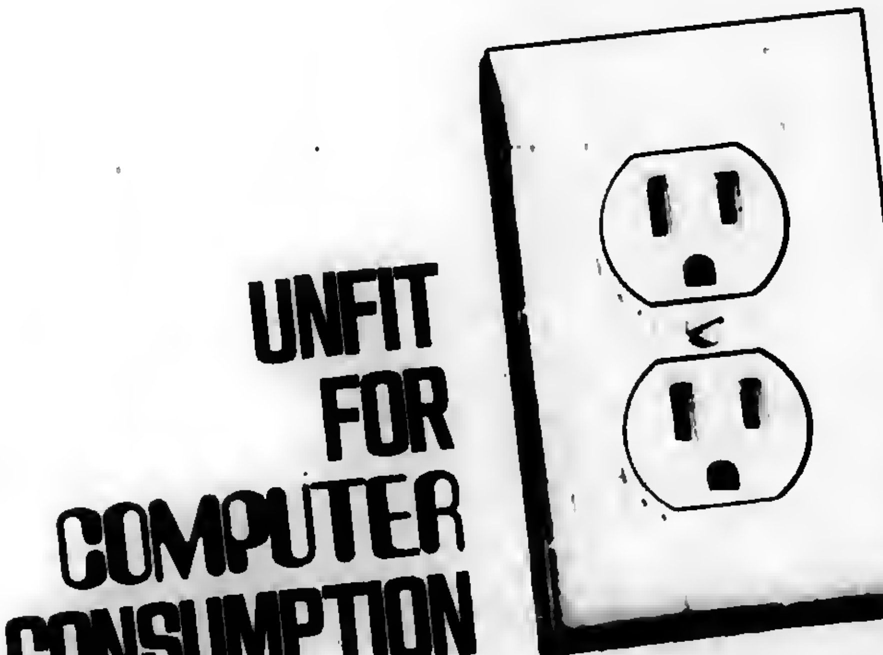
Pfeiffer, according to Lieske, did state there was no public evidence to support such a charge.

Lieske also claimed a local IBM representative had told him enough about "virtual memory" so that the ensuing release was no surprise, but again Lieske had no proof.

Will Fly to Nebraska

Pfeiffer and Guth, according to Lieske, indicated they were on a customer-relation call and that if Lieske ever did have any problems, he should call Pfeiffer directly and he would fly to Nebraska to help.

At present, following local press coverage, the governor's strong statement and IBM's visit, the opposition to public bidding has backed off. The proposed study is now a thing of the past.



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System Protection Depends on Well-Educated Auditor

By a CW Staff Writer

TORONTO – Internal auditors are "clearly responsible" for helping companies "implement adequate security" for computer systems to protect against fraud and other threats, but they need to be educated about computers to do so, according to Dr. Harvey S. Gellman, president of DCF Systems, Ltd.

Auditors and DP Security

Speaking here at a seminar of the Toronto chapter of the Institute of Internal Auditors recently, Gellman said the internal auditor "must be concerned not only with protecting his company from computer fraud, but also protecting it from loss of availability of its computer systems" from such forces as fires, natural disasters and social protests.

And, of course, "the internal auditor will not be able to make an adequate contribution to the development of data security controls unless he has considerable knowledge about computer system design and computer programming," Gellman said.

"It is therefore necessary to provide good education for the internal auditor to equip him for his role in protecting the security of computer systems."

Fraud Protection

In the fraud area, protection consists of two "essential measures."

"One," Gellman told the auditors, "is the separation of duties. For example, programmers should not operate the computer and the input control group should not prepare input."

The second measure, he said, is the separation of controls. "There should be a separate audit group, not under data processing."

In some cases, he noted, "the personnel of the data processing department may resist the involvement of auditors in their work. They may feel that the presence of auditors implies inadequate quality in the work of the data processing personnel."

But, he said, the cooperation of the auditors and DP personnel usually improves with time, and he noted "good collaboration is essential if proper controls are to be achieved in computer systems."

The internal auditor can best meet his responsibilities if he can review computer programs in the design stage, Gellman stressed. But if he is unable to become involved at this point, the auditor should review the programs after they have been written "to determine the adequacy of built-in controls and to search for possible loopholes."

The third and, Gellman said, the worst, choice "is for the internal auditor to audit the computer systems after they become operational.

Too Little Too Late

"After the computer systems become operational," he noted, "it is extremely difficult for the auditor to become familiar with all the intricacies of the computer programs and the operating procedures. Documents that describe the system are rarely adequate for helping the auditor acquire a full understanding of what is going on" in the system.

While most auditors now generally audit "around the computer" using traditional auditing procedures, Gellman recommended they begin "auditing through the computer" by using such techniques as simulated transaction testing, generalized audit programs and specialized audit programs.

Cost Analyses

In addition, Gellman maintained auditors should help companies in performing cost versus benefit analyses to determine appropriate security for different sets of data and programs in a system, because it is not cost-effective to spend $10,000 to protect something worth only $5,000.

"In terms of an overall strategy for data security," Gellman said, "I believe the internal auditor should try to identify the hazards that could affect his computer systems most seriously. He should then select and implement a few key security measures (usually involving about 20% of the total effort) that will produce about 80% of the desired results."

Tax Collector Taxed

LIBERTY, Pa. – The tax collector here took one bite of computerization and decided he didn't like the taste.

Phil Bugen, Liberty Township tax collector, notified the county tax board that he doesn't want the township's tax bills prepared by computer this year. The township reportedly had problems converting its tax records to the computerized system and in putting a recent revaluation on the tax rolls.

A large number of duplicate assessments and errors on the 1972 rolls required adjusted tax bills and a sizable municipal tax increase this year to make up for uncollected taxes.

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- How can the information system improve financial control?
- How can long-range systems planning best be achieved?

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T.A. LaRoe, Plant General Manager, Westinghouse Large Turbine Division.
J.B. Ferguson, Vice President and Controller, Westinghouse Electric Corporation.
R. L. Custard, Vice President, Divisional Management Systems, Westinghouse Tele-Computer Systems Corporation.

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- How can corporate assets be optimized among alterntive uses of funds?
- How can you choose the most effective tradeoff between risk and rate of return?
- What information does management need for strategic planning?
- How can efficient graphical display contribute to more effective man-machine planning?
- What are the implications of advanced information technology in managing an organization?
- What skills are required to develop a sophisticated planning system?

The IU team will consist of:

Charles J. Curto, Manager, Development Planning.
Howard C. Jansen, Manager, Strategic Planning.
Thomas H. Johnson, Manager, Systems Development.

Friday, May 11

The second day will be devoted to separate Workshops that permit a more detailed examination of each company's system and management philosophy.

The fee for the two-day Conference is $175. The first day may be attended separately, at a fee of $100. The fee includes all handouts, lunch on both days, and a banquet on May 10. Non-members will be charged an additional $30; this entitles them to membership in SMIS for one year.

PRE-CONFERENCE WORKSHOPS. Two Workshops will be given on Wednesday, May 9. The fee for a Workshop is $75 including all handouts and lunch. The topics offered will be:

#24 Financial Management Information Systems, Willis I. Eise, Vice President, First National City Bank, New York City.
#25 Ingredients of Successful MIS Project Management, Dr. Richard F. Powers, Commander, U.S. Navy, Office of Assistant Secretary of Defense (Systems Analysis).

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Register me for May 10 and 11 ($175) – ALSO check below which session you plan to attend Friday:

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One User's Trial by Fire

It's the Hard and Dangerous Way to Break Into DP

By Michael Weinstein
Of the CW Staff

MERIDEN, Conn. – "Trying to improve our company's operation with a computer almost put us out of business," Frank Gilchrest of Napier Co., a jewelry manufacturer, declared.

In 1966, the firm started to look at computers as a tool to improve its order entry and accounting systems. Business was improving at such a rate that "the girls could not keep up," Gilchrest related.

"We didn't understand computer operations but we did know what we wanted to accomplish."

With his objectives in mind, Gilchrest went to several computer vendors for assistance and proposals.

A small system was chosen on the basis of cost and free training, he remembered.

Prior to the computer installation, in January 1967, Gilchrest and another Napier employee attended a three-week class – given by the vendor – in New York

"The implication at that time was that after three weeks, we could return and start operating our system," he stated.

"At the time this did not seem strange to us, as we had no previous experience with computers, and viewed them as just a more complicated adding machine," he added.

With the short course behind him, Gilchrest started to operate his machine, but "nothing worked."

"We had no idea what programming meant at that time," he said, and thought that each program had to be an entity in itself.

So instead of writing a master file and routines to work on that file, Gilchrest started to write one large program.

This program was to have everything needed to do the order entry applications. His initial thoughts were that the program had to be rewritten each time new orders were received.

Further, as the program had to include all the data in addition to the code, it soon began to run into the thousands of statements.

Soon it became evident that Gilchrest was having problems, so he called in his local technical representative.

"But he was as poorly trained as I was," he noted. In fact, he had attended the same sort of schooling that I had with his previous experience being an operator in a bank."

So they took their program to a computer in Hartford to see if it would run on a larger machine. "It didn't," he said.

At this time, Gilchrest said, "we knew we needed expert help, so we called the vendor and asked for a specialist.

The specialist came, explained about master files and application routines, gave some advice and left.

"Every other week, the expert would come look at our program and write some advice on the back of envelopes or other scratch paper. We treasured these notes, and hung them on the computer, each time trying to implement the expert's advice before the next visit."

After about nine months of this work and rework, the program would run, but the troubles were not over.

"Our applications had major bugs, so that when a customer sent in an order for $500 we would ship him $5 worth of merchandise," he related.

"After some months of this type of service we were actually in danger of going out of business. So we went back to the vendor and asked for a full-time expert.

"When the new expert arrived, he was astonished, amused and upset from looking at our code," he said.

"But after six months, we were able to rectify the problems. During this time we had to go back to a manual operation."

During the same period of time, Gilchrest learned more about computer operations so he could write his own code and operate the system.

Asked whether management at Napier was ever upset during those trying times, he responded: "They were upset but they looked to me to solve the problem. My problem was that I was looking at nobody."

ASM Explains Why It Left Foundation

Special to Computerworld

CHICAGO – The unpublished reasons why the Association for Systems Management withdrew last month from the Computer Foundation project include fears that the group would be powerless to change anything it did not agree with, and suspicions that a "sales crisis" was behind the move to have the CDP program supported by other organizations on an industry-wide basis.

These reasons were in addition to the official explanation given that only a few members of ASM were involved in computer practice certification interests.

In giving these reasons to an ASM member who had challenged the official line, an ASM spokesman emphasized that ASM was not against the concept of an "umbrella" society – but that it was convinced the foundation as currently organized was not such a society, and would make no real impact upon the DP profession.

When the Time Comes

When an umbrella society that would make a real impact should appear, the spokesman stressed, it would be a dereliction of duty not to support it.

The main surprise among the latest ASM reasons for withdrawal was the assessment that the CDP program was apparently in a "sales bind."

Data Processing Management Association figures issued to members of the foundation organizing committee indicated that income from examination fees was rising during the past four years. However this increase appears to represent the increasing number of people retaking the exam. A second look at the figures showed that first-time registrations had in fact dropped from 2,233 in 1970 to around 1,430 this year.

At the same time, both DPMA and ACM have had continuing financial problems during the past year, making it unlikely that the losses normally incurred by DPMA in supporting the examination would be able to be taken out of either society's reserves in the future.

Pourquoi est-ce que je dois changer de langue? Il m'a pris dix ans pour apprendre celle-ci.
(Why should I switch languages? It's taken ten years to learn this one.)

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Editorial

No More Funds

Congress should stop all funds for the development of the FBI-operated Computerized Criminal History System until its operational deficiencies and overall cost can be fully explored.

No more funds should be appropriated until the FBI and the Law Enforcement Assistance Administration can develop effective, meaningful guidelines to insure the accuracy and completeness of the information in the system.

A recent General Accounting Office report shows clearly that the system is plagued by operational deficiencies and that the plans of the FBI to overcome the deficiencies are clearly lacking in scope and substance.

In addition, the GAO report indicates that no one in either the FBI or the LEAA has given eny really serious thought to the overall cost of development and operation of the system.

Only when these blanks are filled in can there be a knowledgeable debate over whether the system will be worth the cost and whether it will assure that individual liberties can in fact be protected in such a system.

'Sorry, Pal — It's Indelible'

Letters to the Editor

'RPG II Advocates Are Small Thinkers'

Green-hat accountants never die – RPG II won't let them . . . Among others, this statement refers to the DP manager of States Steamship Co. for his letter [CW, Feb. 21].

I work in a predominantly RPG II shop. I am the only die-hard Cobol man left. At least I was until the company outgrew the small-time batch-processing method and decided to go on to bigger and better things. They are contemplating a 370 DOS/VS with CICS.

All of a sudden reality hit. IBM's CICS doesn't even support its own RPG II. As a matter of fact, any sophisticated software does not support RPG II. Why doesn't it support this fine Mickey Mouse Language that only the old time green-hat accountants understand? Ask IBM.

RPG II is the big brother of RPG which was designed to help accounting departments convert from EAM equipment to 360/20 card systems without an extensive knowledge of DP techniques. Even the terminology of the language is the same as EAM terminology.

There is extremely limited control of I/O. There is no such thing as working directly in the I/O areas or redefining area in core. It is easier to write another RPG II program than to debug the present one.

Any systems man will tell you that you must design a system, using RPG II, around the limitations of the language whereas with Cobol or ALC you can design the system around the needs of the customer and program it accordingly.

Any RPG II shop that exists within a growth company is inevitably going to face a conversion problem, either to Cobol or ALC, lest the DP manager wishes to tell management that the company cannot grow into online terminals and sophisticated systems.

RPG II advocates are small thinkers with limited ability. They are trying to awaken the Romans, not the modern-day analysts. They always refer to the Data Division of Cobol for comparison. They never refer to the Procedure Division vs the Calculation Section where one Cobol compute statement will accomplish six to 10 RPG II statements.

I do not think that Cobol is the ultimate answer to computer programming; however, it will survive, per U.S. Government requirements, over any and all languages. No matter what happens in the industry, it will support Cobol until something specifically replacing Cobol occurs.

I'm placing States Steamship Co. on my list of places not to send a resume. I prefer State of the Art growth companies.

Marvin S. Ruth
Systems Analyst
Hacienda Heights, Calif.

Design, Plans Make Language Successful

Two more cents for RPG II. Apparently the persons writing encomia of this language have the good fortune to be part of a team or leader of a team of professionals when it comes to programming. Give these people Cobol or Fortran and they would probably have equal success.

Success or failure using a particular language cannot be attributed to the language but to the design and planning (or lack of) which preceded the actual writing of the program. This would also account for ease or difficulty in debugging programs.

Blaming inefficiency on a computer language is really a copout. One had best examine system designs and programming techniques for the real culprits.

A few tips for disgruntled RPG II users:

- The basic cycle as explained in the Language Manual is sufficient; any more detail is superfluous.
- Liberal use of the DEBUG operation greatly reduces debug time.
- The cycle is readily overridden by use of the READ and EXCPT operations.

Michael T. Rusk
El Paso, Texas

Codasyl Work Based On Problem Definition

Current discussions of Cobol language development appear grouped more around problem definition (how much should be standardized) than around proposed solutions (Draft Proposed Revised Standard X3.23).

More than a decade ago, representatives of the computer industry, government and some very large DP users met and defined a problem. The scope of the problem was restricted to language specifications.

Considering the situation in 1959 and 1960, a more inclusive scope could very well have killed the standards development effort. The current work of Codasyl in PLC and Ansi in X3J4 is based on that problem definition.

Complaints by users or their would-be spokesmen that PLC is not considering items outside language specifications for standardization ignore that bit of history.

PLC cannot be expected to work on something without direction. Ansi is responsihle for directing the development effort. Specifically, X3 directs the efforts of its working committee X3J4 and Codasyl.

Individuals who feel that the problem definition needs widening should address their comments to the appropriate authority: Sparc, c/o Ansi X3 Secretariat, Bema, 1828 'L' Street NW, Washington, D.C. 20036, with a copy to Rohert Kearney, chairman X3J4, Bell Telephone Lags, Bisp Area Room 4D819, P.O. Box 2020, New Brunswick, N.J. 08903.

Comments may also be directed through the Acpa Standards Committee, P.O. Box 95, Kensington, Md. 20795.

James Manley
Treasurer
Association of Computer
Programmers and Analysts
Kensington, Md.

Hit-and-Run Tactics Hurt Entire Industry

One point five cheers for Jerrold Asher ["User Deserves Support, Not Hit-and-Run Treatment," CW, Feb. 21]. The remaining cheers will be promptly delivered after the "how" is strengthened with the "why" analysis of these "hit-and-run tactics" and the necessary "what to do about it!"

Another marvelous piece of full-page color advertisement exists which nroclaims that a pretty young lady is ". . . working on your software. On our payroll." For definitional purposes it must be made clear that the super-promising ad intends "your" to refer to the customer and "our" to refer to the company making these wonderful announcements.

Based on our experience, the ad should correctly proclaim ". . . working on our software, on your payroll" because we have spent many thousands of dollars in expenses, lost an even greater sum in revenues and, most significantly, had to stand by helplessly to see our integrity and reputation shaken because of the widening credibility gap between us and our customers.

Fire the pretty young lady who, it appears, turns out rotten systems software? Negative! Because she works on what she is told to work on and for as long as management decides until her services are needed elsewhere to build a newer mousetrap with which to catch new customers without giving a damn if the "old" mousetrap will work.

The scheme concocted hy management works marvelously well, but is a very sad example of today's business ethics and the morality of a growing number of business executives.

It is rather simple to recognize the logic of the thing with simple arithmetic. Based on the closing price of that company's common stock as reported in CW's Stock Trading Summary of Feb. 21, this president does not have to care what happens to his customers anymore, or how hard his systems programmers have to struggle to right wrongs and do a good job.

He personally is worth in excess of $14 million and that's what gives him the "right" and "might" to tell a very disappointed and unhappy customer of his that he has the wrong attitude because the customer (that's us) was so frustrated that its president (that's the undersigned) picked up the telephone, called that president (guess who) and had the shock treatment of his life when told he had the wrong attitude because he complained about the defect-riddled delivery made by that president's company and which, five long months later, remains in that unusable state.

Perhaps if we would all accept a higher grade of responsibility and report to everyone else the "who done it," we would soon be rid of those Asher addresses. His conclusion is most deserving of being repeated: "The hit-and-run tactics of some firms are only profitable in the short run. In the long run they are pernicious to the entire computer industry."

Heinz Dinter
President
Computer Management Corp.
Miami, Fla.

Software Support: A Learning Process

As an NCR user, I can fully support the survey on "NCR Users Pleased With Hardware, but Want More Software Support" [CW, Feb. 28]. Software support is a sore subject with us. We pay $800/mo for software support. The man assigned to us had never seen the package programs before this assignment, and his help to us was limited to only putting the package on the system; no program modifications were allowed.

After almost a year of this, we feel we have paid NCR well to train one of its analysts. This man is now qualified to install the hospital package programs; hopefully, he will be able to utilize this experience and the next user will not suffer.

Glenn T. Young
Director of Data Processing
Matagorda County
Hospital District
Bay City, Texas

(Other letters and viewpoints on Pages 11, 14 and 16)

For Want of a Filing Cabinet

Cobol Not Transferable Due to Lack of Right Support

For some years now, one of the questions a lot of people have been raising is, "Why isn't Cobol transferable from one machine to another when it is supposed to be machine independent? Isn't that what Cobol is all about?"

It's a very valid question and one to which at last I think I found the real answer. The answer is anything but what I expected it to be. As a matter of fact, even when I first discovered the answer I didn't realize it.

The answer is a four-drawer filing cabinet in Pittsburgh, Pa. The four-drawer filing cabinet concerned belongs to U.S. Steel, and is next to the desk of Warren Simmons.

The Taylor Report

By

Alan Taylor, CDP

Simmons introduced me to his cabinet so I could get a telephone number. He had no difficulty in finding the particular cabinet for it was the only one there.

In fact it was the only one he had space for. And that is the important point. For Simmons, as well as being an employee of U.S. Steel, is also their representative in many Cobol organizations.

Currently he holds two key positions. He is the secretary of the Codasyl Executive Committee and he is also the chairman of one of the Codasyl standing committees, the Codasyl Planning Committee.

To qualify for these positions, or indeed to be a member of Codasyl at all, a member must be an individual who "volunteers and has the support of his organization."

Simmons certainly volunteered, but has he really got the support of U.S. Steel? Is the provision of a filing cabinet – one single filing cabinet – supporting Codasyl or is it hamstringing Codasyl?

Personally, I think there is no doubt that U.S. Steel's "support" of the very important positions held by its representative is not genuine support.

Simmons' Duties

Let us look and see what the duties of Simmons are and how they would relate to the one filing cabinet. Let us also look and find out what the consequences of not having better support from U.S. Steel have been in the past year or so.

As secretary of the Executive Council Simmons has to maintain the records and correspondence not just of the Executive Council but of the whole of Codasyl.

Simmons is the key person with whom all documents are supposed to remain. Moreover they are supposed to be publicly available since the work of Codasyl is in the public domain.

That isn't just an idea. It is one of the fundamental purposes of Codasyl. The only way this work can be in the public domain is to keep all the records of it available to the public.

Certainly committees which meet inside this and other countries, and which do not permit the general public to come to their meetings, cannot be said to be keeping their work in the public domain.

But that right is enshrined in the maintenance of the records of Codasyl, and the accessibility of them. But the filing cabinet is not large enough – so the public does not have such necessary access.

Of course Simmons has some specific operations for the Executive Committee itself. He has to maintain the records and the minutes of the committee. This maintenance also is supposed to be performed in the public domain, Again, actually owing to the lack of the necessary support by U.S. Steel, it is not happening that way.

Planning Committee

As well as being executive secretary to the Executive Committee, Simmons has another duty. He is also the chairman of the Codasyl Planning Committee. This is a key committee, for this is the committee which is supposed to monitor the operations of the other Codasyl committees (including the Executive Committee) and to find out whether the goals of Codasyl are being attained and if not, why not.

It is to this committee that questions should come such as the one we started with, "Why is Cobol not in fact transferable? Isn't that what Cobol was all about?"

This of course would be a duty which, if properly handled, would require the Planning Committee to check a considerable pile of records. This has been acknowledged in the past. Until last year 20 sets of all the proposals to change the language, and copies of the actions of the Programming Languages Committee (PLC) were being sent to Pittsburgh for the use of the Planning Committee in this operation. Of course this was only one part of the Planning Committee's work.

The other part was to obtain information from users, etc. All this material then had to be made available to all committee members.

The committee function is to "assimilate" the material. For this they need to have individual access to it, time to go over it and consider it, all of which puts a very heavy burden upon the secretarial duties of the Planning Committee – a burden that was understood would be supported by the chairman's organization, in this case U.S. Steel.

Now Simmons is not the secretary of the Planning Committee, he is chairman. But then, no one else is secretary either. Simmons has the right to appoint a secretary and when the Society of Certified Data Processors discovered that no such secretary had been appointed by him, it volunteered to take on the role with the full understanding of just how much work would be involved.

Simmons had no objection, but didn't use his power of appointment. So now he is responsible together with the other committee officers for all the secretarial duties including this large clerical-type operation.

U.S. Steel apparently still feels the provision of one four-drawer file cabinet is enough to support him in this position. Unless, of course, we are to take into account the fact that he does have a Planning Committee vice-chairman.

The vice-chairman is appointed by the chairman. Out of all the members of the committee, Simmons appointed a fellow U.S. Steel employee.

U.S. Steel also provides the vice-chairman with a four-drawer filing cabinet.

The Results

As a result of this situation many things are happening. To start with, Codasyl records are not available to the public.

Nearly a year ago a number of people tried to obtain access to the Codasyl records. This request was repeated during a visit to Pittsburgh last March.

At that time it was discovered that not only were the records of the Executive Committee unavailable but the full records of Codasyl were also unavailable. Not even the records of the Planning Committee itself or the minutes of the previous meeting were available to its own members.

Why? Because they and everything else were in the basement of Simmons' home, miles away. Some of them apparently were in packing cases. The packing cases had probably been supplied by U.S. Steel during a move two years ago, so perhaps we should count the cases in as part of the U.S. Steel support.

Some of the records had been taken out so the chairman of the Executive Committee, Jack Jones, could reconstruct his file of the Codasyl minutes.

Data Missing

In the meantime, the members of the Planning Committee were not getting the information they should have been getting. After Simmons decided that the Planning Committee did not need the records of what was being proposed and would be satisfied with a copy of the report written by the Programming Languages Chairman, the Society of Certified Data Processors joined the committee.

Simmons was receiving material to be assimilated, but it wasn't getting to members of the committee. At least it never got to the SCDP.

So we, and presumably the other members, are unable to carry out our operations.

And that is basically the reason why Cobol is not working. Cobol is not working because the Codasyl Planning Committee, which is supposed to gather information as to how goals are being carried out, is not getting the information necessary for this task.

The reason the committee is not getting the information is simply because U.S. Steel is not supporting its representatives adequately. In a nutshell, U.S. Steel's lack of support of these important functions is the reason why Cobol is failing.

So now you know. To summarize, here are the reasons I believe U.S. Steel is the prime cause of the failure of Cobol.

- Failure to properly support its employee as secretary of the Executive Committee and therefore keeper of the full archives of Codasyl in the public domain.
- Failure to support the chairmanship and secretariat of the Planning Committee and to provide members of the Planning Committee with the material needed to perform their duties.
- Failure to insist that action they do support, such as the distribution of Codasyl newsletters, only takes place when properly authorized.
- Failure to react in a positive constructive manner to criticisms like previous ones which I know have drawn their attention to some of the anomalies involving them and Cobol.

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Did You Take CDP Exam?

Will anyone with copies of CDP review courses or parts of such courses sponsored by the DPMA chapters – not the commercially available courses – please contact Alan Taylor, c/o Computerworld, giving details of the course sponsorship.

Church Has Responsibilities, Too

Valentine's Day was a very happy day as far as I was concerned, because two letters written to me at that time changed my thinking on the matter of church organizations, and I now think matters have improved greatly.

The first letter pointed out that the operation was a two-way street, and that the churches, as well as the technicians, had responsibilities which perhaps they had not been taking. Thinking of this, I must say I agree with him, but until I opened the next letter I was not certain that the churches – any of them – would be interested in taking up their responsibilities actively at this time.

Readers Respond

The second letter showed at least one denomination is taking up its responsibility. This I think puts a very different light on the whole matter. It may mean that we have to redesign the structure so that both the responsibilities of data processors, and the responsibilities of the churches are equally operational.

Any ideas on possible structuring of this operation are welcome.

Here are the two letters concerned.

I am pleased to volunteer my services to the Mennonite denominations as an adviser on the technical problems involved in computer processing ethical standards. I know of a number of experienced college students who would be delighted to assist various denominations in a similar way.

Thank you for helping both the churches and the data processing community to be aware of their mutual responsibilities. – R. Waldo Roth, computing center director, Taylor University, Upland, Ind.

– – –

Your continued efforts to arouse industry interest in the ethical problems of data processing are very much appreciated.

When you have further response to your calls for volunteers perhaps you and I ought to discuss where we go from here. – Christopher Raible, Director of Extension, Unitarian Universalist Association.

Letters to the Editor

Hire Temporary Employees To Ease Staff Problems

In response to the article on selection and training of data processing personnel in the March 7 issue, I feel I should add another viewpoint.

Because the largest parts of budgets are spent on personnel, an employer should take a considerable amount of time before hiring a person for a vital job. When the position is found to be a necessary function in the company, there is usually an immediate need for a person to fill it.

The cost of training and evaluation could soar if the person hired was not fully qualified to fill the position – a characteristic only found through experience and actual on-the-job training on the user's system. All the testing in the world could not qualify a person for a job.

A new employee is an investment to the user. Through his knowledge and expertise an important function of the company's business will be carried out. When looking for a person to fill this type of vital position it would be wise to hire a temporary employee most closely related with the job requirements associated with the actual position.

Many people disagree, but the cost of bringing a temporary employee into the installation is considerably less than hiring a person in a "rush" situation.

James F. DiVito

Manpower, Inc.
Data Processing Division
Boston, Mass.

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A typical system status report shows just how powerful their DECsystem-10 really is: 80 simultaneous tasks, 400 batch jobs queued from remote stations, 7 batch streams initiated, and 40 interactive users. Yet batch turnaround was only 15 minutes for average student jobs. And interactive response time was not affected.

But with all that power, Pitt's DECsystem-10 is still remarkably easy to work with. Besides using standard COBOL, FORTRAN, ALGOL, BASIC, LISP, SNOBOL, MACRO and BLISS, they've been using the DECsystem-10 for developing their own languages. Like PIL (Pittsburgh Interpretive Language), CATALYST (a CAI adjunct to PIL), TENFOR, a fast load and go student FORTRAN system and a special editor called UPDATE.

All on a computer that costs 30% less than they were spending.

That should be enough to make you wonder about your comp center.

For some thought-provoking literature, write the DECsystem-10 Group, Digital Equipment Corporation, Maynard, Mass. 01754. (617) 897-5111. European headquarters: 81 route de l'Aire, 1211 Geneva 26. Tel: 42 79 50. Digital Equipment of Canada Ltd. P.O. Box 11500, Ottawa, Ontario, K2H 8K8 (613) 592-5111.

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The Professional's Viewpoint

Our Professional Future: 2 Views

The following letters present two views of the data processing professional future. The first letter, written by Nelson Cyr, national director of the Association of Computer Programmers and Analysts, sees the Computer Foundation as a transition to a single unified society. The second letter, from Hamilton Armstrong Jr., president of the Society of Professional Data Processors, sees the end user as the keystone of a master plan.

Foundation as Transition

The proliferation of different computer societies in this country today and their attempts to establish meaningful certification programs within their own spheres of specialties begs the question, will the U.S. eventually need an American Computer Society?

A society akin to the British Computer Society, perhaps, which provides a national professional organization that encompasses hardware and software designers, business and scientific user groups and the academic community . . . I concur with H.R.J. Grosch that such a step is inevitable end e definite prerequisite, if the U.S. computer industry is going to achieve significant success in defining an essential body of knowledge – something that is given a great deal of lip service by many, but very little affirmative action.

Furthermore, I feel societies today must prepare the way for that eventuality. The Computer Foundation is a good place to start. We are now in a transitional phase and must lay the proper groundwork for a responsive and flexible entity.

One Society . . .

I envision the possibility one day of the foundation operating under the auspices of a single, unified computer society in the U.S. – with special-interest groups such as DPMA, ACM, SCDP, SDE, Acpa and others providing unified support for administrative staff, specialty publications and focus areas for the specialists.

The American Computer Society (or whatever) would take care of overhead, handle national conferences and interact with the public, with users, the government and manufacturers. The society would also, through the authoritative functions of its Computer Foundation, concern itself with other facets of the computer field such as: hardware/software design criteria, social responsibility, interface, data exchange and performance standards, and, in general, represent the computer industry as a national, responsive entity much like the British Computer Society.

I propose that these considerations be kept in mind as the foundation is being structured. Further, I recommend modifying the bylaws in such a way as to allow the foundation to function at first as a separate entity supported and controlled by a board as proposed (with some changes in the executive committee's statement of power). I also point out the need to look ahead and anticipate the role that the foundation could play in effecting a transition to a unified computer society.

End User as Keystone

I was delighted to read H.L. Robinson's letter to the editor [CW, Jan. 31] stating "we should . . . recognize individuals' wants before (professional) groups'." That credo should be the first and great commandment of the data processing world!

However, to reach for the sun, it is not enough to jump into the air. Three accomplishments must be achieved before this dream can become a reality.

First, the profession must have set up a bill of rights to protect all users of data processing.

Secondly, a court of appeals known to all (manned by CDPers) would act as judges upon the complaints in relation to that already established bill of rights. There the user should expect remedial action if his complaints are justified. Lastly, some sorts of stigma must be defined for any and all offenders.

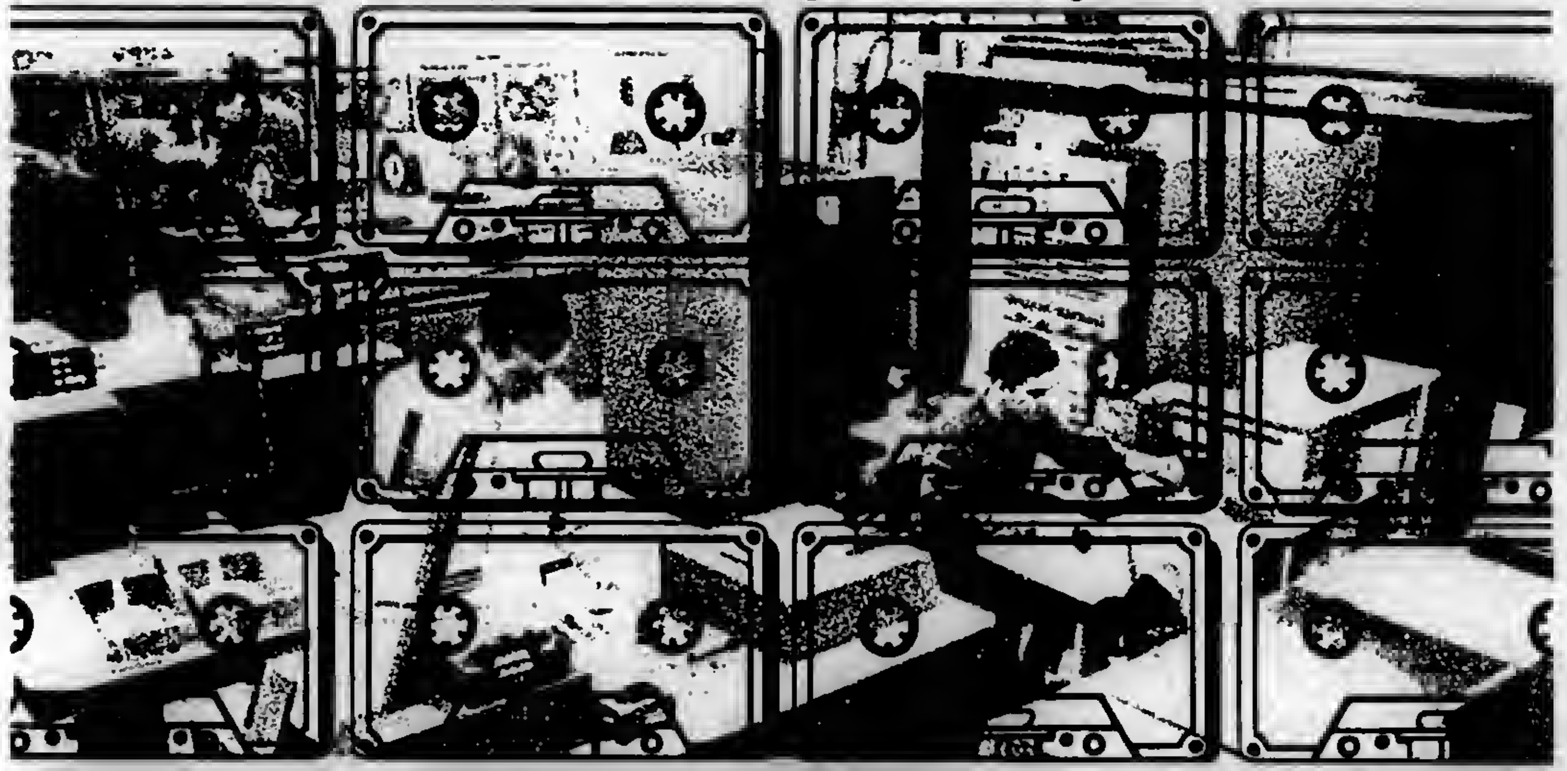
Why, for example, does Alan Taylor bring so many various and sundry groups into play? I feel he is laying a foundation for the development of all those desirous of a commonly held bill of rights (code of ethics) – understandable to all men in all walks of life (not something in 'hexadecimal).

I am assuming he is creating the very judiciary system I spoke of from his certified data processors. This, in turn, will be balanced by a congress of DP professionals.

The keystone of his design, judging from his various columns, will be the end user who must be heard in court when his privacy is threatened or he has been erroneously billed.

It does, however, seem like a strong master plan that could conceivably change our so-called "profession" from a group of charlatans or self-interest groups, such as lawyers and doctors, into a true body of people interested in heightening their standards of performance.

AT LAST, a formally structured, comprehensive cassette course designed to get you more productivity and profit from your computer investment.



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A three-way bridge to technical vitality.

Tony Ralston is the new President of ACM. He's a colorful professional and academician with a long career in numerical analysis and computer science. He has some strong ideas on the goals of ACM and the needs it fulfills for computer professionals.

"ACM was once an academic society," says Tony. "But now we're far more than that. We represent a sort of three-way bridge between the academician, the research and development scientist and the practitioner. The person at the leading edge of computer science, the individual in the hardware and software lab and the user applying computers to practical business and scientific problems. We try to stimulate cross-talk between all three.

"Getting research results into the mainstream of computing isn't easy. It needs this kind of interaction. Active participation. A professional commitment to both the science and the practice of computing. That's when computing becomes a career—and not just another job. That's technical vitality. And that's what ACM is all about."

ACM chapters, special interest groups, publications and conferences are all examples of this kind of dialogue. Along with seminars, lectures and many other activities. Maintain your technical vitality and make a contribution to the computer profession. Join ACM. Send in the coupon today!

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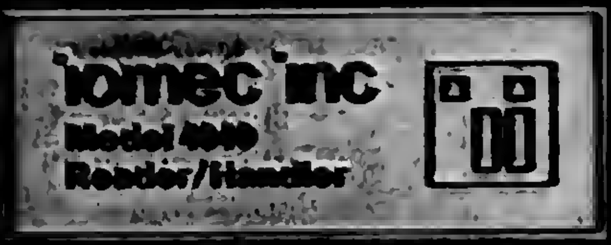


The new iomates. See all 13 in Anaheim, Mar. 27-29.

Letters to the Editor

CDP Certificate Downgraded

In response to the recent questionnaire concerning the termination of the CDP exam until the exam is proven effective [CW, Feb. 28], I question the validity of any project or endeavor that prevails untested and unproven.

How can any body, group or assemblage claim for its members certification, when the certification process itself has not yet been proven acceptable? Are we to violate the analytic technique we supposedly practice, by recommending or installing a system and perform the initial systems study afterwards?

In my opinion, the current CDP certificate has little significance in recommending the professional competence of any individual.

Do those who sponsor the issuance of a certificate harbor the opinion that data processing and computing sciences have so little merit that recognition of one having the minimal skills for certification requires the least amount of effort?

There are many professional organizations, whose members are worthy of professional recognition, that require much more than just one exam so general in scope that it takes on the appearance of a hodge-podge of trivia.

I still would gladly accept any certification process that is consistent and comprehensive.

J. Frank Ellmer

Croydon, Pa.

CDE Program Is Not a Test

The Society of Data Educators appreciates numerous instances of mention in "The Taylor Report" as well as elsewhere, but we would like to correct one misconception.

The CDE Program is not a test. The CDE Program attempts to identify and evaluate data educators who are *already competent* (we do not make them competent, nor do we claim that the CDE in and of itself makes them competent).

The CDE Program does make use of tests where appropriate, and that is as little as possible. Tests are always second-hand evidence of competence, and we prefer the first-hand route of letters from responsible persons attesting to the proficiency of CDE candidates.

The test, used only for some individuals in step number one, is just one of five requirements, and it is used as a gross screening device only. Nevertheless, we collect data from candidates for test revision on a regular basis.

As for the mysterious Mr. X who appeared in one of Taylor's columns [CW, Dec. 13, 1972] he seemed to have been referring to one of the old mimeographed validating tests that we used to collect data for constructing our original printed test. Even so, everyone who received those tests, as well as those who receive the new versions, sign this statement: "I certify that I will keep the contents of this examination confidential."

Enoch Haga, PhD, CDE,
Executive Director

The Society of Data Educators
Livermore, Calif.

On Respecting One's Privacy

Having once berated *Computerworld* for invading my privacy by selling my name and address (by selling your mailing list) I must congratulate you on taking the progressive step of offering your readers the option of "check here if you do not wish to receive promotional mail from *Computerworld*," which appeared on the recent BPA Audit form you sent me. I trust this means I will receive absolutely nothing more than CW (and renewal notices) as a result of being a subscriber.

At the same time I must say I was rather put off by the flyer which arrived with the audit card. To refresh your memory it attempts to flatter the reader into completing and returning the card by saying "... you're somebody special. You are on this magazine's (sic) circulation list because you have been *qualified* as an important decision-maker. People who don't qualify, don't get the magazine."

Is there really any criterion applied to prospective subscribers other than having the $9 for a year's subscription? I'm reminded of the hypocrisy exhibited in a form letter (of course, it was highly personalized with my name appearing several times in the body of the letter) I recently received from *Business Week*.

It asked me to join its highly selected list of subscribers, saying it considered me more qualified as a subscriber than the governor and two U.S. senators of my state. Where had it gotten my name in order to make that judgment? From the *Playboy* subscription list!

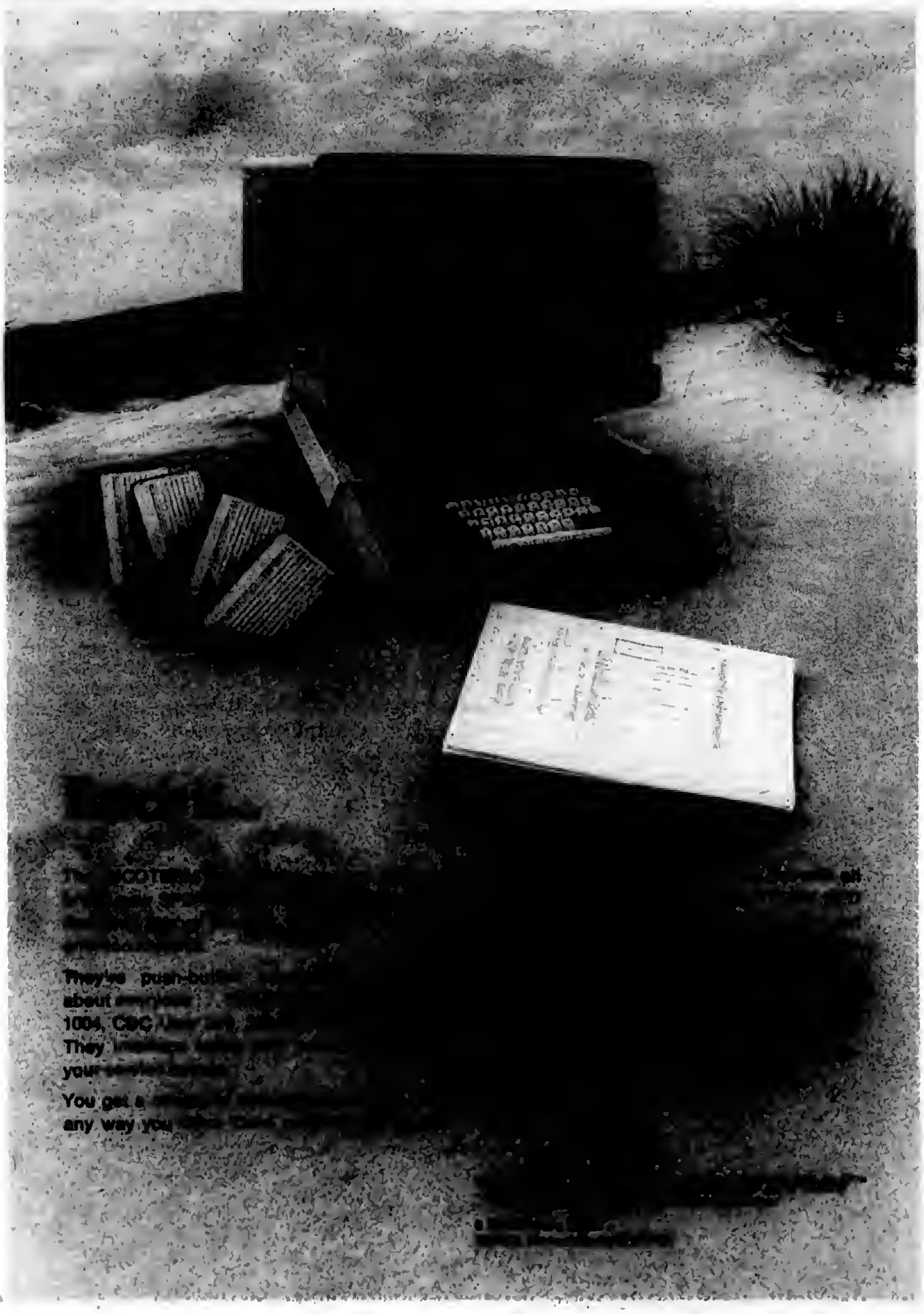
Paul Armer

Stanford, Calif.

We quite agree that it would be far-fetched for anyone to send us $9 for a subscription if they did not have a serious interest in electronic data processing.

However, knowing who our readers are by title and business does give us considerable direction in planning editorial coverage.

And, last, but not least, we subscribe to the Business Publications Audit of Circulation — an organization geared primarily to "free" or "controlled" circulation books — to stay competitive in terms of getting advertising for our publication. Ed.



Time-sharing ★★ ★★ the Time-sharers

Several time-sharing (remote-computing) vendors have added new services lately. ITT Data Services based in Paramus, N.J. has, for instance, extended its Crossbow service to include support for TSO under IBM's OS/360.

Philadelphia based Kidde Computer Services has implemented RJE/Hasp for its subscribers along the East Coast, and International Timesharing Corp. has added an extended Fortran IV compiler (Exfor) as well as a new accounting application.

Interactive Data Corp., Waltham, Mass., has installed a new version of its monitor system which includes an extended Isam, updated language processors, and simultaneous disk updating from separate virtual machines.

The Time-Sharing Division of Applied Data Research (ADR), Princeton, N.J., has expanded the capacity of its Decsystem-10 and created a dual processor configuration, the ADR Teleplex System.

Word/One text editing from Bowne Time Sharing Inc., NYC, has been supplemented with an advanced information retrieval system and support for IBM Mag Card Executive Typewriters as output devices.

ITT Data Services's implementation of TSO will operate on a 370/155 under release 21.6 of OS/MVT. Initial usage is expected to come from clients evaluating TSO for their own in-house system, with production-oriented applications developing later.

Partially in anticipation of the production work, ITT Data Services is also adding OS On-Line Full Service Storage, under which subscribers may allocate cylinder space incrementally rather than in large blocks as required by some other systems.

Kidde's RJE/Hasp allows the customer with an IBM 2770/2780 or compatible terminal to have high-speed I/O, and to work with his choice of ANS Cobol, Fortran G, PL/I or Assembler. Prime and off-time rates are available so that users can make appropriate trade-offs between immediate service and cost.

Extended Isam (Xsam), now on Interactive Data, is described as a logical replacement for IBM's Isam, offering faster access times, less disk space requirements, and variable length record support. Xsam also provides complete Setl support to optimize the use of transient and core-resident system modules, and more efficient handling of overflow records, to reduce the need for file reorganizations.

ADR's move to dual processor configuration is coupled with an expansion of memory and support for a broader range of terminals. The result, in ADR's view, is a system with optimal reliability – since each processor can handle all communications and can access all peripherals in case of a component failure – and extreme flexibility for the user.

Extension of core available under Computer Sciences Canada's RJE and CRJE support is expected to be particularly useful to Fortran users, vendor spokesmen felt. With 130,000 words of Sigma 7 storage available for each program segment, the users will be able to run larger programs without the "mechanical" complexity of employing numerous overlays to fit into less memory than they really need.

Bowne's Word/One text processing has been enhanced with an expanded capability to handle very large documents, as well as by providing an information retrieval system. The service has increased the amount of working storage available for any single document from 9,999 lines to 24,999 lines.

The retrieval operation (Abstract) allows users to search an entire multi-page document or any specific part of it, and to retrieve information in paragraph form.

ITT Data Services is at Garden State Parkway and Route 17, Paramus, N.J., 07652, while International Timesharing is based in the ITS building in Chaska, Minn. 55318.

Interactive Data is based at 486 Totten Pond Rd., Waltham, Mass. 02154; and Applied Data Research is at the Route 206 Center, Princeton, N.J.

Kidde is at Red Lion Road and Philmont Ave., Huntingdon Valley, Pa. 19006 and Computer Sciences Canada is at Place du Canada in Montreal.

X3 Reopens Standards Unit For OS Control Languages

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – The study group on operating system control languages has been reactivated by American Normal Standards Committee X3, Computers and Information Processing, to determine what technical feasibility and economic justification there might be for development of standards in this area.

An earlier group "surveyed the world to death" – as one critic put it – but effectively dissolved last summer without making any final recommendation when the then-chairman felt he had no more time to devote to the project. The new effort will be headed by Dr. Philip H. Enslow Jr. of the Office of Telecommunications Policy.

JCL, Too

The phrase "operating system control languages" covers the control and status aspects of, at least, interactive, time-sharing and batch-processing systems. It includes, for example, what IBM 360/370 users normally call JCL, X3 secretary Robert Brown noted.

Standardization of OSCL would make it easier for users to communicate with their computers, advocates claim. If standardization does finally take place, users of Burroughs' MCP, or of IBM's OS, "or whatever," might be able to use the same control cards, group vice-chairman John Strain of the Army's Computer System and Support Evaluation command said.

The current effort will be very time-conscious and concerned with making a decision. "If after three or four months, we don't feel we can complete the study within a year-and-a-half or two years," Strain said, "we may just decide that it is not going to be a worthwhile effort for us to pursue and that even the study effort itself is not productive, at least at this time."

Enslow and Strain are recruiting people to work on the evaluation, and are not seeking public comment, for now. "We are interested in people with direct knowledge of operating systems, control languages and an idea of what users actually need," Strain said.

He wants people who have had experience or responsibility for the implementation of OSCL and who know what the control commands actually do to the operating systems. He said he would like "some participation" from users "who have a bone to pick and who want to help us study the problem."

Neither Enslow nor Strain want a massive study group, but they do want representation of experience with as broad a range of operating systems as they can get. "We certainly don't want 65 people at our meetings, all of whom are OS/360 users," Strain noted.

First Meeting in May

Strain hopes to have found enough people who have an interest in the outcome of the study "and who have a background such that they have something to offer" so that a first meeting can take place early in May.

The original study group, set up by X3's Standards Planning and Requirements Committee (Sparc) about three years ago, was chaired by Millard Perstine of System Development Corp. It did a massive job of collecting material and turned in a 600-page report early last summer.

At that time, Perstine said his group had reached some tentative conclusions, but needed more time – which he personally could not spare – before it could make a final recommendation on whether or not to advocate development of a standard.

Sparc has been looking for almost a year for someone to head up the second phase of the study. Enslow has taken the assignment as an individual and not as a representative of OTP, Brown stressed, noting that "operating systems are a hobby" for the new chairman.

The rekindled Sparc group has no desire to standardize operating systems themselves, but just the "human interfaces" with the systems. Reasonably, when a user says READ on a control card, it should mean the same thing regardless of what operating system he is using, Brown said.

Strain can be reached at HQDA (CSSE-ST), Nassif Building, Falls Church, Va. 22041.

Federal Rules Run Utility Model

PITTSBURGH – A corporate modeling system which reflects the special requirements of the utility industry is now available as a service or as a package for large scale in-house CPUs from Westinghouse Electric Co.

Unlike many generalized modeling schemes which allow the user to define his own accounting plan, this program's accounting structure is based on federal Power Commission rules.

Developed by the corporation's Power Systems Planning group, the software is a mathematical simulation of the using utility's financial environment. With it, a user can forecast the utility's future balance sheets, income statements and cash flow reports, a Westinghouse source explained.

The complete model is made up of several submodels which are used to describe individual functions to be considered by financial planners. These special functions include physical plant, depreciation and the impact of regulatory agencies.

Other submodels are devoted to operation and maintenance, taxes, bonds and preferred stock, common stock, and financial planning. By separating the functions, the submodels allow rapid modifications to show the effect of actual or proposed changes in any function or combination of functions.

This ability to answer "what if . . ." questions may provide the planner with an insight into his company's operations he never had before.

The program is written in Fortran and has been implemented on CDC 6600 and 7600 CPUs, and on IBM 360s with some 400K bytes of usable core. Lease price is subject to discussion with the user, the company said.

The service offering can be handled by mail or teleprocessing routes. Initial customizing would cost several thousand dollars, after which each use of the model would "probably" cost between $100 and $200, a spokesman said.

Westinghouse Electric is in Gateway Center, 15222.

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Updated Cobol Programs Analyzer Spots Both Untested and Time-Chewing Code

PHOENIX – OS/360-370 users may gain considerable help in the design, debugging and performance improvement of their programs with the advanced version of Cotune, the Cobol program analyzer now available from Capex Corp.

Chief among the new features are summary reports which pinpoint both untested and time-consuming code within the user's program.

Identification of untested code may indicate either an incomplete set of test data or a truly inaccessible portion of the program logic, a Capex source suggested. In either case, the situation is brought to light and can be corrected, he added.

Inefficient Logic

Identification of time-consuming code may point to inefficient logic, or it may simply confirm that most or all of the data exercises the same path through the program.

Changes in response to the Cotune report would tend to improve the performance rather than alter the fundamental logic of a program, Capex noted.

Unlike the previous release of Cotune, the current implementation can be used with virtually any Cobol program, including those used in planned overlay structures or dynamically loaded by run-time executive routines. In addition, users may now select analysis at the sentence level, the paragraph level, or both, the company said.

That option emphasizes one of the major strengths of Cotune compared to some other Cobol program analyzers, Capex noted.

All reports generated by Cotune tie back to the user's source programs, rather than to absolute core locations which the user would have to manually "translate" into the same source references before he could use them anyway.

Cotune produces a profile of program execution, showing, next to each statement, the number of times it was executed and a histogram showing the amount of CPU time used.

Statements resulting in abnormal program termination are also identified in terms of the user's source listing, thus avoiding the need to find and interpret the proper Program Status Word (PSW) before debugging can begin.

Cotune is available on long term license for a one-time charge of $3,950, plus $395/yr maintenance, or on a 12-month lease for $200/mo. The firm is located at 2613 N. Third St., 85004.

Student Accountant Package Available For H200/2000 Line

WALTHAM, Mass. – Educators and school administrators with Honeywell Series 200/2000 systems – including the small Model 58 – can handle most of their student accounting functions with the Scribe software now available from Honeywell as a $2,400 separately priced package.

Installations with Series 1640 or Model 429 systems can utilize the Edinet library of problem-solving programs, individualized arithmetic instruction guidance counselor and teacher aid systems. Most of the 300 programs in the library are free, a Honeywell spokesman noted.

NCR to Offer COM Service In All Centers by End of Year

DAYTON, Ohio – By the end of 1973, NCR plans to offer computer-output-microfilm (COM) services at all of its data centers in the U.S. and Canada and at centers in England, Australia, Japan, Switzerland and Denmark. It is now available in 15 of the company's centers in the U.S.

Users can save massive amounts of paper and substantial postage or other delivery charges through the use of COM, an NCR spokesman said, noting that even a 1,400 page report (which stands a foot high and weighs 38 pounds) can be reduced to just seven microfiche and mailed for eight cents.

System Development Corp. Offers On-Line Chemical Abstract Search

SANTA MONICA, Calif. – System Development Corp. has started on-line bibliographic search service of chemical literature.

Called SDC/Chemcon, the service offers instant access to the Chemical Abstracts Condensates, produced by the Chemical Abstracts Service of the American Chemical Society. The firm is located at 2500 Colorado Ave., 90406.

Sun Oil to Market DP Services

PHILADELPHIA – Sun Computer Services, a newly-formed unit of Sun Oil Co., has begun full-scale marketing of Sun's in-house data processing capabilities.

Included are consultation, proprietary software, systems design and development, time-sharing, batch processing, data preparation and data handling.

By the end of the year, Sun expects to complete its computer network with IBM 370/168s located in Philadelphia and Tulsa. The firm is located at 1600 Walnut St., 19103.

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Data Briefs

AT&T Calls Model 40 a TTY And Not a 'DP Service'

WASHINGTON, D.C. – AT&T has told the FCC that the Model 40 TTY is "an advance" in the Teletype Corp. line of teletypewriters. It incorporates the latest electronic technology . . . in information display to aid in message preparation and is capable of higher speed to better utilize telecommunications facilities."

The AT&T letter was sent in response to an FCC inquiry concerning the Model 40 display. The issue had been raised by Incoterm Corp. [CW, Feb. 21] which had told the FCC that the CRT might violate existing antitrust regulations.

"Teletypewriters are designed for . . . communications usea including communicating in various ways with data processing equipment," the AT&T letter said. The Model 40 performs the same functions with greater flexibility and more efficiently, it added.

Bell System TTY offerings "in no way constitute a data processing service," the letter from T.W. Scandlyn, assistant vice-president, atated.

Audio System Stores 16K Words On 2314-Type Disk in Digital Form

HAYWARD, Calif. – Qantel Corp. has announced an audio-response system that can store a vocabulary of up to 16,000 words.

The system stores its vocabulary on a 2314-type disk in digital format, which is converted through a voice-response controller into audio tones.

The voice-response system can operate with IBM 360/370 CPUs or can be supplied as a complete system including its own processor. The system is compatible with Bell Touch-Tone phones and Bell 403, or equivalent data sets.

A complete system including CPU, disk and audio controller costs about $45,000 or $1,100/mo. The controller equipped to handle two lines costs $5,000 or $125/mo for use with the user's CPU.

Qantel Corp. is at 3474 Investment Blvd., 94545.

L.A.-Houston Net Link Approved

SAN FRANCISCO – Southern Pacific Communications Co. has obtained FCC approval to construct the Los Angeles-to-Houston segment of its proposed 11-state specialized carrier network.

The Southern Pacific link will include 53 microwave towers and service to San Diego, Yuma, Phoenix, Tucson, El Paso and San Antonio. An additional segment from Los Angeles was approved earlier and is scheduled for service by June.

Much of the Southern Pacific carrier system will be built along its existing private communications network operating to support the firm's railroad and associated operations.

Westar to Handle Data

WU Reveals Satellite Plans for 1974

By Ronald A. Frank
Of the CW Staff

NEW YORK – The first commercial satellite, to be launched in April 1974 by Western Union Telegraph Co. (WU), will be equipped to handle 1,200 one-way voice circuits, or about 50M bits of data on each of its 12 transponders.

Details of the Westar service were given by Peter Alden, WU assistant vice-president, at the Annual Systems Management Conference of the American Management Association. The service is scheduled to begin in mid-1974, a WU spokesman said.

The World of Radio Data

Earth stations in the Westar system will be built at Atlanta, Chicago, Dallas, Los Angeles and Glenwood, N.J. A later station may be constructed in Hawaii pending FCC approval.

Each Earth station will have a 50-foot antenna pointed at the prime traffic-carrying Westar vehicle and each will be equipped to interface with WU's terrestrial microwave network. Two satellites will be launched with the second used as a spare and a third vehicle available on the ground depending on traffic requirements, Alden said.

Similar to Telesat

The Westar satellites will be similar to the Telesat vehicle now in service over Canada, and also will be built by Hughes Aircraft Co. The spin-stabilized synchronous satellites will operate at about 22,300 miles over the equator with an expected life of seven to 10 years.

A propagation delay of about 250 msec will result from signals transmitted from an Earth station to Westar and then sent to a second Earth station, Alden estimated.

Data circuits will be affected by this one-half second round-trip delay, Alden said – especially polling protocols such as those used with the WU Multipoint Data Service. This type of polling procedure would have to be modified for satellite use to allow for the longer delay.

Medium- and high-speed data users who utilize Westar will have to incorporate revised handshaking and error-control procedures at higher transmission speeds to effectively use the new service. But satellite-transmitted data will be "less susceptible to errors" than conventional terrestrial systems, Alden predicted.

Transponder for Lease

WU will lease whole transponders to single users or groups of users and to other carriers. A transponder can be accessed through WU or customer-provided ground stations and WU will allow interconnection of its earth stations to customer-provided terrestrial systems, Alden explained.

Users will lease a transponder on either a "fully backed-up or unprotected" basis with an appropriate cost differential for each type of service. While rates for a transponder "will be substantially below" those of Canada's Telesat, exact rates will depend on the requirements of the user.

WU will allow multiple access of a leased transponder on the Westar satellite and will allow users with private networks to access a transponder from a mix of WU and customer-owned Earth stations, for maximum geographic coverage. But customer-provided equipment will have to conform to WU satellite disciplines.

Limited Interconnection

Interconnection at the WU Earth stations will not be possible for bandwidths of less than 60 voice-grade channels. But users can obtain smaller increments at cities in the system or "terrestrial junction stations."

For data transmissions, modems and multiplexers will be used to access analog channels, or TDM equipment can be used to subdivide the 50M-bit capacity of a transponder, Alden said.

Initially, voice-channel groups will be subdivided into 2,400-, 4,800- and 9,600 bit/sec synchronous data channels and 1,200 bit/sec asynchronous data channels. This type of multiplexing will be similar to the WU hybrid service on the present Atlanta-to-Cincinnati route. TDM equipment to subdivide a transponder directly will be available in 1975-76, he said.

The Westar system will interface at appropriate cities with the digital network now being constructed by WU. For the smaller user, voice-grade facilities could be available for "two-thirds of the current private-line mileage rates," Alden estimated.

> *"But satellite-transmitted data will be 'less susceptible to errors' than conventional terrestrial systems."*

Other services to be provided include: 1.544M bit/sec service; bulk medium-speed synchronous facilities for Datacom users; medium-speed channels for facsimile; point-to-point low-speed asynchronous data channels between "high-capacity cities"; and switched data services operating asynchronously to 1,800 bit/sec and synchronously up to 4,800 bit/sec.

Varian V73 Users Get Vtam For Telecommunications Support

IRVINE, Calif. – Varian Data Machines has added a data communications software system to its V73 minicomputer.

The Vtam system combines a generalized telecommunications access method with the earlier Vortex file structure and multitasking software to form a total communications operating system, the firm said.

A data communications multiplexer offers improved data handling compared with other comparable systems and allows 60K bytes of throughput, according to the firm. The multiplexer operates with both synchronous and asynchronous lines at rates up to 50 kbit/sec.

Adapts to Line Growth

In addition to handling diverse line speeds, the system adapts to line growth requirements. The table-driven multiplexer reduces programming overhead by handling data on a message basis. The multiplexer is microprogrammed, and services up to 64 full-duplex lines.

In a hierarchy of multiplexers, virtually any number of I/O lines can be connected into the V73-communications system.

The Vtam software allows the user to program without attention to multiple terminal and line characteristics, the firm said. Vtam is said to reduce network control and terminal protocol to READS and WRITES at the logical I/O level, allowing programming resources to be focused on application software.

Host or Front End

The V73 with the data communications software can serve as a host CPU or as a front-end processor in communications nets. Dual processors can be used in message-switching and data base management applications.

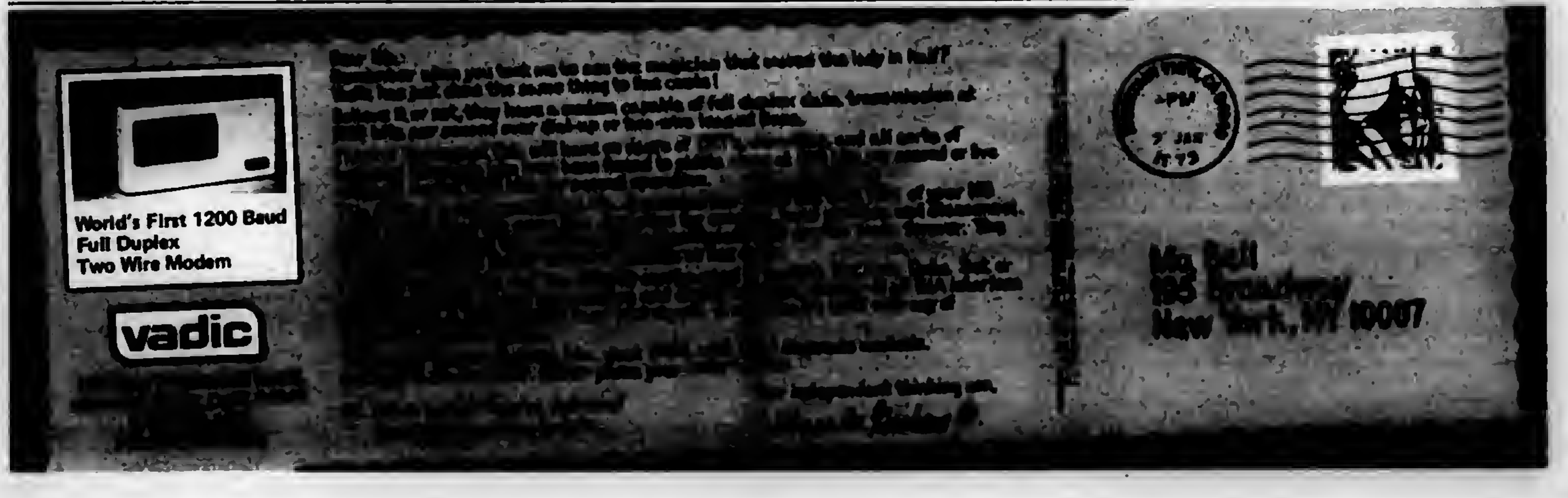
The V73 as a front end with Vtam can interface with IBM 360/370 mainframes as well as most major CPUs, a spokesman said. It can attach to either a multiplexer or selector channel on IBM CPUs.

The mini-based system can operate at a lower cost than comparable IBM communications controllers, Varian said. For existing V73 usera with Vortex software, the Vtam nucleus can be added for $500.

Typical Processor Cost

A typical single processor system with 64 lines, Vortex and Vtam software and a standard set of V73 peripherals plus 32K of storage would cost about $70,000, a spokesman estimated.

Various processor configurations range from $10,000 to $100,000. Monthly lease rates and maintenance are available.



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Programmable Front-End Processor Controls Local and Remote Networks

By Judy Kramer
Of the CW Staff

HOUSTON – A programmable front-end processor which can control a local or remote terminal network and communicate with a central computer is available from Texas Instruments.

The DXS Data Exchange System is designed for on-line data entry and inquiry from CRT terminals or Touch-Tone telephones.

Each DXS/terminal system appears like a standard terminal network to the central host computer, a TI spokesman said. In its present configuration it is being used with 360/370 systems to emulate an IBM 2848 terminal controller and 2260 CRTs.

However, it could be configured to operate with any host computer and any multidrop-type terminals, he added.

Each system is built around a pair of TI 960A minicomputers. One CPU manages the terminals and the other handles the basic functions. When data is entered into the system, DXS validates and formats the data and stores it on disk until the host interrogates the system.

There are three basic configurations of the system. The DXS-I supports up to 50 Touch-Tone telephones for input of numeric data.

The DXS-II accommodates up to 64 multipoint CRT terminals for processing of alphanumeric data. With terminals of this type the user can also perform inquiry functions, polling the central computer via the DXS. If hardcopy output is required, a printer can also be attached to the system, the spokesman said.

Badge-reader and voice-response terminals are also possible.

The DXS-III supports both telephones and CRTs up to a combination of the limits of each.

Prices begin at $65,000 for a basic DXS-II; $90,000 for a DXS-I; and $105,000 for a DXS-III. Included in this price are two CPUs, a 2M-character disk, a tape unit and one communications line supporting up to 16 terminals. Modems for remote terminals, terminals and other communications equipment are extra.

TI is at P.O. Box 1444, 77001.

Wavetek Test Set Set

SAN DIEGO – Wavetek has introduced the Model 420 transmission level test set to measure return loss, attenuation, impedance, frequency response and noise.

Test results are displayed on a built-in oscilloscope. The unit allows the user to analyze a private data link to test the response and to determine if the line is properly balanced.

The Model 420 costs $1,995. A noise measurement option costs $345. Delivery is 45 days from 9045 Balboa Ave., 92123.

The Golden Age of Modem Buying?

COLLEGE PARK, Md. – Is this the "golden age" for modem and terminal buyers?

At least one of them – Dr. Pat Hagerty of the University of Maryland – thinks so; in some ways if not all.

It is often important for a user to be able to use a modem or terminal in his own facilities before he decides which one he wants to buy, Hagerty noted, because of differences in telephone lines and telephone systems in different parts of the country.

Today, he said, the modem and terminal business is so cut-throat that many suppliers will give a user a demonstration unit to try out before he decides.

But, he warned, "after there is a shakeup in the business and fewer firms are around, the vendors might not be so willing to let users try out different units."

CRTs Form Racing Form

TRUMBULL, Conn. – Triangle Publications, Inc. of Hightstown, N.J., is using CRT data terminals to produce the 100,000 copies of its Eastern Edition of the "Daily Racing Form," a journal of horse racing.

The Bunker Ramo 2206/17 CRTs are part of a word-processing system, which also includes a 1-billion byte data base containing detailed information on 90,000 horses racing at all major tracks.

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Bits & Pieces

Datron Manual-Entry Card Unit Is Portable, Low-Speed

MOUNTAIN LAKES, N.J. – Datron Equipment has the Model 102A for users wanting a portable low-volume card reader/transmitter.

It is a low-speed transmission device accepting manually entered 80-column cards. Incorporated are features to allow the unit to be preset to accommodate variable- and fixed-data input.

The 102A can be purchased, rented or leased at rates starting at $16.50/mo from 100 Rt. 46, 07046.

Novas Read PDP's Tapes

BELTSVILLE, Md. – "DEC Tapes" and classic Linc tapes can be read and written on Data General Novas equipped with a CO-500 Linc Tape and a CO-571N option, according to a spokesman for Computer Operations, Inc.

This capability permits interchanging 10-track format tapes between Novas and PDP series minicomputers.

The option is available on any Nova/Linc system for $850 from 10774 Tucker St., 20705.

Imlac Enhances Graphics System

NEEDHAM, Mass. – Imlac Corp. is offering a floating point processor and a two-dimensional scaling, rotation, translation and windowing package as hardware options to its minicomputer-based interactive graphics system.

The floating point processor consists of an arithmetic processing unit and, optionally, 16 general-purpose floating point accumulators. It is designed to work with 32-bit floating point numbers.

Cost of this option is around $6,000.

The two-dimensional package provides for direct scaling, rotation, translation and windowing of displays under program control.

Package cost is $4,200 from 150 A St., New England Industrial Center, 02194.

Multi-Port Offered PDP-15 Users

LEXINGTON, Mass. – A multi-port option for PDP-15 add-on core memory allows up to four "users" – processors, terminals, data acquisition devices, etc. – to share a block of memory on a hardware-defined basis, according to Dimensional Systems, Inc.

The multi-port option for DMS-15 add-on memory accepts memory address requests from various controllers and maps these addresses to a predetermined block of memory, the firm's spokesman said.

A typical 32K-byte DMS add-on with the four-port option costs around $30,000, from 31 Hartwell Ave., 01776.

IBM 3270, 2260 Simulation

Satellite System Allows Networking

By Michael Weinstein
Of the CW Staff

CUPERTINO, Calif. – Four-Phase Systems, Inc. has an integrated system for users who want to unite a central facility with a network of subsystems.

The System IV/40 – which would act as the satellite – features a 72K-byte large-scale integration (LSI) processor with an integrated diskette or cartridge disk drive and an integrated communications controller.

Intended for applications needing as few as two video terminals, the system can be expanded to accommodate up to 16 video terminals and 16 printers.

When operated with the Data IV/70 Source Data Program, the unit combines the functions of key entry, verification and validation with communications and output capabilities.

It can process data with its own CPU or be used as an RJE (Remote Job Entry) device, saving data for future processing at the central location.

When used in a real-time environment – e.g., data entry and retrieval from a central data base – the system's terminal characteristics and communications are compatible with both the IBM 3270 and 2260 Display Systems through software simulation, a spokesman said.

The 3270 Simulator Program provides IBM-compatible extensions for local format storage as well as store-and-forward capability to enable data entry to continue during periods of line failure or central CPU downtime, he added.

Programs for customized user applications can be developed under the Four-Phase Disk Operating System using either Cobol or Assembler.

The price for a three-terminal key-to-disk system is $573/mo on a one-year lease. This includes three 1,152-character video displays and a 24K-byte processor with integrated 2.5M-byte cartridge disk drive and bisynchronous communications controller. Additional terminals may be added for $41/mo. A 132-column 30 char./sec printer and controller may be added to the system for $120. Additional printers cost $100/mo.

For simulation of the IBM 3270 Display System, an eight-terminal System IV/40 with diskette and 1,920-character dual-intensity displays rents for $865/mo on a one-year lease. A similar 16-terminal system with 480-character displays leases for $1,116.

System IV/40 acts as a satellite processor in a distributed processing network.

For simulation of the IBM 2260 Display System, an eight-terminal System IV/40 with diskette and 960-character video displays rents for $678/mo on a one-year lease, while a 16 terminal system leases for $1,141.

First deliveries of System IV/40 are planned for the third quarter of 1973, from 10420 N. Tantau Ave., 95014.

HP Unveils 'Top-of-Line' Mini With Writable Control Store

CUPERTINO, Calif. – Hewlett-Packard has introduced the 2100S Microprogrammable Systems Computer as the top-of-the-line in its minicomputer series.

The basis of the system is the use of a Writable Control Store (WCS) enabling users to write their own instruction sets.

Users can store 256, 24-bit microinstructions on each of three WCS cards.

In conjunction with these cards users can have their own libraries of microprograms on disk. These programs can be transferred to the WCS cards as needed. After execution, the microcoding can be swapped with other microprograms on the disk, or left on the cards.

In this manner the user can alter the 2100 at any time, configuring for different functions – e.g., one time as a process control unit, the next as a communications processor.

Users wishing to retain microcode permanently in the central processor can have the instructions fused on Read Only Memory Chips by a feature called the Prom Writer.

This Programmable Read Only Memory Writer consists of one card temporarily inserted into a 2100S I/O slot and a small box in which the ROM chips are fused.

Software provided with the Prom unit enables the system operator to control the fusing with chips automatically verified and any missing bit re-fused.

The basic 2100S comes with a complement of 102 microinstructions and 86 basic machine language instructions.

The central processor has a cycle time of 196 nsec.

Basic configuration includes a 16K-word memory, communications control channel, hardware floating point, crystal-controlled time base, two software-assignable direct memory access channels, memory protect, memory parity, power fail and extended arithmetic instructions.

The 2100S sells for $16,000 and is available on a lease or rental basis. First deliveries are set for mid-1973.

360/22 Can Attach 2314/2319s Through Channel Enhancement

SHERMAN OAKS, Calif. – IBM 360/22 users can obtain a Selector Channel Enhancement to increase the data transmission rate enough to allow the attachment of 2314/2319-type disk drives and other relatively high-speed peripherals from International Systems Organization.

This enhancement capability is ideal for 360/22 users with a large file space requirement and nominal processing requirements, a spokesman for the firm asserted.

An enable/disable switch is incorporated into the design to return the processor to its normal operating state for maintenance and trouble-shooting.

No Maintenance Interference

Also, the components are interlocked so that removal of any one returns the processor to normal operation. These features will allow IBM or other prime maintenance organizations to perform their maintenance functions without interference from added hardware, the firm said.

These capabilities overcome IBM's objections to foreign vendor modifications, the spokesman added.

Coupled with the availability of memory expansions to 65K bytes, the ability to attach 2314/2319 disk subsystems will give the 360/22 a longer user lifespan, according to International.

If the user wants to expand his 360/22 memory beyond IBM-supplied limits or replace IBM memory, a spokesman said, the disk attachment enhancement feature is compatible with a majority of the available memory expansions.

The installed purchase price of the 2022 High Speed Selector Channel is $6,643 in the Continental U.S.

Lease/purchase plans are also available from 14724 Ventura Blvd., Suite 511, 91403.

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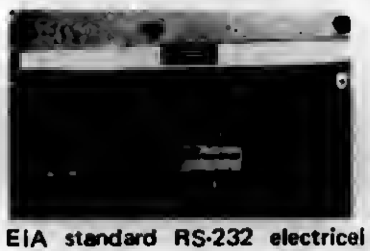

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OS Good, Applications Bad

Software Best, Worst of HIS, User Says

By Michael Weinstein
Of the CW Staff

PROVIDENCE, R.I. – "Software is the best and worst aspect of our HIS 2050 system," said John Snodgrass of Balfour Co., a jewelry firm here.

To clarify this apparent contradiction, Snodgrass explained that the OS/2000 operating system provides all the capabilities expected, but the application software support from Honeywell has been a bit lacking.

In speaking about Honeywell as a supplier, Snodgrass felt the hardware maintenance was a major plus.

"When we have a problem, they [Honeywell] are always there and we have not experienced very much down-time."

The operating system is running well with only slight problems in the job scheduling procedures. But many of these problems may be due to the slower peripherals attached to the central processor, he said.

"We had some slight problems earlier with OS/2000 as the early releases were all maintenance releases developed to clean up operation. But after these initial changes the system ran well," he said.

Applications Troubles

In the application area, Snodgrass said his firm does most of its own coding, but whenever Balfour has used HIS supplied programs troubles developed.

"We started to use a payroll application, but soon found it more expedient to take parts here and there and write portions ourselves," he stated.

"Another problem arose when programs did not work in the same manner as described in the technical manuals."

Balfour called in the branch office for assistance, but found there wasn't anyone there who had an adequate expertise with the packages, according to Snodgrass.

They were willing but in the end all the programs were sent to corporate headquarters in Massachusetts, he related. "It seems strange that they were not willing to send a person down here for a day instead of spending all that time up there. A few hours here would have been much more helpful."

Installation's History

Prior to the present installation of the 2050, Balfour had been operating with an HIS 200 under OS/200.

In 1972, the firm wanted to upgrade, with the primary objective being the ability to run multi-job streams and the support of remote video display terminals to be placed throughout the company for on-line inventory order tracing.

With the current lease on the HIS 200 running out Balfour looked at both the HIS 2050 and the IBM 370/135.

The company decided to remain with Honeywell for several reasons. Peripherals would have had to be exchanged – at some cost – if a switch was made to IBM. Programs written for the current HIS system would also have had to be converted if the firm chose IBM.

Balfour felt Honeywell's OS/2000 was in many ways superior to IBM's proposed DOS for Balfour's applications, mainly because it would require less support.

> *"When we have a problem, they [Honeywell] are always there and we have not experienced very much down-time."*

It would also have been very costly to pay for schooling to retrain personnel if the switch was made, Snodgrass said.

Finally, on a cost basis the proposed HIS system was less expensive than the proposed IBM 370/135.

These reasons, coupled with a long and good working relation with Honeywell, decided the issue and in July of 1972 the 2050 was installed.

The present configuration includes the 2050 CPU with 196K memory, six tape drives, four disk subsystems with a total storage area of 72M characters, card equipment, printer and communications equipment to support the inventory order tracing terminals.

Problems Arise

One immediate problem following the upgrade was the speed of the newer CPU compared to the older peripherals. "We kept the peripherals we had been using on the older HIS 200 and found that throughput was suffering as they could not keep up," Snodgrass stated.

To counteract this bottleneck, Balfour is looking at the newer HIS 277 disk drives. "But, with the recentness of the release of the 277 disks and Dash/2000 – the disk operating system – we are waiting for these units to be fully field-tested," he added.

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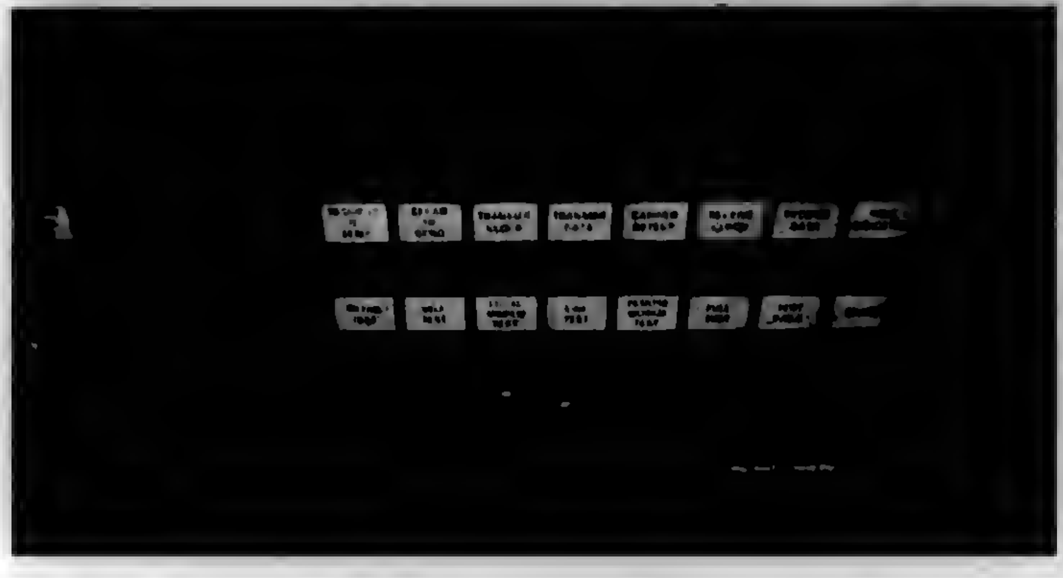

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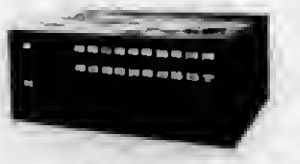

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Study on How French Is Spoken Promises Some Side Benefits

By Ken Shonk

Of the CW Staff

SANTA BARBARA, Calif. – Using a computer and 25 hours of secretly recorded conversations with 50 educated Frenchmen living in Paris as the data base, Andre Malecot is close to finding out just how French is actually spoken.

His study also has the goal of establishing correlations between different peoples, their emotional states and the way they use the language.

Some Interesting Correlations

In the seven-year study Malecot found such correlations among his sample as: older people tend to speak 20 syllables a minute slower than those younger; women speak slightly longer than men; the longer the sentence, the faster people tend to speak; and supervisory people speak slower than subordinates. In the conversations with French doctors, engineers and other professionals only 4,000 words were used although topics ranged from automobiles to world politics.

A French-born phonetician and professor of French and Italian at the University of California, Malecot spent most of the study handcoding the two million bytes of information on 13,000 optical data sheets. The data sheets contained a phonetic transcription of the conversations, all possible subtleties of pronunciation and a large number of grammatical, psychological, intellectual and demographic factors.

The information was then fed into an IBM 1232 to establish the correlations.

Malecot said he believes that besides broadening the study of the phonetics of all languages the research can help in the accurate identification of people by their voices.

Court System Is Statewide Effort

DENVER – A computerized court system is scheduled to begin operation soon in this area and should be operating statewide by the end of 1975. Although many counties throughout the U.S. have similar systems, the Colorado project is one of the first statewide efforts.

The proposed system will handle, at first, the court calendar, indexing of cases and docketing, according to Nelson Howell, senior budget and fiscal analyst for the state's judicial department. Eventually the court system will tie into the law enforcement system.

It will also keep track of probation cases in an attempt to analyze the effectiveness of probation measures, Howell said. Fiscal, statistical and personnel records will also be a part of the system.

The judicial system is partly computerized now. Besides personnel and budget applications, the state has a comprehensive jury selection system that Howell said "makes the whole jury selection process practically untouched by human hands." The computer maintains the master file, picks potential jury members, sends out notices and pays the jurors, all with minimal manual intervention.

Howell explained many of the proposed applications will be handled on-line but high costs will prohibit a completely on-line system.

Colorado presently has a 144K IBM 370/135 and uses IBM's Basic Court System package for file maintenance and teleprocessing.

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La Caravane arrive

Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, Zero-Un *Informatique*. With the leadership of Zero-Un's widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures		$1.48 billion
Projected increase for 1972	8.1%	(1.6 billion)
Projected increase for 1973	14.5%	(1.83 billion)

Submarket projections:

Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

Data Communications Terminals and Control Equipment expenditures are expected to go up 40% in 1973 to a total over $27 million.

Independent Peripheral Equipment expenditures are expected to increase markedly in 1973, partially as a result of newly expanded marketing operations.

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French Market Caravan Schedule

Dates	City	Site
May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

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☐ French Market Caravan (May 2-June 7)
☐ English Market Caravan (Sept. 4-Oct. 18, 7 cities)
☐ German Market Caravan (Oct. 30-Nov. 30, 5 cities)

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Mini...evolution?

GAITHERSBURG, Md. – "The Minicomputer – Evolution or Revolution?" will be the topic of the keynote address at an April 4 symposium here sponsored jointly by the National Bureau of Standards and the IEEE Computer Society.

The symposium will examine minicomputer trends and applications with a morning and afternoon session at which papers will be presented. "The Minicomputer Is Another Maverick at Ford" is the title of a paper by H.J. Kuschnerus.

The keynote address, to be given by George Vosatka, president of Varian Data Machines, will focus on the causes and effects of expanding minicomputer applications and will project the impact of present trends such as the use of intelligent terminals and interconnection of data networks.

Registration costs $12 for members and $15 for non-members. The IEEE/CS can be reached through Box 639, Silver Spring, Md. 20901.

Univac Users 'Exchange Know-How'

NEW ORLEANS – "Exchanging Know-How" is the theme of the spring meeting of the Univac Users Association here April 3-5. Sessions focusing on applications in the fields of education, finance, government, management and personnel will be supplemented by sessions on each Univac machine.

One of the highlights will be a presentation of the new Program Library Interchange through which users can exchange without cost programs written by members.

In the management area, one session will deal with on-line administrative systems at the University of Maryland. In the session on "Evaluating the Areas Where the Dollars Are: Compilers and Multiprogramming Potential," John L. Johnson of Data Technology Industries, Inc. and James Stein of Navy Ships Parts Control Center plan to show comparative figures as examples of how the DP manager can evaluate a Cobol compiler and also the effectiveness of a machine's multiprogramming capabilities.

Societies / User Groups

In "Effective Systems Planning" R.L. Mason of the Transformer Division of Westinghouse Electric Corp. will delve into why some systems' plans are realized and others are not.

For users interested in educational applications, members of the Chicago Board of Education will explain the use of a computer-assisted instruction system in elementary schools in deprived areas.

The sessions relating to government applications feature a discussion on data base organization led by representatives from the University of Maryland, and an on-line system for court administration being installed in El Paso County.

Further information on the conference at the Fairmont-Roosevelt Hotel is available from C.J. Rachel, executive secretary, Univac Users Association, P.O. Box 500, Blue Bell, Pa. 19422.

Sigucc to Discuss Serving Users

CHICAGO – The Special Interest Group on University Computing Centers (Sigucc) of the Association for Computing Machinery will hold a user services conference here, April 3-5.

Emphasis will be on the exchange of information and experience on practical, applied computer technology.

Most sessions will consist of a small panel of experienced computing center personnel, but open discussions will be the primary emphasis.

Tuesday's sessions include user consulting, documentation, accounting services for users, personnel selection and job submission and retrieval.

The sessions on Wednesday and Thursday concentrate on various aspects of services highlighting user viewpoints, education and priorities.

"The Special Problems of Small Colleges" will be discussed by Fred Weingarten of the National Science Foundation.

The cost of the conference, to be held at the Playboy Towers Hotel, is $50 for Sigucc or ACM members and $65 for non-members. Registrations should be sent to Fred Harris, ACM-Sigucc User Services Conference, 5641 Ingleside Ave., Chicago, Ill. 60637. Further information on the conference may be obtained from the conference's general chairman, Susan H. Kolasa at the School of Law, Stanford University, Stanford, Calif. 94305.

Seminar to Examine DP Center Security

CHICAGO – Managing the Security of Data Processing, a two-day seminar being presented here and in Dallas by the American Management Association, is designed to increase awareness of various precautions needed to protect a data center.

The course will treat environmental factors, disaster recovery planning, protection of vital data as well as the new role of EDP auditing.

The course, to be held March 28-30 at the AMA Management Center here, and April 4-6 at the Hotel Adolphus, Dallas, costs $250 for members and $280 for non-members.

The AMA is at 135 W. 50th St., New York, 10020.

Calendar

April 10-14, Detroit – 22nd **Annual Conference and Exposition of the National Microfilm Association.** Contact: National Microfilm Association, Suite 1101, 8728 Colesville Road, Silver Spring, Md. 20910.

April 16-19, New Orleans – **Association for Educational Data Systems (AEDS) 11th Annual Convention.** Contact: P.L. McCreary, Jr., Bossier Parish School Board, 2500 Viking Drive, Bossier City, La. 71010.

April 26-27, Bloomington, Minn. – **American Society for Information Science (Asis) Regional Conference.** Contact: Jack King, Library, Hamline University, St. Paul, Minn. 55101.

April 29-May 2, Sarasota, Fla. – **Annual MIS Conference,** sponsored by AMF, Inc. Contact: AMF Inc. World Headquarters, White Plains, N.Y. 10604.

April 30, Saddlebrook, N.J. – **User Seminar on Automatic Testing,** sponsored by Instrumentation Engineering, Inc. Contact: Kathleen McMillan, Instrumentation Engineering, Inc., 769 Susquehanna Ave., Franklin Lakes, N.J.

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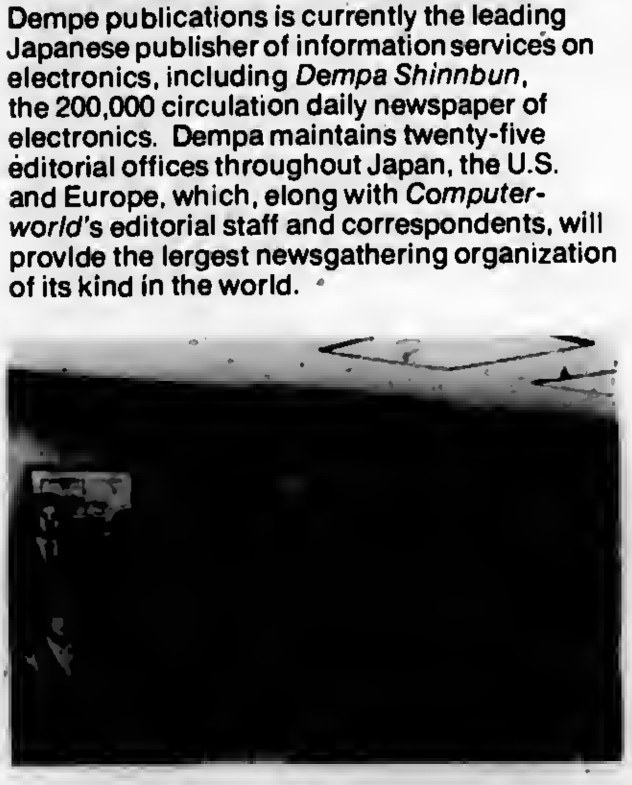
As a joint venture of Computerworld, Inc., and Dempa Publications, Inc., *Shukan Computer* will provide the only newsweekly for the Japanese computer community. Like its sister, *Computerworld*, *Shukan Computer* will cover the latest developments in all aspects of the computer industry; including hardware, software, services, application techniques and industry trends.

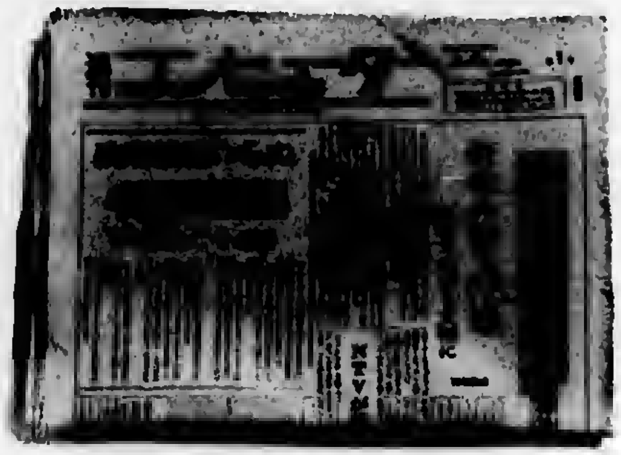
Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld's* editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.



The Staff of Dempa Computerworld Inc.



Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld*'s President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

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Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

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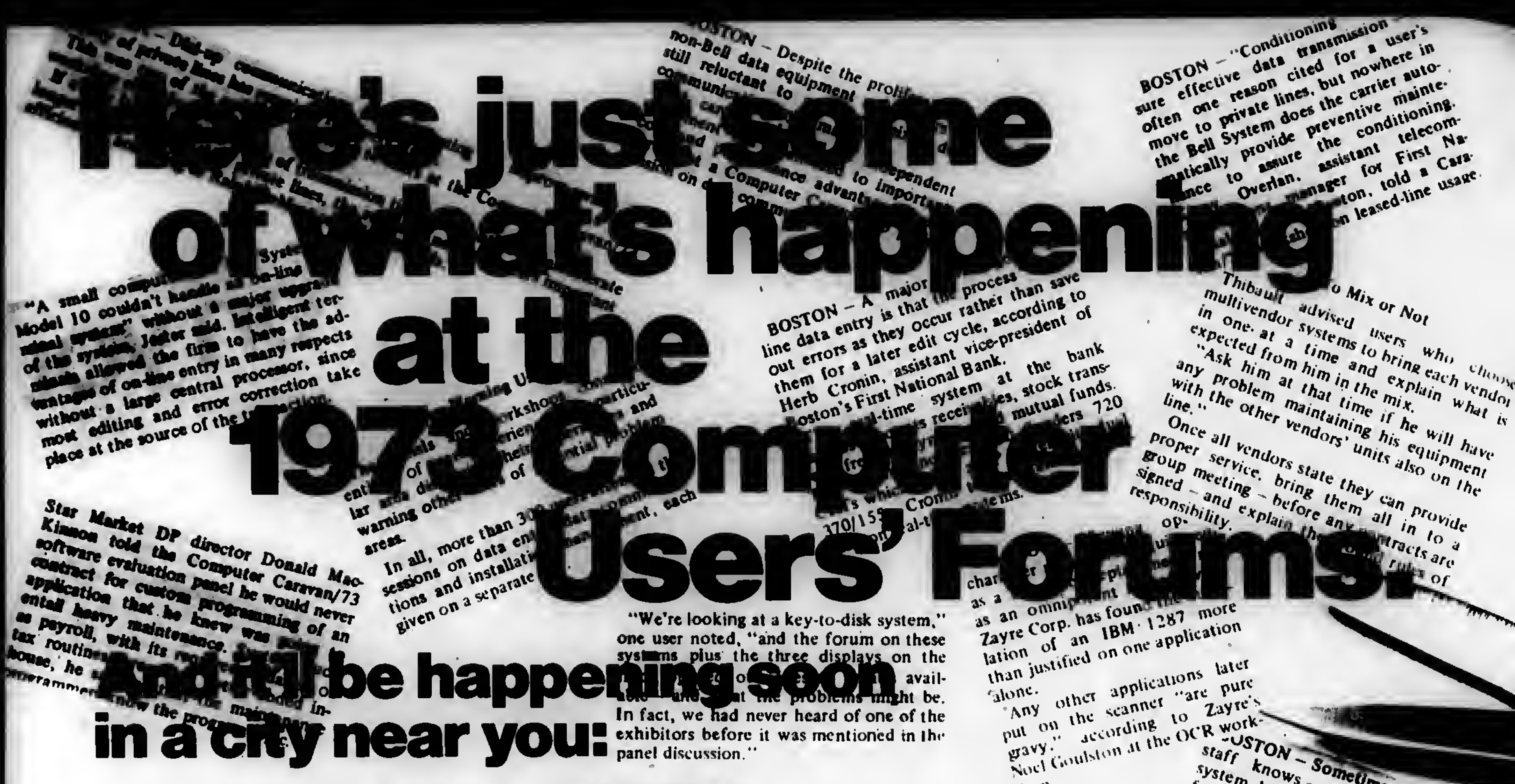

Here's just some of what's happening at the 1973 Computer Users' Forums.

– Dial-up communica... of private lines ha...

"A small compu... Syst... couldn't handle all on-line Model 10 couldn't handle all on-line without a major upgrading of the system," Jester said. Intelligent terminals allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never contract for custom programming of an application that he knew was going to entail heavy maintenance. ... as payroll, with its ... tax routines ... house, he ... programmers know the program ... maintenance ...

...BOSTON – Despite the proli... non-Bell data equipment ... still reluctant to ... communica... independent ... to import... a Computer C... ...nce advant... sion on d... comm...

BOSTON – A major ... process line data entry is that the process out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank. ... real-time system at the bank ... receivables, stock transfers and mutual funds ... 720 ... 370/155 ... Cronin ... real-time systems.

...Planning U... workshops ... particular ... experience ... and ... their ... potential problem ... of ... lar area ... warning other ... areas.

In all, more than 30 ... sessions on data entry ... tions and installation management, each given on a separate ...

BOSTON – "Conditioning ... sure effective data transmission ... often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning. ... Overlan, assistant telecom... manager for First National ... Boston, told a Caravan ... on leased-line usage.

...o Mix or Not

Thibault advised users who choose multivendor systems to bring each vendor in one at a time and explain what is expected from him in the mix. "Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain the ... rules of responsibility.

... character ... as a ... as an omnipotent ... Zayre Corp. has found the ... more ... lation of an IBM 1287 ... than justified on one application alone.

"Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the ... avail... problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

...OSTON – Sometimes all the in-house staff knows – even after a packaged system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

And it'll be happening soon in a city near you:

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: San Francisco. And here are some of the panelists who will be there: Hector Gomezr, State Compensation & Insurance Fund; Kenneth Iversen, Amfac; Stu Proffitt, Standard Oil of California; Steve Tiller, Del Monte Corp.; John Nackerud, Transamerica; Roger Kovach, University of California (Berkeley).

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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Computer Users' Forum Registration

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1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

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01 Mining/Construction/Oil & Refin.
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03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:____________

YOUR FUNCTION
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03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:____________

2. Please check the appropriate city:

Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

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COMPUTERWORLD

CW SPECIAL REPORT

★ The Non-IBM World ★

Increased Quality **Reduced Costs**

Success of Non-IBM Sources Is a Boon to All Users

"There are two types of people: those who divide people into two types and those who don't." – John Barth

Most people in the DP world fall into the former class and divide the world between IBM and "the others."

While this division may become a partisan issue with cries of monopoly, unfair marketing practices, charges and countercharges argued by lawyers, economists and philosophers, the real outcome will probably be decided by the users with those companies which are able to offer viable products and services attracting the more loyal customer base.

But even though the problem of competition is far from being resolved, it is clear that the cynics who wrote of the computer industry as "Snow White and the Seven Dwarfs" during the 1960s were too hasty.

As we move into the 1970s, Snow White is having trouble with detractors who call her Snow Grey (her virtue in question through a morals charge before the Justice Department).

While two of the dwarfs have died, no epidemic ensued among their users and the "others" are quietly winning an increasing number of loyal users by offering added or specialized services and in some cases zeroing in on one segment of the computer user market.

And Then There Were Five

Of the seven original dwarfs – CDC, Burroughs, NCR, RCA, Honeywell, Univac and GE – RCA passed away from a bizarre case of management syndrome that will provide Harvard Business School students a theme for years to come.

The other departed dwarf, GE, apparently decided its real love and/or money lay in running a time-sharing network and building the better light bulb.

The other five have prospered by getting their product lines in order and in some cases staking out a portion of the computer user market. And all except NCR showed record, or near record, earnings for the past fiscal year.

Even if it is true that there will be more tombstones in the DP cemetery, past history shows there is little danger to the user.

Univac's marked success with former RCA customers and general contentment among past GE users under Honeywell has shown that even if a company fails or abandons the computer field, the users are taken in and pampered by one of the survivors and in nearly all cases are better off than before.

And More Heard the News

The success of the remaining five dwarfs has lured other companies to enter the computer systems market through the following rationale.

- It appears the recession is over and potential users are now willing to invest more freely.
- The Nixon economy tends to favor companies that reinvest profits in growth as opposed to keeping money in the form of dividends.
- Non-IBM suppliers have shown they can compete by offering a differing technology or by directing efforts to a small defined segment of the market.

For example, major releases of "virtual memory," key-to-floppy disk and dual-processor systems had been offered by other sources long before IBM gave these techniques its blessing.

Additionally, IBM is so large that a company such as NCR can define a segment of the computer user community – e.g., users moving up from cash register equipment to their first computer – and develop this market with no designs on the large or sophisticated scientific user.

To put the issue into proper context it should be noted that not all computer acquisitions come down to a choice between IBM and another company, but the aura of the corporate giant is so large and pervasive it forms the benchmark others must try to exceed.

Users will benefit from this overall competition as vendors offer systems and services beyond comparable IBM offerings, sacrificing large profits to develop a stable and loyal customer base.

But while the sacrifices are great the stakes are high; many economists feel that the computer market is one of the world's fastest growing industries. Those companies that survive the growth period will be paid well for their sacrifices.

As a note of caution, these same experts feel it is not a game that will allow an unlimited number of players. Rather it is felt the industry will even out much the same as the auto industry with three or four major suppliers and a few others supplying special interest groups.

For the present, no one is predicting anything but continued good health for non-IBM manufacturers in the foreseeable future.

Users Who Should Know Grade Vendors

- **Burroughs: 'Good User Relations'**
- **CDC: 'Super Computer Power'**
- **DEC: 'Superior Cost/Performance'**
- **Honeywell: 'Excellent Support'**
- **NCR: 'Most Hardware for the Money'**
- **Univac: 'Best Operating System'**
- **Xerox: 'Good System, Low Visibility'**

By Michael Weinstein
and Toni Wiseman
Of the CW Staff

Superior hardware capabilities and cost/performance from non-IBM sources or good vendor software and organizational support from IBM? This is the trade-off many users feel they must make when obtaining computer systems, according to a recent *Computerworld* survey.

Computerworld interviewed users of seven different computer systems: Burroughs, Control Data, Digital Equipment (System 10s only), Honeywell, NCR, Univac and Xerox. In most cases about 20 users of each system were surveyed.

It was not the intent of the survey to obtain technical evaluation of the systems, but rather to determine general user opinions about the vendors, their equipment, software and services.

Burroughs/User Relations

Burroughs' greatest strength appeared to be its relationship with its users, many of whom expressed a genuine liking for their supplier.

"What I like most about them (Burroughs) is their non-arrogance," one user stated. "When I have a problem, they are really interested in helping me and I can usually get to a source who can solve my problems."

Another user echoed this feeling by contrasting his experiences with IBM. "When I was with IBM I felt as though I was just an account number and if I did not like something it was too bad. With Burroughs I feel they want my business and have a concern for my problems."

Another plus voiced by Burroughs users was the hardware/software mix of their systems. Users felt the machines were designed with the operating software in mind, as opposed to designing the hardware first and then making the software fit.

But if users were high in their praise of the operating software, they were low in their esteem for applications software and software support, except in the banking area.

In fact, Burroughs users were typical of all users in the non-IBM world in that they did not have access to large libraries of applications, whereas IBM users do have this resource.

CDC Power

Control Data ranked high with its users in the power of its computers and in certain application areas where they have built specially-tailored systems.

Thus, the majority of CDC users were either large institutions with a great deal of internal expertise who used the machines as large number crunchers or users in the applications areas where CDC had provided everything needed.

There were few users in between – general EDP users – compared to the other suppliers. Logically then, the greatest problems voiced were not in the area of software but in the areas of organizational and hardware support.

Most critical were the large users who felt that on-site engineers were not as competent as they should be.

DEC Cost/Performance

Digital Equipment users were very pleased with the capabilities of their System 10s in relation to the cost.

One user who had benchmarked a DEC System 10 against an IBM 370/155 felt the System 10 was a vastly superior machine at a fraction of the cost.

But he hastened to add, "the first peripheral a System 10 user should obtain is a very competent programmer/analyst."

He felt the DEC machine was very powerful but it was incumbent on the user to determine how to use this power, "but they become disinterested if they do not find the problem 'stimulating.' "

This opinion was reasserted by other users who felt DEC was weak in applications software and follow-up support. They felt the computer was superior and that DEC assumed the user was superior.

Of all the users surveyed, DEC users felt they probably received the least handholding.

Honeywell Happiness

Honeywell users, on the other hand, were quite happy with the support they received. Honeywell users were the only ones questioned who felt they received

(Continued on Page 32)

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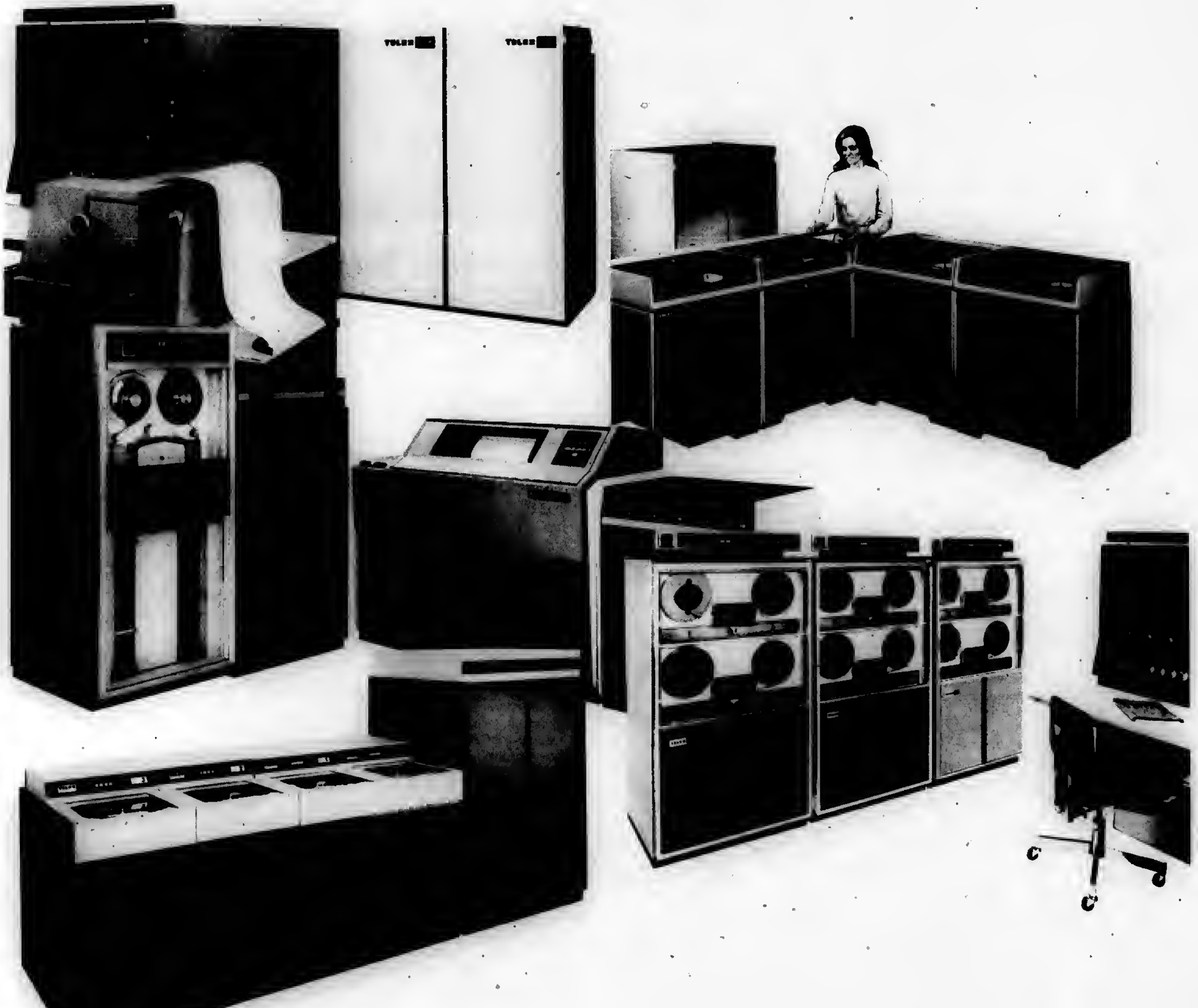
DEPEND ON THE INDEPENDENT THAT OFFERS ALL THE MAJOR PERIPHERALS.



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Cost/Performance or Software/Support?

To be or not to be with IBM, that is the question. Whether it is nobler in mind to pay the extra money and get the ever-present and reassuring IBM support, or to brazenly go forth and, while paying less, have more of the burden for day to day operations fall on the user's shoulders.

This seems to be the basic trade-off of the non-IBM user.

Initial cost saving is a major reason given by many users for choosing non-IBM computer systems. But in saving money on equipment costs, users have found they had to spend time and money to develop a greater in-house expertise.

The question arises then, whether they would have been better off under IBM's protective fold. Despite complaints about software most non-IBMers respond that they would not be better off.

One user voiced a popular view when he said users had to be responsible to themselves and that no vendor was totally dedicated to providing software.

Analysis

"A basic truth of all computer system manufacturers is that they are in the business of building and selling hardware," he said. While they have nothing against making a little on the side from selling software, their major emphasis is on developing programs needed for direct support of their systems.

"When I was an IBM employee, there was a document that had to be put together by anyone proposing a new program product," related the user. "After a brief introduction as to what the software would do, the initiator had to specify – in detail – what hardware products it would help to sell."

Even IBM had limits on the number of development projects it could support, he continued. It was understood that priority would go to the utility programs, operating systems, compilers and on-line terminals operations close to the heart of equipment operations.

Applications Expertise

The real difference between the IBM user and the non-IBMer is not so much in his vendor-supplied software, but in his ability to access someone who has experience in his particular application problems.

If the IBMer has a problem in some remote area, it is probable that somewhere an IBM expert exists who has spent time on this application.

However, the user will still have to pay extra for this expert to come and solve the problem.

The other danger in the outside expert is that after he has solved the problem he leaves, and problems that ensue are many times faced by an internal staff that does not understand the problem enough to effect a solution.

While the non-IBM user does not have access to such large amounts of expertise this can work to his benefit. He simply cannot afford to run a "sloppy" installation.

Runs 19 Concurrent Jobs

Burroughs B3500 System Gives User 'Time to Spare'

GREENSBORO, N.C. – "After 15 years with IBM, it's hard to imagine having a computer that allows us to go home at the end of the day with all our work done," said Dick Saunders, manager of programming for Cone Mills.

In discussing his last three years as a Burroughs user, he said his company "never had it so good."

Cone Mills is a textile company with standard data processing applications such as inventory, payroll, etc.

Until 1969, Cone Mills followed a standard IBM path from the 650 through the 1400 series and on to the 360s.

In 1969, it was running a 360/30 with 65K and a 360/40 with 128K.

At that time the firm decided to install an order entry system, but the current system was too small to support such an application.

IBM's suggestion was to upgrade to a 360/65 with 512K bytes of memory. But because of the considerable money involved and the need to move from DOS to OS, the firm decided to shop around before coming to any definite decision.

"We used to have a staff of 15 programmers and they were not enough; now we only need seven."

Out of a preliminary survey came three possible vendors: IBM, RCA and Burroughs.

A primary consideration was the ability of the chosen machine to run multijob streams simultaneously.

"We had many very small applications so the more we could process, the better we could serve our internal users," stated Saunders.

To determine which system could best meet their needs, Saunders developed a benchmark to run on each proposed system.

The benchmark results showed Burroughs and RCA were very close in terms of throughput capability and cost.

To add another dimension to the study, Saunders began talking to other users with surprising results.

"In all the time we called users, we never found an unhappy Burroughs user. Sure there were some with problems but none were discontent with the fact that they used Burroughs equipment," he said.

Added to the user responses, an inside study determined the Burroughs operating system software was superior to other offerings.

In 1970, the Burroughs system was installed. Built around a B3500 with 240K bytes, the configuration included six 1,600 byte/in. tape drives, a 100M-byte on-line disk subsystem, related printers and card equipment.

Saunders and his staff converted over 1000 programs to the new machines. Using these programs, they were able to run 19 jobs concurrently on the 262K byte B3500. Previously, it took more than three shifts for the 360/30 and 360/40 to do the same work.

"In the days before the B3500, we just never seemed to get done. All the jobs were late. With the new machine I was going home on time and we didn't need the extra third shift," Saunders stated.

"Soon we started looking for additional services we could provide and started going into data communications," he added.

This operation meant the replacement of a remote 360/20 with an RJE unit and setting up otber remote terminals.

The operation of these communications functions concurrently with the data processing jobs has had no effect on throughput speeds, according to Saunders.

Another advantage of the B3500 is that the firm needs fewer programmers, he explained.

"We used to have a staff of 15 programmers and they were not enough; now we only need seven."

"You kicked your computer – that was a pretty childish reaction."

Users Who Know Grade Vendors

(Continued from Page 29)

better support from day to day than their IBM cousins.

More than any other class of user, the HIS user had a feeling of IBM presence and contrasted his service to IBM's.

Time and again the determining factor for going with Honeywell was a cost advantage with no reduction in service.

One large complaint from Honeywell users was in the area of application software. But users indicated they saw a marked improvement in this area over the past year.

"Honeywell has come to realize that if they are going to compete across the board with IBM they must supply improved software," one user noted.

"They are working in this area, with marked improvements in the operating systems and new additions to application packages," he continued.

Users Split on Univac

Univac users were split on the quality of service, with some praising their service as above and beyond anything expected and others feeling they had been left out on a limb.

But more than any other user, the Univac user felt he had the best operating software – especially in Exec 8. This operating system capability was the reason cited by many users for being in the Univac fold.

NCR had the distinction of receiving the highest praise for hardware/cost capabilities and the most chastisement for software and support.

This disparity approaches a love-hate relationship among many users who suffered in the beginning to get their installations operating. Once they overcame problems, however, NCR users were generally very pleased with the operation of their systems.

The concensus of opinion is that NCR produces good hardware; if they would only write manuals and provide software support, they would be the best.

Xerox was the sleeper of the group. Users who had taken the effort to benchmark the Sigma line highly praised the computer's capabilities.

But Xerox did not appear to have a uniform approach to support from region to region.

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Support-Wide Reliability an Impetus

Eight-Month Study Brings Town to Honeywell Lease

By Toni Wiseman
Of the CW Staff

WELLESLEY, Mass. – In order to keep up with expanding demands on its computer facilities, this town is leasing a Honeywell Model 2020 system.

The Honeywell system replaces an IBM 360/20 and major reasons for the change include going to disk storage to replace the outdated card system and upgrading to a Planned Programming Budgeting System (PPBS), according to James Kirwin, data processing supervisor for the town.

The decision to go to Honeywell was made by a committee of Wellesley citizens with DP backgrounds, based on an eight month study of the computer market. Other systems considered were NCR, Burroughs and Univac.

"We chose Honeywell's system because it will enable us to expand our data processing services to the town, and will also provide greater efficiency in using current programs and increase the number of new applications," Kirwin said.

Many of these new applications center around the PPBS application which Kirwin described as "a budget control type idea which goes on historical information."

Card Environment Limited

"A card environment is very limited as far as statistical analysis and with the 2020 we can do more statistical investigation and analysis for the planning board, school department, DPW, etc.," Kirwin said.

The new system, according to Kirwin, will enable the town to do major redistricting for schools, voters and census information, which was impossible on the older system.

Kirwin listed inventory service for the town's 14 schools and a complete range of data storage and analysis, such as maintenance schedules and average breakdown costs for the DPW and other applications as the "new flexibility of the 2020" will allow them to undertake.

"And with Honeywell we can have these expanded capabilities for only $400/mo more than we were paying before," Kirwin stated. "In comparison with other vendors," he continued, "I don't think their reliability, support-wise, was as good as Honeywell.

And others with the support were "extremely expensive for the same type of equipment," he added.

The HIS 2020 system includes 32K of memory, a 24K increase over the former system. It also has a 450 line/min printer, card reader and card punch.

Disk storage of 9.2K characters of information will replace the punch-card storage system.

Wellesley's DP department consists of an operator, two keypunch girls and Kirwin, who does all the programming. All processing is done at one location since, as yet, there are no outside terminals.

In all, they run some 200 programs, covering the gamut of administrative functions from payroll processing and utility bills, to real estate taxes and encumbrance accounting.

The system also processes grades and attendance records for the school department. "We hope to expand our services to include student scheduling by 1974," Kirwin said, "but for that we'll use a federally subscribed programming package."

So far, the system is operating on only a one-shift basis, but Kirwin has many expansion plans for the future. "We hope to get more involved with budget analysis, and planning the budgeting system, for one thing," he stated.

Asked about the possibility of sharing DP programs with other neighboring townships, Kirwin said, "We're not doing anything like that at the present time, but I'm not opposed to the idea. It's something we might consider in the future."

Early Impression From Copier Maker Wins Over DP User

By Dan Puccio
Special to Computerworld

DORCHESTER, Mass. – The Xerox people don't know it, but they began to sell Jordan Dennis Co. a Xerox 530 computer the day they converted its Xerox 914 copier to the 1000 version.

Xerox modified the copier at its own expense simply to improve the speed and clarity of the copier.

It was a surprise and gave Jordan Dennis a great deal of confidence in Xerox.

Later, when the 530 was announced, the wholesale firm was in the market for a multipurpose computer that could meet a lot of requirements. Its unique capability and expandable modular design was tailor-made for the newly formed Return Data Division.

Its multiuse foreground/background capabilities will enable the firm to perform the combination of commercial and/or scientific data manipulations natural to the Return Data Innerplex procedures. It will enable Jordan Dennis to move ahead with its plans to implement new ideas in the field of postal sciences and related material communications technology.

The system will initially manage a data base of some 4.5 million records comprised of individual names and addresses controlled in a multiplicity of categories.

The initial configuration now on order can select, sort, tabulate, mix and match records – using a 50M byte disk system and dual magnetic tape drives – while simultaneously printing text or numerical records. The two line printers to be used with the system print 144,000 record/hr.

Acquisition of the system will provide the Return Data Division with the ability to mix words and numbers into an infinite variety of variables.

The upper and lower case capability will be used to generate large volumes of text material for automated reproduction. The firm expects to use this capability in a number of ways in connection with direct marketing analysis and related communications materials.

Main memory and disk capacity will be expanded via the modular assembly technique as more records are put into the data base. The present 4.5 million records cover primarily the New England area.

Consumer data covering all cities and towns in the U.S., approximating 55 million records, will ultimately be merged and integrated into the system.

Dan Puccio is president of Jordan Dennis Co., Dorchester, Mass.

Our
April
25th
Supplement.

Data
Communications

Probably no part of Electronic Data Processing systems requires such extensive planning as a communications network. Usually two to three years is required to make sure the resulting system is successful. And if the planning is inadequate, the results can be disastrous.

Computerworld's communications specialist, Ron Frank, takes a close look at this very complicated area in our April 25 supplement. It will include information on how to go about configuring a data communications network that will solve your particular problems. We'll describe some successful communications networks and discuss the utility of various kinds of equipment. When we put it all together, you'll have an excellent overview of this increasingly important EDP tool.

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Replaces 360/50s

User Cuts Cost, Increases Capabilities With DEC-10

By R.G. Ellis

Special to Computerworld

PITTSBURGH – Caught up in a wave of cost cutting, reorientation and restructuring characteristic of university computer centers across the country, the University of Pittsburgh was forced to replace its IBM 360/50s.

Based on all the benchmarks, the university determined that the base cost for a comparably configured Digital Equipment Corp. PDP-10 system was about 80% of a 360/50, and yet the processor was twice as fast.

Changing to DEC equipment represented a major change for the computer center at the university. Originally founded in 1956, it grew in much the same way as many university centers did through the 1960s, with a succession of IBM equipment – the 650, 7070, 7090 and 360/50s.

But in the late 1960s and early 1970s the computer center was forced to realign its operation in the light of limited funds.

In 1970 it was decided that the computer center was to become more businesslike in its operation, leaving developments which had no obvious benefit to the users to other research-oriented departments.

Setting the Goals

After an examination of the computer capacity on hand it became clear that even the gross amount of power of IBM 360/50s was inadequate to meet demands.

Long turnaround times and a large job backlog were the order of the day. It was not uncommon to have a 100-hour CPU backlog in the batch machine for long periods of time.

One goal, therefore, was to increase the total processing capacity by a minimum of 100%.

This increase could be accomplished by speeding up the CPU in the batch IBM 360 system, but not in the companion time-sharing system.

If other vendors were to be considered, however, the increase could be accomplished by methods other than simply speeding up the CPU. Capacity increase could involve the file-handling structure, multiprogramming techniques, printing speeds and operating systems.

Along with the capacity problem, the center had several recognized operational problems due to its three essentially different computer systems – large- and small-scale batch, remote and local and interactive time-sharing.

Thus, a second goal was to find equipment that could combine all types of usage into a common system.

Supporting the Users

Given the many users in diverse locations who used the center, a third goal was an improvement of services.

These services included the submission and retrieval of work, user consultation, dissemination and promulgation of information and adequate user work space.

Since nothing is static, any system chosen had to provide for future growth with systems which have extensive expansion potential without reprogramming.

Finally, this proposed system had to keep expenditures at or below the 1970-71 fiscal year level.

Digital Equipment offered a PDP-10 which had four times the capacity of the 360/50 – used in the time-sharing mode – but which cost 30% less.

Its relation to the 360/50 batch machine was difficult to determine even though it was clear that the central processor speed was twice that of the Model 50, with the exception of double-precision arithmetic which was not a hardware feature on the PDP-10.

In terms of a common system, the PDP-10 was the best working time-sharing system investigated, but it also had one of the most primitive batch-processing systems.

Both were working in the same machine environment, however, using the same command language, compilers and documentation.

Multiprocessor System

Although not implemented at the time, DEC was willing to commit contractually to a multiprocessor system. In addition, it had a prototype successor processor – the KI10 – that was going to be announced shortly, which was approximately twice as fast as the current model and had the double-precision arithmetic feature not available on the PDP-10.

The new machine was modularly expandable with a variety of peripherals and memory to 4M words.

Probably the strongest factor in DEC's favor was its price/performance ratio. A large dual-processor system could be configured for approximately $50,000/mo equivalent lease costs.

Checkpoints

The DEC approach called for phasing in the system over an 18-month period and providing checkpoints for the university to watch.

The university was allowed to withdraw from the contract if these timings were not satisfactory.

DEC replaced the time-sharing first which was the easiest to convert and provided early returns on the investment. Other vendors suggested further developments before time-sharing was operational.

DEC argued that batch processing could be made subordinate on a time-sharing executive system more easily than vice-versa.

R.G. Ellis is director of the computer center at the University of Pittsburgh.

"We'll declare ourselves a panel of experts and clean house."

About the Editor

This special report has been edited under the direction of Michael Weinstein, *Computerworld's* systems editor.

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Univac User Has Nothing but Praise for Exec 8

MANKATO, Minn. – "We chose Univac, mainly because of software capabilities, and we've never had cause to regret it," stated Don Henderson, director of computer service for Mankato State College.

Prior to 1970, Mankato had a conglomerate of equipment, mainly earlier IBM 1401 and 1410 computers. As needs grew they were forced to go outside to time-sharing services and add equipment bit by bit.

In 1968, Henderson started to write specifications for a system that would move the school out of its "patch-work second-generation" operation into a centralized third-generation shop.

Dual Purpose

He wanted a system that would serve both the academic needs for remote terminal operation and allow administration batch needs such as general accounting and payroll.

These needs demanded a system with a large on-line storage capability coupled with ability to support demand-type terminals.

After documenting these needs into an RFP, eight vendors responded.

Univac was chosen on the basis of the strength of operating system software (Exec 8) and support promised to Mankato to help it begin.

"What we really liked," Henderson said, "was the ability to dynamically assign memory as per our needs. Other systems we looked at generally used fixed partitions.

"The ability to change the partitions in the Univac computer meant we could get more throughput by setting partitions based on the application we were running."

Other software capabilities that helped swing Mankato to Univac were the operator status capabilities which allowed the user to determine from the operator's console the status of any job in progress.

A major hardware plus, Henderson added, was the communications capability that allowed attachment of various demand terminals – each with a different transmission rate – directly and smoothly into the central processor.

To add frosting to the cake, Univac offered Mankato the full-time support of two system representatives who would work with the user for one year helping him convert all programs and teaching system operation so Mankato could go it alone.

"All classes were taught at our site, at no additional cost," Henderson related.

"In the beginning we did not have a proper staff, and so much of the burden for the day-to-day operation fell onto the Univac people. Their help was essential until we could recruit and train our own staff."

They Blink by Night

On the morning of Nov. 20, 1970, three trucks arrived – each from a different part of the country – and the Univac people started to assemble the machine, Henderson remembers.

"It was the smoothest installation I ever experienced, and they had the machine up and the lights blinking by that night."

The system installed consists of a Univac 1106 with 262K-word memory, four tape drives, one Fastran drum with a 132M character storage capacity, a 1782 drum with a 12.5M character storage capacity, various card units and printers.

Tied into the computer center are several remote job entry (RJE) stations which send and receive data, as well as terminals spread out through the campuses used by students and faculty for program teaching and development.

Henderson has set up his Exec 8 operating system to allow six concurrent batch jobs and up to 30 terminals to operate simultaneously.

At full pitch, he estimated response time at any terminal never exceeds 10 seconds.

Program compilers supported are Fortran, ANS Cobol, Basic, Algol, Snobol, Symscript and GPSS.

The only difficulty he reported was that sometimes initially it took too long for Univac to respond to software problems. But even here he qualified his feeling: "Maybe it was because we asked too much of them in the beginning while we were new to the system."

The only hardware problem was with the 6C tape drives which he said were too slow for the central processor.

"We now operate on a better than 99% uptime and have only experienced two or three system crashes that lasted more than an hour or two since the system went up," he concluded.

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User 'Knows Who He Is'

Non-IBMer Must Develop Strong In-House Staff

TOLEDO, Ohio – Like a man who "knows who he is" and doesn't need the "frills," Bill McMillan of Questor Corp. went to a non-IBM system vendor to take advantage of system cost savings at the expense of software handholding.

But, he added, to save money by going to a non-IBM source it was necessary to develop a strong in-house personnel.

Questor got its first Honeywell computer – a 12K HIS 200 – in early 1966. Since then the company has expanded to its present configuration of two 2070s in the Toledo headquarters – one with 262K and the other with 394K – a 2040A in Michigan and a 2050A in Massachusetts.

Peripheral equipment tied to these systems includes 35 tape drives, eight Model 277 disk drives and assorted printers, card readers/punches, etc.

In evaluating the seven years with Honeywell, McMillan cited the necessary development of a strong in-house capability as a major advantage, not only in money saved but also in system efficiency.

IBM users many times come to depend on their vendors to bail them out when trouble arises, he stated.

"If you are an IBM user and have a problem with a costing program for building products, it is reasonable to assume that somewhere IBM has an expert in this – or any other – particular field."

Handholding Costs

But this handholding costs money, McMillan stressed, and few users realize the extent to which they pay IBM to be there just in case trouble comes.

"By developing our own internal capabilities, we do not have to continually pay for services that we might use only once or twice a year," he added. In addition, after an initial problem is fixed and the expert is somewhere else, new requirements or problems may arise with no one present who understands the problem enough to provide a solution.

A Jealous Streak

If McMillan does envy IBM users in any way it is because of the large library of application programs available to them.

"For the non-IBM user to take an application program written for an IBM system and refit it to his own computer is a waste of time in most cases," he said, "as it is easier to start from scratch and write your own program."

Honeywell is finally realizing that it must provide more application packages, but it has taken Honeywell too long to get to this point, McMillan asserted.

The fact that Honeywell is improving in this area makes McMillan feel that for the new Honeywell user the road will be much smoother.

By attempting to improve software support Honeywell's long-range position as a computer systems supplier will be improved, McMillan feels.

Even with recent improvements, he hopes more effort will be put into software capabilities such as sharing of files, data base management and field debugging.

On the other side of the coin, operating systems have always been good, McMillan said, pointing to his own operation. Under OS/2000 he is running multiple job streams as well as communications applications.

Toledo No Mecca but . . .

In building his internal staff, McMillan stated, he was surprised at the relative ease of finding good programmers and analysts locally for his Honeywell equipment.

To complement local personnel, he stated, he had very good success with the Honeywell Institute.

"From time-to-time we call and ask if there are any exceptional students. After interviewing and hiring several graduates we were quite happy with the results," McMillan said.

As for actual hardware operation, McMillan had only small complaints about initial problems balancing disk and tape heads.

Historically, he concluded, "Honeywell has done everything that could reasonably be expected of them to support our hardware operation."

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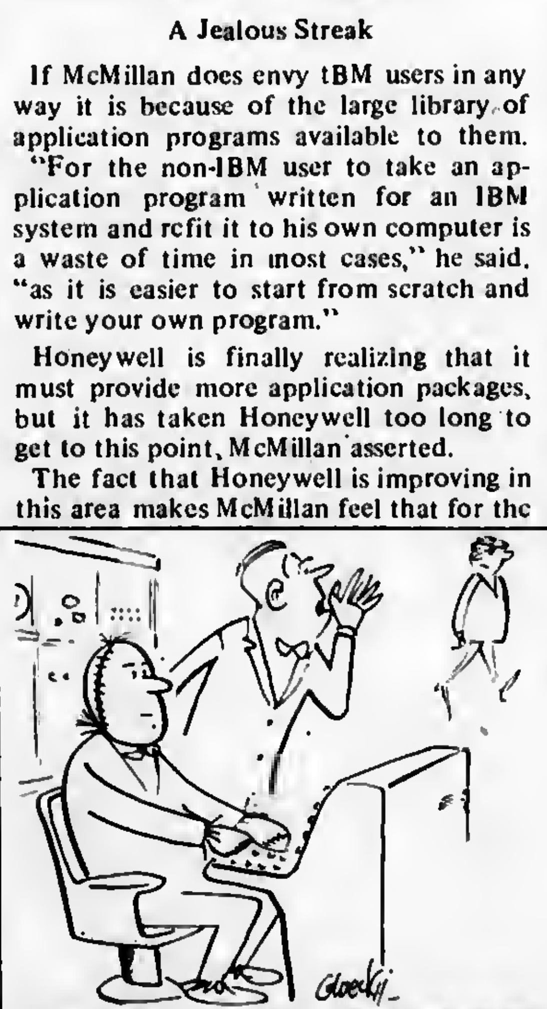

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Maintenance, Spare Parts Problems

Burroughs: 'Nice to Do Business With'

PADUCAH, Ky. – "Burroughs has consistently stayed ahead of the rest of the computer companies in releasing new products," John Williams of Computer Services, Inc. (CSI) believes.

But, Williams added, there are tradeoffs. For the exceptionally good hardware/software capabilities the user generally faces, there are sacrifices in sales support, parts availability and training.

Nuts and Bolts

The biggest problem he sees for Burroughs users is the lack of an adequate network for distributing spare parts.

"At times I have had to charter a plane myself, just to insure that I was going to be operational the next day."

Another problem cited was in the area of maintenance, with "Burroughs like many other companies promoting from within. The result of this policy for the user is that many times his computer room is the training ground for the new engineer.

"After a while he is going to learn his job, but in the meantime I wish Burroughs would charge me accordingly," Williams said wistfully.

Despite these drawbacks, Williams is quite content with Burroughs in relation to computer equipment from another vendor.

CSI acts as the computer facility for many of the local banks and some of the local commercial companies.

Operationally, CSI employs Burroughs equipment for the banking customers and an IBM computer for the commercial ones.

Burroughs equipment includes three B500s – each with 19.2K character memory – a B300, several magnetic tape drives, card equipment and MICR input devices.

At many of CSI's user sites, the firm has installed minicomputers to provide remote preprocessing capabilities.

With no disk equipment all programs are loaded from tape which has led to some disillusionment with Burroughs tape peripherals.

"Subjectively, I feel the Burroughs unit is not as good as it might be," noted Williams, explaining that problems were mainly in the electromechanical operations, he related.

Not Arrogant

One of the most pleasing aspects of being a Burroughs user to Williams is the character of the firm itself.

"Their organization is still small enough that I feel comfortable with them. It is possible to get right to the source of solutions without getting involved in a lot of organizational red tape.

Most of CSI's business revolves around 16 application programs written by the CSI, so Williams had little experience with or comments on Burroughs-supplied application packages.

"Their organization is still small enough that I feel comfortable with them. It is possible to get right to the source of solutions without getting involved in a lot of organizational red tape." – John Williams, Computer Services Inc.

As for the operating software, he stated, "while it may be good for the general application, we found it could be more improved for our operation.

"Our particular assembler version was inadequate in cross-referencing and label-addressing. We could have upgraded to a different assembler, but then it was lacking in some of the areas where our present assembler was strong," he related.

This situation led Williams to rewrite part of the software and add modules to streamline his operation.

His experience is probably not typical, he said, and even before the changes the system worked well.

User Believes CDC Should Downplay Number Crunching

By Richard E.W. Smith

Special to Computerworld

The philosophy that attained success for Control Data Corp. in the scientific user area does not directly carry over for the business-type user.

Therefore, it will require some rather basic changes for CDC to become one of the leaders in the EDP marketplace. But I have few doubts that they will succeed in this effort.

But first, there will have to be some hardware changes. The supercomputer design of CDC has always been most efficient at arithmetic calculations – so-called number "crunchers." The ordinary business DP workload is not highly arithmetic oriented, but is dominated by the requirement to move massive amounts of data.

At Kaman Sciences the workload is about 60% business DP and 40% scientific. While there are certain inherent efficiencies in such a workload (if the programs are designed with considerable forethought), the Cyber computers are quite cost-effective for this job mix.

This may not be true for a strict business environment; however, recent hardware and software improvements by CDC favor business efficiencies. The compare and move unit (CMU) introduced with the Cyber is the greatest single contribution.

Kaman tests have shown that a string of 20,000 characters can be moved 20 times as fast with the CMU. Obviously, then, CDC is taking the appropriate steps with hardware.

Second, continual improvement must come in business software. That's not at all surprising, as software in general is the weakest area in the computing industry today.

I specifically said continual improvement because CDC has made great progress in business software in the last two or three years. We have been a CDC customer for ten years, but only with the release of Cobol 3.0 would we consider using CDC's Cobol.

We found the Cobol 3.0 programs well-written. They run faster and take less storage than when written in Fortran. We have also found poorly written Cobol programs will cause considerably more grief by increasing running time and storage requirements than poorly written Fortran programs.

In other words CDC's Cobol is not yet mature enough to keep mediocre pro-

(Continued on Page 39)

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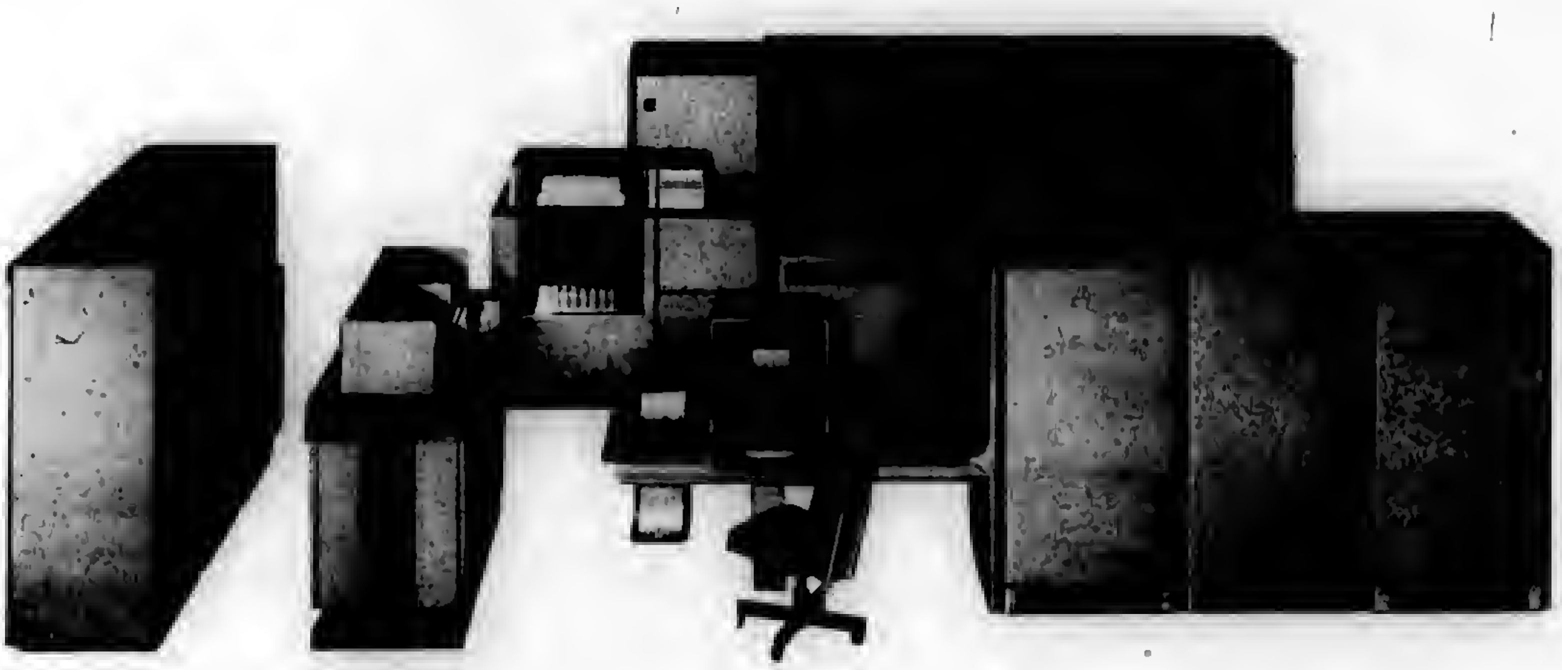

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Kellogg Reports Smooth Sailing With Univac 1106

BATTLE CREEK, Mich. – "We wanted a machine that offered communications and multiprogramming capabilities, but was not too complex for us to operate," stated Ted Tuttle of Kellogg Foods.

After a careful evaluation period, Tuttle chose a Univac 1106 and reports smooth sailing ever since.

Earlier data processing at Kellogg followed a familiar pattern of a card-in-card-out basic stored program computer beginning in 1960. This was followed by an IBM 1410 in 1964 which was upgraded to a 360/40 and a 360/30 operating under DOS in the late 60s.

In 1969, Kellogg underwent an evaluation period made necessary by the changing nature of its computer operations.

The plan was to have a centralized computer facility provide the processing power for all of the company's offices around the country. Each office would be equipped with terminals, printers and other peripheral devices accessing the main installation over telephone lines.

From this plan a set of operating specifications was assembled that became the basis of an RFP to possible vendors.

Simple Operations

Besides the usual system size and configuration needs, Tuttle was looking for a system that provided simple communications operations and allowed multijob stream programming.

Additionally, to bypass potential conversion problems, the RFPs directed each vendor to run benchmarks for converting existing programs – mostly in Cobol – to be run on the bidders' machines. All vendors were restricted to using only as much hardware as they had bid for the benchmarks.

The output from each vendor was matched with standard output from the existing IBM 360 systems to determine filter devices and aids as well as timings.

From this evaluation two options were chosen as the most promising: stay with IBM and go into OS or convert to Univac.

A major consideration against going to OS was that many internal people would have been needed for program maintenance, Tuttle said.

"We visited local shops that were running under OS and found in some as many as six people whose sole job was upkeeping OS. We thought this was a waste of personnel," he added.

Univac Offer Best

In 1971 the firm decided to go with Univac on the basis of price/performance, ease of operation and two unique features offered Kellogg:

- The system would be leased on a 24-hr day basis and thus there would be no charges for overtime.
- Univac would provide a full-time Site Engineer to be resident at Kellogg.

The system Kellogg acquired included the 1106 with 262K words; 12 9-track 1,600 bit/in. dual-density tape drives; two 9300 substations, including printer and card reader/punch; one stand-alone high-speed printer; two drum storage units with a total of 400M characters.

Prior to installation, Kellogg received another consideration in the form of a 9300 substation linked to an 1108 in Pheonix, Ariz. This was used to convert nearly all of Kellogg's programs prior to the actual installation of the leased 1106.

In September 1971, the computer was installed with the only remaining task being to test the converted programs on the new machine.

Since that time operations have been smooth with Tuttle adding new applications to his system. One involves eight display terminals tied to the 1106 for order entry; another is the impending use of remote job entry devices in remote stations for better throughput.

One of the most pleasing aspects of the new machine has been the resident systems engineer who tests all releases and brings them up on the 1106 before they are put into use, Tuttle said.

With the system in operation now, Tuttle evaluates the central processor as excellent, with almost no trouble reported.

The peripherals are graded as good with the exception of the 9300 substations which he feels are too slow and not dependable for large amounts of printing.

The software is more than he expected with highlights being the ease of communications software and the wide range of operator functions available, Tuttle said.

"From his console the operator can determine status information, internal time information, as well as access a good device cataloging program," he noted.

Since Kellogg writes most of its own applications software it has had minimal experience with Univac-supplied applications programs.

Finally, the resident SE has provided not only a good maintenance source but a vital communication link between Kellogg's operation and Univac, Tuttle stated.

User Believes CDC Shifting Priorities

(Continued from Page 38)

grammers out of trouble. A similar statement can be made for utility software such as Sort-Merge.

The area where CDC has the toughest road ahead is service. Our experience with service has been twofold.

The support at our central site in Colorado Springs has been satisfactory. Hardware maintenance has been quite good and the analyst support has not been detrimental.

From knowledge of other sites, our maintenance experience may not be normal. Many installations are extremely critical of their CE support. I can recall only one incident when our system was down for any appreciable length of time.

Statistically, we show an up-time of 98.6% over the past five years.

CDC has been able to get away with low-caliber service mainly because of the market it serves. The large scientific organizations are generally more capable and more willing to assume the software maintenance burden than most business customers.

Outside our central site we have experienced very poor service. Our primary business is to provide services to certain industries, such as radio/TV stations, schools, banks and hospitals. In some of these services we install CDC terminals in the customer's facility.

Most often the customer is not computer oriented and consequently requires considerable support. We expect CDC, as well as any other manufacturer, to be responsive to the requirements.

But service has been lackadaisical in most instances in our remote sites.

Richard E.W. Smith is vice-president of Kaman Sciences Corp., Colorado Springs, Colo.

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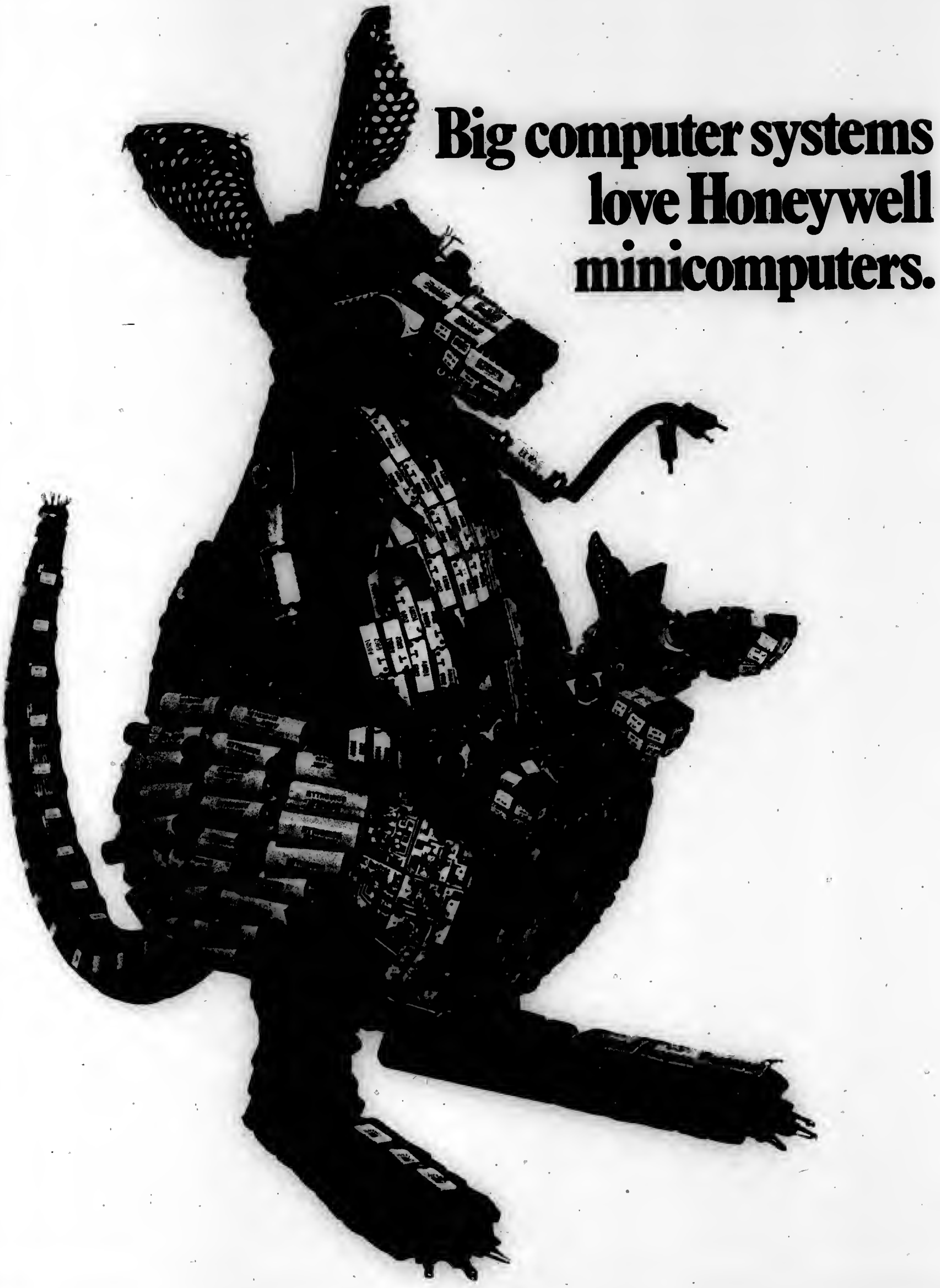
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The Other Computer Company:

Honeywell

Hospital Hails CDC's Service To Health Field

By Warren Bassett

Special to Computerworld

PITTSBURGH, Pa. – In choosing a computer for Mercy Hospital the major consideration was finding a vendor that had a total commitment to servicing the health field.

At the same time, like most hospitals, Mercy was under strong public and government pressure to keep costs down.

Mercy Hospital believes it has found a vendor which meets both these objectives – Control Data Corp.

Prior to signing the contract with CDC, Mercy Hospital spent approximately four years exploring and analyzing all possible data processing alternatives.

These alternatives included seeking affiliation with a local group of hospitals which operates a joint data processing facility; consideration of an in-house installation which included proposals from most of the principal hardware vendors; consideration of affiliation with a shared data processing service which operates nationally; and the CDC "facilities management" alternative.

On November 3, 1971, a five-and-one-half year contract was signed between CDC and Mercy Hospital.

Under the terms of the agreement, CDC is responsible for providing total data processing services to the hospital including all hardware, software and operating personnel.

The only person on the Mercy Hospital payroll dedicated to full-time data processing is the data processing coordinator.

Payment to CDC is based on a "per transaction" or "per item" basis, and payment is not made until an implemented program is operationally acceptable to the hospital staff.

Additionally, the group of application programs that make up the patient finance package – Medisharp – must be totally implemented within a specified period of time.

No 'Headaches'

Thus, the hospital has no "operational headaches" of a data processing facility, and because of the payment and time clauses the hospital is assured that CDC will accomplish defined objectives within defined time limits.

The system installed at the hospital is based around a 98K Model 3300 CPU. The central processor is tied to one multidisk drive, three disk storage drives, card reader, line printer, card punch and four magnetic tape transports.

Optional equipment includes a communications subsystem and remote batch terminals.

The applications software – Medisharp – is used to prepare billing notices and control admitting forms.

Under software control, the system also prints statements and collection notices for the credit department and generates statistical analysis for the cost accounting programs.

In addition to these standard packages, a patient data base has been established and Mercy Hospital is in the process of planning and implementing clinically oriented data processing programs such as a tumor registry, ECG analysis, a laboratory system and physiological monitoring.

Mercy Hospital is more than satisfied with the performance of CDC's software, personnel and hardware. CDC has taken the time to learn the operational problems of the health field instead of isolating itself in the mysterious world of bits and bytes.

Warren J. Bassett is director, methods and procedures, for Mercy Hospital, Pittsburgh, Pa.

HIS Gives a Little Extra to Small User

By Toni Wiseman

Of the CW Staff

PHOENIX – When Bob's Big Boy Restaurants opened in 1956, it was a small concern – one restaurant to be exact. But expansion followed and this eventually led to computerization in 1969, and with eight restaurants to oversee, the company invested in a GE-55.

Later, the need to convert to disks, not available on the 55, brought up the question of acquiring a new system, according to Lee Fobar, DP manager for the chain. Since the company does all its own programming, it was only interested in a basic system.

After considering both the HIS/58 and the IBM System/3, Fobar determined that both would meet their needs in terms of core and peripherals. Ease of conversion was the determining factor in the final choice of the HIS/58.

"The 58 is capable of using the old Gecol language in which all our programs are written, so we can take our current programs, recompile them, and that's the end of conversion," Fobar said, "whereas with the S/3 we would have had to rewrite everything into RPG."

A switch to RPG would have meant classes in language training which would come to a large sum of money. "We didn't want to go through another output of money," stated Fobar.

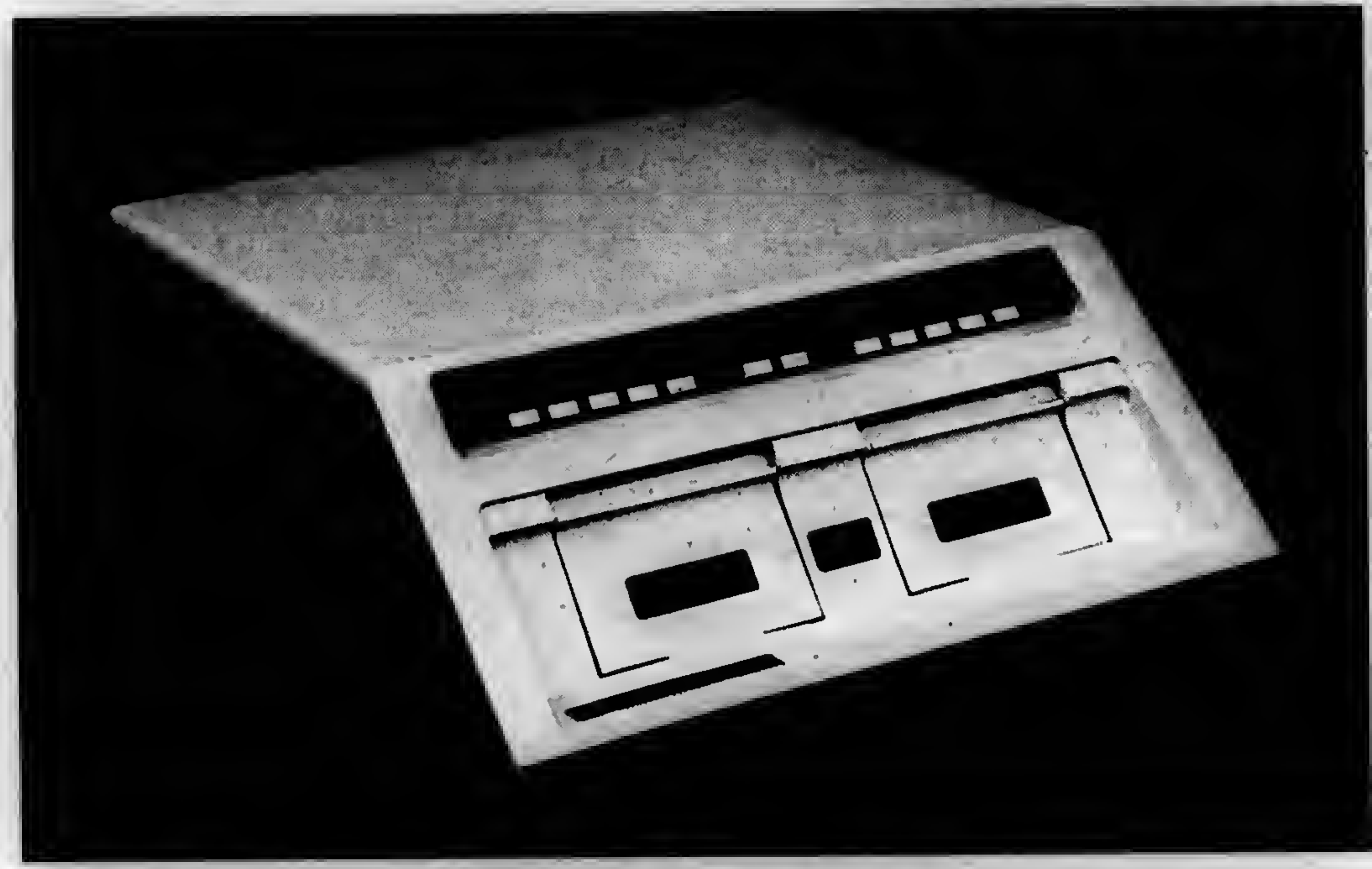
The company's DP department consists of three people: Fobar, who does all the programming; a keypunch operator; and a girl who runs the computer. This small size is compensated, according to Fobar, by the fact that the personnel in various departments (accounts payable, payroll, etc.) all know how to run their own particular applications.

"The 55 is a very simple machine to operate, and the 58 is basically simple too," Fobar said. "We like that because we can continue to have the girls run their own work."

The Honeywell lease terms made upgrading to the 58 a cost-effective alternative to a completely new system from another vendor. IBM offers investment credit without requiring a contract for a user-specified number of years, but Honeywell, with a five year contract, offers both investment credit and reduced rental which constitutes, in Fobar's opinion, a savings in the long run.

After ordering the HIS/58 with a 12K system, 100 line printer, and card punch with interpreter, a problem arose because the Bob's Big Boy Restaurant building is not equipped with the proper power for either the S/3 or the HIS/58. "It's going to cost a couple of thousand dollars to bring power into the building," Fobar said, "but to compensate for this, Honeywell has agreed to give us a three-month rental credit."

The new



UNIVAC 610 Tape Cassette System

UNISCOPE 100 Display Terminal

UNIVAC Communications Printer

NCR Users Like Hardware but Want Better Software

Problems Compounded By 'Neophyte Users'

ROCKVILLE CENTRE, N.Y. – The most common difficulty users face with NCR systems comes from the poor software and software support, according to John Giustra of Conversion Sciences, a software house specializing in NCR systems.

Many times, less than adequate software is compounded by users who are new to computers, he added.

"Many first-time users do not realize that a computer is just a piece of hardware whose efficiency is dependent on a good program of software development."

While courses exist, Giustra feels that many users fail to take the responsibility for attending and try to teach themselves from NCR manuals.

These manuals are poorly laid out and "while most questions can be answered from the eight or more volumes, many users do not know the proper questions to ask."

Root of Problem

Support problems can be traced to NCR's efforts to sell their hardware very cheaply. This hardware is certainly very good, he added, but the low volume of rental derived does not allow NCR to provide adequate local support.

"NCR runs each branch as a profit center, and the branches find it difficult to pay the higher salaries needed to keep the more experienced support personnel.

"In many cases the user's SE is almost as new to data processing as the user himself. Many SEs were taken from the ranks of the firm's cash register representatives," he said.

When this happens users become prematurely disillusioned with a perfectly good piece of equipment and it can cause a residual bad feeling toward NCR.

In many cases the user is saved from disaster by the fact that NCR operating software and utility and sort routines are sound, Guistra contended. Their strength allows users to run programs even if the users' programs are not so elegant or powerful.

Learning Under Pressure

In this sink or swim environment, many NCR users get to be quite proficient under pressure. They must write a large portion of their own applications as NCR has a limited and often-times inadequate supply.

Until NCR devotes more effort to this area, the NCR user should become more aggressive in acquiring programs from other users or consider purchasing software.

Finally and most important, most problems can be easily solved if the user hires the proper in-house personnel – including at least a manager analyst, programmer/operator and an operator/programmer, Giustra suggested.

Century 50 Expected To 'Spin Like a Top'

HARTFORD, Conn. – "In summing up my feelings as an NCR user, I would say we are very pleased with the hardware and feel our system is extremely cost-effective. Now if they could only do a little more work on the software," said Robert Dunphy, DP manager, Hartford Police Department.

"Looking back, it seems strange," Dunphy noted, "that we originally intended to go with a System/3 because of the hardware but had some reservations about the software. We went with NCR because we liked the software but had reservations about using the hardware."

As it turned out the hardware is good and once the software is fixed the little machines will "spin like a top," he said.

Dunphy, previously a systems analyst for Pratt & Whitney Aircraft, arrived at the police department in mid-1971 charged with the responsibility of developing a computer capability.

Prior to his arrival all police data had been keypunched even though the department had no computer; the rationale was that computing was coming and when it did the data would be ready.

"I found myself in the position of having large amounts of statistical data and no computer to provide processing capabilities," Dunphy recalled.

Dunphy's first thought was to obtain an S/3 with a disk subsystem since all his experience had been on IBM computers.

First analysis indicated that such a system would cost about $25,000/yr. With this dollar figure and a list of objectives, he went to the city council for authorization to submit bids for a low-cost system with on-line disk facilities.

"A major consideration was to keep the cost low since we felt it was better to have the city pay for the computer than to ask for a grant from the government.

"In retrospect, this turned out to be a wise decision as many cities who got 'free' money from the Law Enforcement Assistance Administration are now worried that government cutbacks may bring their computing efforts to a halt."

With city approval, a Request for Proposals (RFP) was sent to various vendors asking for proposals within the specified price range.

System configuration was spelled out as a central processor in the 16K to 24K byte range; a low-speed printer, card equipment and an 8M to 12M byte disk subsystem.

Dunphy also asked the bidders to respond on available application packages – both of a general nature and special police applications – since the installation is basically a one-man shop.

"I felt there would not be enough time for me to both write all the software and perform my overall duties to the city."

Although Dunphy's original intention was to get an S/3, the arrival of proposals from other vendors caused him to re-evaluate his original plan.

But NCR was selected as the best offer on the basis of cost and promised software packages. These software packages included, in addition to standard computer programs, special police applications that Dunphy was interested in.

In mid-1972, NCR delivered a Century 50 central processor with 16K bytes of memory and peripherals specified in the RFP including 8.4M bytes of on-line removable disk storage.

Also included was the free software Dunphy had been so interested in.

Fortunately for the city, Dunphy's previous experience as an analyst enabled him to debug the programs.

"In many cases it was necessary to go right into the supplied software and rewrite it, correcting here and discarding there," he commented.

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Xerox System Calmed User's Fear of Moving From IBM

By Harold Aaron
and
Kenneth Cannizzaro
Special to Computerworld

NEW YORK – Despite initial trepidation, the New York Institute of Technology (NYIT) moved away from IBM to a Xerox system.

The overall consensus after eight months of operation on the Sigma 6 is that Xerox has provided a viable approach in maintaining large-scale machine services while dramatically reducing operational costs.

The idea of switching vendors first began to take shape in January 1972 when NYIT attempted to reduce expenditures in the face of rising educational costs.

The computer center staff was asked to compile a report on alternative methods of cost reduction without incurring drastic cutbacks in computer service. The initial interpretation of cost reduction was construed to mean a smaller IBM computer.

NYIT and various secondary school users were then being serviced by a 1.5 Mbyte 360/65 running under OS MVT and HASP. Operational costs were substantial for a machine of this size, but it provided a wide range of necessary services from CALL/360 time-sharing to batch processing with excellent response time.

Thus, the first proposal came from IBM who proposed a 370/145 running under MFT. Since this 370/145 under MFT could not support concurrent time-sharing and batch operations, IBM proposed that the center segment its time. The center could schedule discrete batch and time-sharing operations using a trimmed down version of CALL/360.

But the impact this proposal would have on the end users was distressing and, as a result, NYIT was forced to look elsewhere. A plan was formulated to contact and evaluate various computer manufacturers on their ability to meet these requirements:

- Ease of conversion
- Multiuser (time-sharing and batch) programming
- Compatible batch and time-sharing files
- Price/performance
- Large time-sharing user capacity concurrent with batch
- High performance compilers (e.g., response time)
- A wide variety of languages

At this point, it was not clear whether any vendor could provide what the center was looking for. It was assumed that some goals (e.g., compatibility between batch and time-sharing and concurrent operation) would have to be compromised. Each of the manufacturers was requested to propose its system in three stages:

- Stage 1 – Initial sales call and demonstration.
- Stage 2 – Question and answer period.
- Stage 3 – Practical demonstration of capabilities.

Initially, IBM could not meet the original criteria previously outlined. Univac could not offer a unified batch and time-sharing capability. In addition, the cost of the equipment was beyond the proposed budget.

Honeywell also could not offer a unified batch and time-sharing environment, however, the price was well within the budget. This narrowed the field down to Burroughs and Xerox.

Both vendors claimed they could meet the criteria and could remain within budget limits. The initial offering from each was as follows.

- Burroughs – B6700 running under MCP.
- Xerox – Sigma 6 running under UTS.

After the initial sales call by each vendor and after extensive question and answer periods, the center was given some hands-on experience with the systems.

After an extensive evaluation the school was left with Xerox's initial proposal and a second proposal from IBM.

The new IBM proposal consisted of adding more core to the 145 to enable batch and CALL/360 to run concurrently. However, the size of each program user area was seriously limited.

In addition, this new proposal with increased core size was at the maximum dollar limit of the school's budget.

The computer center staff then visited Carleton University in Ottawa, Canada, to see the UTS System running on a configuration similar to the one Xerox had proposed. All of the claims that had been made appeared plausible.

The Canadian site was supporting over 50 time-sharing terminals with concurrent multiprogramming batch streams. The system was impressive since all programming and debugging was done on-line for batch as well as time-sharing applications.

The university appeared satisfied with the Xerox system running under UTS, although it was not running under the latest UTS release.

NYIT submitted existing PL/1 and Cobol applications to Xerox to test their conversion support. Within two weeks they had satisfactorily converted the applications, thus demonstrating their ability to aid in the proposed transition.

At this point, IBM returned with another proposal. IBM offered more core to provide an increase in program user area, but the school could not afford the additional core.

After much discussion and anxiety, the decision was made to order a Xerox Sigma 6 computer running under UTS.

The Sigma 6 has been running for about eight months. The system supports 43 on-line terminal users and concurrent multiprogramming batch usage.

Harold Aaron and Kenneth Cannizzaro are on the DP staff at NYIT, Long Island, N.Y.

Sigma 6: the Good and the Bad

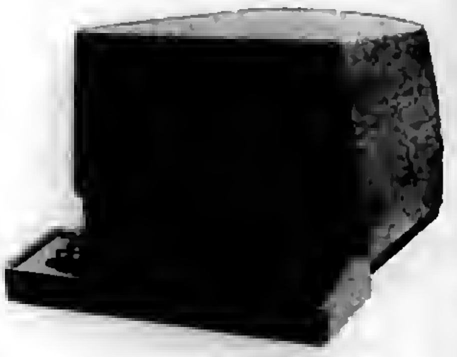
Negative Features

- Initally documentation was poor (now improved)
- Operating System releases were initially unstable (have been improved)
- Software support suffers from logistical problems

Positive Features

- Provides a high degree of multiprogramming between time-sharing and multi-batch, thus providing excellent CPU utilization
- JCL for UTS is extremely easy to use and often not needed. Time to master – one to two days
- Systems staff is free to do development work and is not required to constantly "babysit" the operating system
- Excellent terminal flexibility
- Operators find system easy to run since UTS does resource scheduling and allocation
- System backup procedures are efficient, easy to use and automatic
- UTS gathers easy to use, comprehensive accounting and systems performance data
- Total file compatibility between batch and time-sharing applications
- Wide range of processors (compilers) available (conversion minimal)
- Excellent Xerox conversion of PL/1 and Cobol applications
- Large time-sharing capacity
- Commonly used processors (e.g., compilers) are re-entrant
- UTS is a virtual memory operating system that successfully handles swapping without page thrashing

7700A Desk Console



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CI Notes

DP Merger Activity Drops

CHICAGO – Merger activity in the computer services and manufacturing field fell 40% in 1972, according to W.T. Grimm & Co., a financial consulting firm. Net announcements in the DP category amounted to 81, down from the 135 recorded in 1971.

But overall merger activity for the 40 categories covered by the study totaled 4,801, a 4% increase over the 1971 total of 4,608.

Within the computer classification, 58% of all transactions represented divisional or fractional sales. In 1972 there were 47 divisional sales, down from 84 in 1971, the study showed.

Honeywell to Buy Datapoints

SAN ANTONIO, Texas – Honeywell has agreed to purchase Datapoint 2200 systems for marketing under its own label.

Honeywell said no details on the configuration, marketing methods or price are available yet. The agreement is thought to cover a new 48K-memory version of the unit. Datapoint presently makes the 2200 with 16K.

Information Marketing IIA Topic

PHILADELPHIA – The Fifth National Meeting of the Information Industry Association (IIA) will examine "Information Futures: Product Planning for Profitability."

Sessions at the meeting April 2-4 at the Penn Center Holiday Inn will investigate techniques and feasibility of marketing information byproducts of a firm's operations. The IIA is at 904 Montgomery Bldg., Washington, D.C. 20014.

Rapidata, Standard to Settle

FAIRFIELD, N.J. – Rapidata, Inc. and Standard Computer Corp. have agreed to terms of settlement for a breach-of-contract lawsuit brought by Rapidata against Standard in 1969.

Under the terms, all claims against Standard and Standard's counterclaim will be dismissed.

Supershorts

Microdata Corp. has shipped the 2,000th Model 800 minicomputer.

– – –

General Automation, Inc. has signed a contract with Documation, Inc. for the purchase of 500 Documation punched card readers over the next two years.

– – –

Centronics has received a $5.2 million order for printers from Computer Related Equipment Ltd. of Germany and England for delivery during the next 12 months.

– – –

Naco, an affiliate of Fuji Motors Corp., Tokyo, has been named Japanese distributor for Syncom Inc. products.

Installed Base Passes W. Germany

Japan Now Called Number Two DP User

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Japan is now the number one computer-using country outside of the U.S., surpassing even West Germany in the total number of computers installed, according to Patrick J. McGovern, president of the market research firm, International Data Corp. (IDC).

According to the IDC figures, 19% of the computers installed by all manufacturers outside of the U.S. are now in Japan, with 14% in West Germany and 13% in the UK.

Next come France with 12% of the installations outside the U.S., and the Soviet Union with 8%. Other Western European computers account for 14% of the installations, while Canada has 6%, and Italy has 5%.

2.1% of Japan GNP

The installed base of computers in Japan at the end of 1972, McGovern related at an industry briefing here, was valued at $4.4 billion and represented 2.1% of the Japanese gross national product that year.

On the other hand, computers installed in West Germany were valued at $3.4 billion. This represented 1.74% of the gross national product of that country.

According to the IDC figures, a country with a computer-to-GNP ratio of 1.4% to 2.1% is average and has a computer growth potential of 13% to 17% yearly.

A country with a ratio of less than 1.4% is considered undeveloped in computer use and can be expected to chalk up growth rates in the range of 20% to 25%.

A country where the installed computer base is over 2.1% of the GNP, however, is considered to be approaching saturation in computer use and will see a growth rate of 10% to 12%.

Therefore countries like Switzerland with a ratio of 2.42%, due to its concentration of banking institutions, will show a slower growth rate than ones like the Soviet Union with a ratio of .36%, the lowest in the world.

To put the ratio into perspective, the U.S. currently has an index of 2.87% and so will be in the slower growth category, the figures showed. The international average for countries outside the U.S. is 1.12%, which indicates the greatest growth in computer use will be in the international market.

Countries currently below average in computer use, and therefore ones that will show the greatest growth, include Italy, Belgium, Spain, Brazil, South Africa, Norway, Mexico, Finland and Austria, according to IDC.

At Home Abroad

Among the computer manufacturers, the share of the international market breaks down much the same way as does the U.S. market, the IDC figures found, except that IBM's international share is less than its share of the U.S. market.

Outside of the U.S., IDC said, IBM has 46.8% of the installed base of computers followed by Honeywell with 8.1% of the base. International Computers Ltd. is next with 6.9% of the base, followed by Univac with 5%, Burroughs with 2.9% and Control Data with 3%. Siemens has 2.3%, while the three major Japanese makers have 10.6% in total.

In all, U.S.-based mainframe makers control 69.6% of the non-U.S. base of computers, while foreign manufacturers account for only 30.4%, McGovern said.

One trend presently catching on in Europe in general, McGovern noted, is the use of independently manufactured peripherals which are now being accepted by European computer users much as they have been in the U.S.

In addition, he noted, the European market was just opening for U.S. firms in the area of third-party leasing, and might be a good market for the leasing of 360 equipment.

In the Japanese market, McGovern said, a relatively high growth rate would continue, even though Japan had a high EDP to GNP ratio of 2.1%.

He noted the growth rate had been 40% annually for the past six years and the upswing should continue because of the government emphasis on computerization and industry emphasis on efficiency.

CDC Acquires ITT's English Time-Sharing And Services Unit

LONDON – Hard on the heels of Control Data Corp.'s takeover of IBM's Service Bureau Corp., CDC's British unit has acquired the assets of ITT Industries Data Services Division for an undisclosed price.

CDC said the kind of business being conducted by ITT Data Services Division complements CDC's plans for Europe in the data services area. The ITT division, located here, offers time-sharing and remote job entry and programming services. CDC already has a remote batch data services business on the continent.

The annual revenues of ITT Data Services are estimated at $5 million.

CDC currently operates data centers with CDC 6600s in Stockholm, the Hague and Frankfurt.

Commerce Shows Imports Rose In '72, Exports Off '71 Pace

By a CW Staff Writer

WASHINGTON, D.C. – Exports of computer equipment dropped slightly during 1972 compared with 1971, while imports of such equipment rose during the period, according to figures released by the Commerce Department last week.

The Commerce figures reflect only shipments from U.S. plants in the states and do not include those from plants located abroad and operated by U.S. firms.

Overall, the U.S. exports of computer-related equipment were valued at $1.2 billion during the year, which is down slightly from the previous year, Commerce said.

The exports of complete mainframes and central memories were valued at $357 million, down from the $374 million of such devices exported in 1971 – and far off the pace of $427 million registered in 1970, the department noted.

Input devices accounted for exports of $17 million while output devices accounted for exports of $33 million. Combination input/output devices accounted for exports of $203 million, down from $250 million registered last year.

Random-access storage devices were responsible for exports totaling $83 million while other storage and memory units accounted for exports of $68 million, approximately the same as the exports in these categories last year.

Statistical machines used with punched cards or tapes had a value of $156 million during the year, the department reported, with the best markets for this type of equipment being in Canada, France, the UK, Japan and West Germany.

Imports of data processing equipment, however, showed a significant rise during the year, the department noted, even though the dollar value of these imports is still small.

Overall, the U.S. imported DP equipment with a value of almost $50 million or a 65% increase over the same category of imports last year.

The Commerce report couldn't have come at a worse time for those in the computer industry arguing that multinational computer corporations are a major contributor to the U.S. export market, even though it does back up some of their contentions, sources said last week.

This is because, they said, the rate of exports of computer equipment seems to have slowed down while the rate of imports has been increasing.

Today the balance is preponderantly in favor of the U.S., but what will happen years from now if the present trend continues? one source asked.

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Source Data Entry Seen Helping Optoelectronics 30% Growth in '73

NEW YORK – Optoelectronics shipments grew 25% to $106 million from $86 million in 1971, and a 30% volume gain is projected for 1973, according to a report from Frost & Sullivan, Inc., a market research firm here.

By 1978, annual revenues are expected to be around $265 million. A principal growth market will be the source data entry area, the study indicated.

"Advancements in the technology needed to make OCR cost-effective are now appearing," the study observed. Other important markets are also expected to develop in instrumentation and controls, optical encoders and isolators and automobile manufacturing, the report added.

In the computer peripherals field, especially memories, substantial growth is projected for laser technology.

Frost & Sullivan noted that liquid crystal displays will see the highest growth rate in dollars in the years 1972-78, with a 2,300% rate, while optical couplers/isolators will grow at a 370% rate; light emitters, 284%; and monolithic arrays, 154%. Laser devices are expected to have a growth rate of 133%, trailed by light sensors, at 85%.

The report noted that the technology of liquid crystals has "moved suddenly into the forefront of displays after years of being on the back burner."

The growth prognosis in the report applies also to the older optoelectronic technologies now "gaining in usage, such as cadmium selenide photocells and phototubes."

Multinational Tax: IBM Safe?

NEW YORK – Legislation that would tax foreign income as earned income would not affect IBM's earnings very much, if at all, according to a study by Bear, Stearns & Co., a securities firm here.

The legislation is contained in the Burke-Hartke bill, among others, and would prevent U.S.-based multinationals from avoiding U.S. taxation on foreign-source income until the income is repatriated.

Bear, Stearns & Co. published a table of what it called multinational firms' global tax rates, generally based on 1971 data. If a firm's rate is below the U.S. rate of 48%, the report noted, such a company would indeed be affected adversely by such legislation.

IBM's global tax rate, according to the study, is 48%, so legislation would not have any such impact.

The study also said that for some multinationals the change wouldn't mean a drop in reported earnings because some firms' shareholder reports show U.S. taxes on foreign income as though the income had been repatriated and taxed, although that is not the case.

Calcomp Growth Seen Jumping

WILMINGTON, Del. – California Computer Products Inc. (Calcomp) has the potential for growing "almost twice as fast as the industry during the next five years and the potential for reaching an annual volume of $100 million by 1974," President Lester L. Kilpatrick told securities analysts here recently.

Citing Calcomp's position in the graphics business as the "difference between Calcomp and other companies in the IBM plug-to-plug replacement market," Kilpatrick said, "Calcomp hopes to grow at an approximate 30% compounded rate per year in the seventies."

This compares, he added, with an industry growth estimated at 16%-18%.

"Calcomp's growth from $53 million in fiscal 1972, ended June 30, to about $75 million in fiscal 1973 and a projected rise to $100 million by 1974 is predicated on a unique leadership in computer graphics and competitive leadership in disk drive memory systems," he observed.

Contracts

Air Force Awards Four DP Contracts

HANSCOM FIELD, Mass. – The Air Force has awarded several fixed-price contracts for equipment at the San Antonio Data Services Center, for a total of $616,017.

Sharing in the awards are Telex Computer Products Inc., $374,510; Tracor Data Systems, Inc., $188,304; Federal Data Corp., $35,143; and Comdisco, $18,060.

Recognition Equipment has received a contract from the U.S. Postal Service to extend the capabilities of the Code Sort Optical Character Reader system currently installed at the Cincinnati Post Office.

Data Technology Pty. Ltd., Sydney, Australia, has signed a contract with Computer Products, Inc. for the firm's RTP line of input/output equipment. The contract is part of another contract from the State Electricity Commission of Queensland to supply an industrial acquisition and control computer system for the Gladstone Power Station.

Academy Computing Corp. has signed a three-year contract with Mercy Hospital, Oklahoma City, Okla., to provide patient accounting and billing services.

The Helitron Division of S.P. Woodsum Associates, Inc. has contracted with Itronics Corp. to build special computer-oriented equipment for the Return Data Division of Jordan Dennis Co.

The Credit Bureau of Omaha has entered into a services contract with Chilton Corp. Under the five-year agreement Chilton will automate the Omaha bureau, train all personnel and provide all DP services.

The Transcom subsidiary of HI-G has received a contract from Ford Motor Co. for 1,000 Audioport 160 terminals for use in a direct order entry system for spare parts.

Data Dimensions, Inc. will assume responsibility for the billing and accounts receivable of Clark Boardman Co., publisher of treatises and newsletters for the legal profession.

The Transit Systems Division of Keene Corp. has received a contract from the Kansas City Area Transportation Authority for its Automatic Fare Collection and Revenue Processing System for use with Kansas City's 300 buses.

A $1.4 million contract was awarded to Trans-A-File Systems Co. by the University of Rochester, Strong Memorial Hospital, for a medical record and retrieval system.

Rapidata Inc. has signed a three-year $7.7 million dedicated service contract with the N.Y. Telephone Co.

Orders & Installations

Korvettes, a national retail chain, has ordered 2,000 NCR 280 point-of-sale terminals. The order is the second part of the company's program to convert to a computer-based point-of-sale system.

First Data Corp., a time-sharing/batch utility, has ordered a Digital Equipment Decsystem-10 to expand its facilities.

Inmont Corp. has ordered a Burroughs B6700, 17 B1700s and 63 TC 500 intelligent terminals to establish a corporate data base and nationwide data communications network for manufacturing and marketing functions. The order is valued at $6 million.

The State of Georgia has ordered dual Comten 45 communications systems to control a statewide criminal justice network. The system will also be connected to the FBI's National Crime Information Center.

General Tire and Rubber Co. has installed Software Design Associates, Inc.'s RCA 501 Simulator software.

The U.S. Treasury has ordered a 2250 data entry system from Scan Data for use in its Washington, D. C. disbursing center.

Bancsystems Association, Cleveland, has purchased a Telecontroller communications processor system from Action Communication Systems. The system will serve as backup for Master Charge authorization equipment.

Weingartens, a Houston-based retail chain, will install Nuclear Data's Electronic Store Information System.

Random House, Inc., Westminster, Md., has ordered a Univac Series 70/60 system worth $1 million.

E.I. Dupont de Nemours Co. has ordered intelligent terminal systems from SYS Computer Corp.

Eastern Airlines has ordered CC-70 front-end data communications systems from Computer Communications, Inc.

Loyola University's Hospital/Medical Center, Chicago, has installed Comress' Hyper-Faster teleprocessing monitor to support an on-line hospital information system.

Tabulating Consultants Inc. has ordered two NCR Century 300 computers, worth over $3 million, for trust fund administration.

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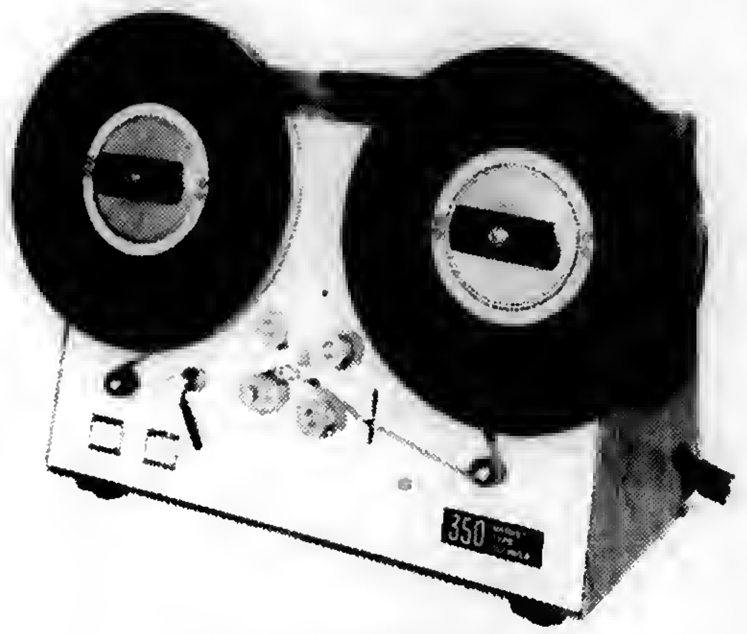

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NCR Reviews Market Philosophy, and Is Pleased

By a CW Staff Writer

"NCR has paid the price of admission into the computer society. We are now more experienced in every respect and this will benefit our market penetration in the future," said President William S. Anderson in a recent interview.

For the first time, he added, NCR's computer operations are close to profitability. In the overall sense, because of the stimulus they provide for the sale of data terminals and other NCR products, they are already contributing to corporate profitability, he said.

'IBM on My Mind'

"If you are not IBM, you have to try to live in an industry which is heavily dominated by one company. So far, we've managed. Naturally, we worry about IBM. On the other hand, even IBM can't be everywhere at the same time.

"We intend to concentrate on those areas we know best and continue to offer the customer good, solid incentives to go NCR instead of IBM. And if we do a better job for him, which we can in many areas, then we can continue to grow in EDP," Anderson asserted.

NCR's approach of viewing the computer as an integral part of total business systems, rather than as a separate entity, evolved from the firm's position as a large supplier of general business machines, Anderson added.

The two most recent surveys of first-time computer users conducted by International Data Corp., for example, showed NCR capturing about 15% of the market, second only to IBM, he said.

In the 1960s, NCR's sales volume tripled, largely because of the firm's efforts to link its data entry machines with computers via punched tape, magnetic ink character recognition and optical scanning.

Strategy for 1970s

NCR's marketing strategy for the 1970s consists of emphasizing a range of data terminals and DP equipment supported by prepackaged applied programs.

Although NCR may have been slow to reach stature in the computer industry, the DP segment now represents the fastest growing area of NCR's business, and Anderson expects this trend to continue.

NCR first began delivering computer systems over 10 years ago, but only since the introduction of the Century Series has it become a significant factor in the computer industry, Anderson said.

About 3,500 of NCR's installed worldwide base of 6,850 computers are of the Century Series, he noted.

In 1972 NCR installed approximately 1,000 Century Series systems for the third consecutive year and also shipped a record amount of add-on equipment to current users.

Total DP shipments increased from $210 million in 1971 to a record $245 million last year, he said.

Revenues from computer rentals and sales rose to $251 million, also a new record, up from $214.6 million the previous year. These figures do not include DP field engineering revenues or revenues from the company's worldwide network of 84 data centers.

Terminal Growth

In the terminal area, NCR is aiming at both the specialized and general-purpose segments. In the past two years, the firm has increased its share of computer installations in commercial banks from 12% to 18%, aided by the introduction of the 270 Series.

The firm is planning additional families of terminals for markets such as hospitals, motels and hotels, Anderson indicated.

The NCR 260 Series of general-purpose terminals features heat-activated printing and speeds up to three times faster than those of conventional teletypewriters, he said.

Joint Venture Productive

Computer Peripherals, Inc., the company jointly owned by Control Data Corp., is now in the full-scale production phase and is supplying computer peripherals to both NCR and CDC from four plants.

The sharing of research and development expenditures in the computer peripheral field and the achievement of lower unit costs through greater volume already are contributing positively to NCR's computer operations, Anderson said.

Company Profile

Last year almost half of the company's sales volume was generated outside the U.S. The company has about 450 sales and service offices abroad and operation in every country of teh free world. Engineering and manufacturing is also multinational.

NCR is projecting further gains in its computer operations in 1973 based on recent product releases, additional releases scheduled for this year both in the hardware and software areas, and the general resurgence of the economy, according to H.V. Schiffer, vice-president, EDP Products and Systems.

To capitalize on this opportunity, Schiffer is expanding his computer sales force by approximately 10%.

Further growth is also foreseen for NCR's data center operations, which have been growing about 15% a year since the first three centers were opened in 1960. Revenue generated by the centers in 1972 was $44 million. NCR will offer computer output microfiche services at all its 38 domestic data centers as well as a number of the 46 centers overseas.

In addition to the stream of new products created by R&D expenditures of $110 million in the past two years, NCR has been undergoing other major changes, Anderson pointed out.

Production and engineering operations have been completely reorganized and decentralized, with engineering, advanced development and manufacturing support integrated at the individual plant level.

British Sign for Space At Communications Exhibit

NEW YORK – The British Department of Trade and Industry has reserved a block of booths at the Electronic Communications '73 exhibit here Oct. 2-4.

The British government agency will underwrite a portion of the cost to UK firms as part of its trade encouragement policies.

The show, scheduled for the Coliseum, will include a "how to" exhibition of equipment for administrators and communications managers as well as a separate section for equipment designers.

National Expositions Co., show coordinator, is at 14 W. 40th St., 10018.

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2 Key-to-Disk Makers Improve Reports

Two key-to-disk makers, Inforex, Inc. and General Computer Systems, Inc., have turned in profitable, vastly improved reports for the year and six months respectively.

At General Computer Systems, revenues for the first half-year were almost equivalent to those for the entire previous year.

With revenues of $4.4 million compared with $1.5 million in the same 1971 period, earnings totaled $361,372 or 22 cents a share compared with a loss of $409,905 or 33 cents a share in the year-ago period. The 1972 figure included a $170,209 tax credit.

This marked the firm's second constructive profitable six-month term.

The order rate has improved "substantially," according to President Barry Weinberg, who noted the restructuring of pricing schedules making GCS competitive for customers desiring a smaller number of terminals has increased the prospect list "dramatically."

Dramatic Turnaround

In both the quarter and year ended Dec. 31, Inforex showed a dramatic turnaround, aided substantially by entering as sales its transactions with Leasing II.

In the three months, the firm earned a record $693,000 or 27 cents a share compared with a loss of almost $2 million or 89 cents a share in the previous year's period.

Revenues rose to $7.3 million from $2.1 million, and included $1.4 million in sales to Leasing II.

In the year, Inforex earned $1.2 million or 51 cents a share compared with a loss of $5.7 million or 29 cents a share. Revenues, including $6.6 million in sales to Leasing II, rose to $23.1 million from $4.9 million in the year-ago period.

Record Shipments

During the quarter, a record 1,898 keystations were shipped, bringing total worldwide deliveries to 11,847 since shipments began in February 1970, the firm said.

The company entered 1973 with a total of 729 directly serviced end users in the U.S. and Europe, up from 321 a year ago, noted President Thomas B. Horgan.

Emphasis during the year was placed on achieving profitability, which was done "by holding development and administrative expenses fairly level through most of the year, increasing expenditures only in the marketing and field engineering areas as required to expand the revenue base," Horgan remarked.

MAI First Quarter Turns Around

NEW YORK – Management Assistance Inc. managed to show a turnaround for the first quarter ended Dec. 31 with earnings of $242,000 or 1 cent a share compared with a loss of $455,000 in the year-ago period.

The portion of the firm's revenues contributed by the marketing of its Basic/Four system and maintenance services of its Sorbus Inc. subsidiary rose to 51% or almost $8 million from 17% or $2.1 million in the same period last year.

Total revenues reached $15.8 million, up 26% from the $12.5 million in the quarter a year ago.

Later than anticipated billings and collections in the Basic/Four program continued to create a strain on MAI's cash position, according to President Raymond P. Kurshan.

The firm is continuing discussions with financial institutions to develop a program to finance accounts receivable from domestic sales of Basic/Four systems, and MAI may also seek a rescheduling of its long-term debt payment arrangements, he said.

Sales of unit record and other older equipment by Genesis One Computer Corp., the marketing subsidiary, continued in excess of the forecast, Kurshan added.

Acquisitions

Academy Computing Corp., an Oklahoma City-based company, has acquired Clinton Data Processing, Inc., to expand its customer base to western Oklahoma.

Tesdata Systems of Chevy Chase, Md., has agreed to acquire Computer Synektics, Inc., Santa Clara, Calif. Computer Synektics will become Tesdata's Western Operation Center.

Axicom Systems, Inc., a subsidiary of Transport Data Communications, Inc., a time-sharing and data base management company, has entered into an agreement with National Equipment Rental to acquire Satellite Computer Services of Philadelphia.

LVO Business Forms, Girard, Kan., has been sold by LVO Corp. to James R. Orwig, president of the subsidiary. The firm's new name will be Forms Manufacturers Inc..

PCS Data Processing, Inc., New York, has acquired Brokerage Service Corp. for $344,400 and 47,250 shares of PCS common stock. Both companies provide data processing and recordkeeping services for the securities industry.

Automatic Data Processing Inc., Clifton, N.J., has agreed to acquire National Inventory Control Systems, of Portland, Ore., for about 170,000 common shares, on a pooling-of-interests basis.

Southwest Peripherals of Phoenix has acquired the Computer Products Department of Wabash Computer Corp., also of Phoenix.

Earnings Reports

ELECTRONIC ASSOCIATES
Year Ended Dec. 29

	1972	a1971
Shr Ernd	$.61	$.36
Revenue	43,256,000	34,417,000
bSpec Cred	666,000	651,000
Earnings	1,647,000	961,000
3 Mo Shr	.29	.28
Ravanue	13,873,000	12,690,000
cSpec Cred	198,000	518,000
Earnings	778,000	753,000

a-Restated to reflact merger of Infonics inc. with Electronic Associates on a pooling-of-interests basis. b-In 1972 consists of tax credit and gain on sale of business, less loss on currency realignments; in 1971 consists of tax credit, gain on currancy realignmants and sale of land and building; c-In 1972 consists of tax credit less loss on currency raalignments; in 1971 consists of tax credit and gain on currency reelignments.

PITNEY-BOWES
Year Ended Dec. 31

	1972	1971
Shr Ernd	$1.02	$.84
Revenue	342,144,000	300,916,000
Disc Op	.....	(736,000)
Spec Chg	.....	346,000
Earnings	13,640,000	11,337,000
3 Mo Shr	.34	.22
Revenue	96,065,000	63,714,000
Disc Op	.....	(196,000)
Spec Chg	.....	241,000
Earnings	4,514,000	2,969,000

COMPAC
Three Months Ended Oec. 31

	1972	1971
Shr Ernd	$.13	$.11
Revenue	6,697,736	5,430,113
Earnings	133,064	67,756

INFOREX
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.51	.....
Revenue	23,116,000	$4,694,000
Spec Item	a747,000	550,000
Earnings	1,226,000	(5,710,000)
3 Mo Shr	.27	.....
Revenue	7,320,000	2,127,000
Spec Item	a294,000	b550,000
Eernings	693,000	(1,953,000)

a-Tax loss carryforward. b-Speciel charge.

VARISYSTEMS
Three Months Ended Oec. 31

	1972	1971
Shr Ernd	$.19	$.15
Revenue	1,941,700	1,239,262
Spec Cred	.....	a16,000
Earnings	206,500	123,163
6 Mo Shr	.12	.23
Revanue	2,655,700	1,666,262
Spec Cred	.....	a43,000
Earnings	131,500	181,163

a-Tax loss carryforward.

SEISMIC COMPUTING
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.11	$.10
Revenue	5,482,000	4,596,000
Spec Cred	.....	a12,000
Earnings	133,000	120,000

a-From repurchase of subordinated dabentures.

BRESNAHAN COMPUTER
Three Months Eneded Oec. 31

	1972	1971
Shr Ernd	$.07	$.08
Revenue	1,426,000	1,349,000
Earnings	126,000	150,000

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Lease Revenues, Strong 4th Quarter Propel Memorex Back into the Black

SANTA CLARA, Calif. – Aided by a strong fourth quarter and a sizable jump in leasing revenues, Memorex has rebounded from last year's $13.4 million loss with earnings of $1.2 million or 30 cents a share for the year ended Dec. 31.

The fourth quarter earnings jumped to $611,000 or 15 cents a share as revenues rose to $39.4 million compared with $29.6 million in the year-ago period.

Leasing revenues for the year exceeded the volume of outright sales for the first time in the company's history, according to President Laurence L. Spitters. Leasing revenues increased 71% to $78.3 million from $45.6 million, while sales rose slightly to $67.1 million from $64.6 million.

Leasing revenues constituted over 92% of the firm's $35 million revenue increase during the year, Spitters said. Over one-third of Memorex equipment is leased overseas, according to the firm.

Overall revenue for the year climbed to $145.4 million from $110.2 million.

Qualified Statement

However, Memorex auditors issued a qualified opinion regarding the 1972 statement, indicating their opinion is subject to the realization of sufficient future revenues to recover a $22.6 million investment in the MRX/Computer Systems program.

The firm continued its deferral accounting policy, and said during 1972 there was no material writeoff of amounts deferred during 1972.

As of the end of the year, Memorex's investment in the systems program consisted of deferred R&D, facilities, inventories, lease acquisition costs and computer systems for lease, the firm said.

Since the commercialization of the MRX/Computer Systems and the 3670 Disk Storage System, Memorex has ended deferral of development spending on these products, the firm said. As a result, the amount of intangible deferred expenses was reduced during the fourth quarter, "the first such reduction since 1967," Spitters said.

He cited the achievement of four goals as the "turning point in our long-term program to establish a significant position within the DP industry.

"First, the growth of revenues has given to our business the economy of scale necessary for profitable operations. Second, the financial turnaround and rising profits during 1972 has added to our corporate strength.

"Third, successful entry into the marketplace of the MRX/Computer Systems and 3670 Disk Storage Systems has provided credibility for the two most important development programs in our history.

"Fourth, the restructuring of the financing of our equipment-for-lease program in connection with the recent acquisition of ILC Peripherals Leasing Corp. has resulted in a major reduction of interest costs."

ADR Returns to Profitable State

PRINCETON, N.J. – Record revenues and a return to profitability characterized Applied Data Research, Inc. for the year ended Dec. 31.

With revenues rising to $8.9 million from $6.4 million, earnings climbed to $72,180 or 7 cents a share from a loss of $351,651 in the previous restated year.

Software product sales accounted for about $3 million of total operating revenues, according to President John R. Bennett.

He also cited continued improvement in the other operating divisions and a new and profitable Timesharing Division.

The firm recently reported its first million dollar quarter for software product sales, Bennett added.

The Control System Division has reported increased acceptance of its integrated hardware/software products, and currently has a backlog of about $1 million on its Star product line, he said.

REI's First Quarter Earnings Rise

DALLAS – Special credits totaling $1.2 million helped Recognition Equipment show a hefty increase in earnings in the quarter ended Jan. 31.

However, President Herman L. Philipson Jr. cautioned against annualizing quarterly results because the "large size and uncertain timing of typical transactions could yield either losses or larger-than-normal profits in some quarters."

Earnings rose to $480,000 or 10 cents a share compared with a restated $97,000 or 2 cents a share in the comparable previous year's period.

Earnings included a $311,000 loss in Corporation S and special credits, $1.1 million of which resulted from sale of shares of Docutel Corp.

Revenues for the period decreased to $7.5 million from $8.7 million.

REI has proposed a merger with subsidiary Corporation S and said it showed 49.7% of the unit's loss in the restated 1972 statements, and is including 100% of the loss in 1973 statements.

Backlog at the end of the period stood at $19.2 million, up from $15.3 million a year earlier, while shipments in the first quarter declined to $2.6 million from $3.6 million a year ago.

Anderson Jacobson's 9-Month Earnings Soar

SUNNYVALE, Calif. – A record third quarter helped boost Anderson Jacobson, Inc.'s nine month earnings to more than double the figure for the corresponding year-ago period.

In the quarter ended Dec. 31, earnings totaled $99,590 or 4 cents a share compared with $34,239 or 1 cent a share in the 1971 period. Revenues also rose to $1.5 million from $1.1 million.

Nine month earnings totaled $262,284 or 10 cents a share compared with $110,300 or 4 cents a share in the year-ago period. Revenues rose to almost $4 million from $3.1 million.

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Computerworld Stock Trading Summary

TRADE*QUOTES

All statistics compilad, computed and lormatted by TRAOE★OUDTES, INC. Cambridge, Masa. 02139

CLOSING PRICES THURSDAY, MARCH 22, 1973

EXCH		PRICE 1972-73 RANGE I1)	CLOSE MAR 22 1973	WEEK NET CMNGE	WEEK PCT CMNGE
	SOFTWARE & EOP SERVICES				
D	ADVANCEO COMP TECH	1- 3	1 3/4	0	0.0
A	APPLIEO OATA RES.	3- 7	3 3/8	- 1/8	-3.5
O	APPLIEO LOGIC	1- 4	2 1/2	0.	0.0
N	AUTOMATIC OATA PROC	65- 99	65	-3 1/4	-4.7
D	8RANOON APPLIEO SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	3- 14	2 3/4	- 1/4	-8.3
O	COMPUTER DYNAMICS	1- 4	7/8	0	0.0
O	COMPUTER NETWORK	2- 7	1 3/4	- 1/4	-12.5
N	COMPUTER SCIENCES	3- 10	3 1/4	- 7/8	-21.2
D	COMPUTER TASK GROUP	1- 2	1 5/8	+ 1/4	+18.1
D	COMPUTER TECHNOLOGY	2- 8	3	0	0.0
O	COMPUTER USAGE	5- 14	5 1/8	- 5/8	-10.8
N	COMPUTING & SOFTWARE	8- 28	7 7/8	- 7/8	-10.0
D	COMRESS	1- 3	3/4	0	0.0
O	COMSHARE	5- 10	5 7/8	- 5/8	-9.6
D	DATATA8	3- 9	2 3/4	- 1/8	-4.3
O	EOP RESOURCES	1- 8	1 5/8	0	0.0
A	ELECT COMP PROG	1- 5	1 3/8	0	0.0
N	ELECTRONIC OATA SYS.	43- 65	46 3/4	-2 3/4	-5.5
D	INFORMATICS	3- 11	3 7/8	- 1/8	-3.1
O	I.D.A. OATA CORP	1- 3	3/4	0	0.0
D	KEANE ASSOCIATES	4- 7	3 1/2	- 1/4	-6.6
O	KEYOATA CORP	7- 13	7 1/2	-1 1/2	-16.6
O	LOGICON	4- 9	5 3/8	- 1/4	-4.4
A	MANAGEMENT OATA	3- 10	2 1/2	- 1/2	-16.6
D	NATIONAL CSS INC	8- 41	34 1/4	-2 1/2	-6.8
O	NATIONAL INFO SRVCS	1- 5	1 5/8	- 1/8	-7.1
P	ON LINE SYSTEMS INC	5- 19	15 3/8	- 1/2	-3.1
N	PLANNING RESEARCH	4- 17	3 5/8	- 1/2	-12.1
D	PROGRAMMING METHODS	20- 25	21 1/2	-1 3/8	-6.0
O	PROGRAMMING & SYS	1- 2	7/8	0	0.0
O	RAPIOATA INC	5- 27	16 1/4	-3 1/4	-16.6
D	SCIENTIFIC COMPUTERS	1- 4	1 1/4	- 1/4	-16.6
O	SIMPLICITY COMPUTER	1- 5	2	- 1/8	-5.8
O	TBS COMPUTER CENTERS	3- 6	3	0	0.0
O	TCC INC	1- 3	1/2	+ 1/4	+100.0
O	TYMSHARE INC	7- 12	7 1/2	- 7/8	-10.4
O	UNITEO OATA CENTER	5- 8	5 1/4	- 1/2	-8.6
N	UNIVERSITY COMPUTING	7- 26	10 1/8	0	0.0
A	URS SYSTEMS	6- 10	5 5/8	- 1/2	-8.1
	PERIPHERALS & SUBSYSTEMS				
N	AOORESSOGRAPH-MULT	20- 49	19 1/2	-3 1/4	-14.2
O	AOVANCEO MEMORY SYS	12- 23	14 3/4	-3 3/4	-20.2
N	AMPEX CORP	5- 15	5 1/2	- 1/8	-2.2
O	ANOERSON JACOBSON	4- 8	5 3/8	- 7/8	-14.0
O	8EEHIVE MEOICAL ELEC	1- 8	7 3/4	- 1/4	-3.1
A	8OLT,8ERANEK & NEW	5- 21	9 7/8	- 5/8	-5.9
N	8UNKER-RAMO	7- 14	6 1/2	- 1/4	-3.7
A	CALCOMP	9- 25	11 1/8	-1	-8.2
O	CAM8RIOGE MEMORIES	9- 15	10 1/2	- 7/8	-7.6
O	CENTRONICS OATA COMP	6- 28	19 1/2	-2 1/2	-11.3
O	COOEX CORP	6- 25	12 3/4	-1 1/4	-8.9
O	COGNITRONICS	1- 5	1 5/8	0	0.0
O	COMPUTER COMMUN.	1- 7	2 5/8	0	0.0
A	COMPUTER EQUIPMENT	2- 4	2 3/8	+ 1/8	+5.5
O	COMPUTER MACHINERY	7- 13	9 5/8	-1 3/8	-12.5
O	COMPUTER TRANSCFIVER	2- 9	2 3/4	0	0.0
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	23 1/2	-1 5/8	-6.4
A	OATA PROOUCTS CORP	3- 7	3 1/4	- 1/4	-7.1
O	OATA RECOGNITION	1- 5	2 1/2	0	0.0
O	OATA TECHNOLOGY	2- 5	3 3/8	- 1/4	-6.8
O	OI/AN CONTROLS	3- 8	2 3/4	- 1/2	-15.3
N	ELECTRONIC M & M	3- 8	3 1/2	0	0.0
D	FA8RI-TEK	2- 5	3 3/8	- 1/8	-3.5
O	GENERAL COMPUTER SYS	6- 16	6 1/2	-1 1/2	-18.7
N	GENERAL ELECTRIC	59- 74	63 5/8	-4	-5.9
N	HAZELTINE CORP	7- 13	7 3/8	- 3/8	-4.8
O	INFOREX INC	14- 36	14	-1 1/4	-8.1
O	INFORMATION OISPLAYS	1- 5	3/4	+ 1/8	+20.0
O	INFORMATION INTL INC	8- 25	11 3/4	+ 1/2	+4.4
A	LUNOY ELECTRONICS	6- 14	6 1/4	- 3/8	-5.6
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	20 3/4	+ 3/4	+3.7
N	MOHAWK OATA SCI	7- 27	7 3/8	- 1/4	-3.2
O	OOEC COMPUTER SYST.	3- 12	4 1/2	0	0.0
O	OPTICAL SCANNING	2- 16	4 1/2	- 1/4	-5.2
O	PERTEC CORP	5- 17	6 1/4	- 1/4	-3.8
O	PHOTON	3- 15	3 3/4	- 1/4	-6.2
A	POTTER INSTRUMENT	6- 21	5 7/8	- 1/8	-2.0
O	PRECISION INST.	2- 13	3 1/2	- 1/2	-12.5
O	RECOGNITION EOUIP	5- 15	4 7/8	- 7/8	-15.2
N	SANOERS ASSOCIATES	10- 21	10	-1	-9.0
D	SCAN DATA	2- 13	2 1/4	- 1/2	-18.1
O	STORAGE TECHNOLOGY	17- 39	20 1/4	-4 1/4	-17.3
O	SYCOR INC	7- 11	9 1/4	+ 1/4	+2.7
O	TALLY CORP.	7- 15	7 3/8	-2 3/4	-27.1
N	TEKTRONIX INC	34- 64	36 5/8	-5 1/2	-13.0
N	TELEX	4- 15	4 1/2	0	0.0
D	WILTEK INC	10- 26	11	-2	-15.3
	SUPPLIES & ACCESSORIES				
D	8ALTIMORE 8US FORMS	5- 9	6 3/4	- 1/4	-3.5
A	8ARRY WRIGHT	9- 14	8 1/2	-1 1/4	-12.8
A	OATA DOCUMENTS	17- 26	19 1/8	+ 3/4	+4.0
O	OUPLEX PROOUCTS INC	8- 16	8 1/4	-1	-10.8
N	ENNIS 8US. FORMS	6- 10	6	- 3/6	-5.6
O	GRAMAM MAGNETICS	15- 27	17	- 3/4	-4.2
D	GRAPMIC CONTROLS	10- 15	10	- 3/4	-6.9
N	3M COMPANY	76- 88	62	-4	-4.6
O	MOORE CORP LTD	42- 59	58	- 3/4	-1.2
N	NASHUA CORP	48- 62	50	-2 5/8	-4.9
O	REYNOLDS & REYNOLD	37- 77	46 3/4	-2 7/8	-5.7
D	STANOARD REGISTER	14- 20	17 1/4	+ 3/4	+4.5
D	TA8 PROOUCTS CO	14- 23	15	-3	-16.6
N	UARCO	19- 28	19 3/4	- 3/8	-1.8
A	WA8ASM MAGNFTICS	6- 11	6	- 1/4	-4.0
N	WALLACE 8US FORMS	21- 26	23 1/2	- 1/8	-0.5
	COMPUTER SYSTEMS				
N	8URROUGHS CORP	147-244	224 1/4	-14	-5.8
N	COLLINS RAOIO	14- 27	24	- 1/4	-1.0
N	CONTROL OATA CORP	42- 78	42 3/4	-3 3/8	-7.3
D	OATA GENERAL CORP	36-131	35 1/2	-8 3/4	-19.7
O	OIGITAL COMP CONTROL	3- 25	3 3/4	- 3/4	-16.6
N	OIGITAL EQUIPMENT	72-105	79	-5 1/2	-6.5
N	ELECTRONIC ASSOC.	6- 13	5 3/4	- 7/8	-13.2
A	ELECTRONIC ENGINEER.	6- 14	9 1/4	-1 1/2	-13.9
N	FOX8ORO	23- 41	25 1/8	-4 5/8	-15.5
O	GENERAL AUTOMATION	13- 55	33	-5	-13.1
O	GRI COMPUTER CORP	2- 5	1 5/8	- 1/4	-13.3
N	HEWLETT-PACKARO CO	46- 94	80 5/8	-10 3/8	-11.4
N	HONEYWELL INC	106-170	112 1/2	-3 1/2	-3.0
N	I8M	333-451	425 1/2	-18 1/2	-4.1
O	INTEROATA INC	8- 16	7 3/4	-1 5/8	-17.3
N	MEMOREX	10- 38	10 1/2	+ 5/8	+6.3
D	MICROOATA CORP	5- 10	7 1/8	-1 1/8	-13.6
N	NCR	27- 38	29 1/4	-1 3/4	-5.6
N	RAYTHEON CO	27- 47	27 1/8	-2 1/8	-7.2
N	SPFRRY RANO	30- 50	42 1/4	+ 5/8	+1.5
A	SYSTEMS ENG. LA8S	4- 16	4 3/4	- 1/4	-5.0
N	VARIAN ASSOCIATES	14- 22	13 7/8	- 7/8	-5.9
N	WANG LA8S.	18- 61	19	-2	-9.5
N	XEROX CORP	121-172	153	-15 1/8	-8.9
	LEASING COMPANIES				
A	8OOTHE COMPUTER	3- 18	3	- 1/8	-4.0
O	8RESNAHAN COMP.	1- 3	1 1/4	0	0.0
D	COMOISCO INC	3- 18	10 7/8	-1 3/4	-13.8
D	COMMERCE GROUP CORP	4- 11	4 3/8	- 1/4	-5.4
D	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4 1/2	- 1/8	-2.7
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	OPF INC	5- 13	6 3/4	- 3/4	-10.0
M	OATRONIC RENTAL	2- 4	2 1/8	0	0.0
A	OCL INC	2- 10	1 7/8	- 1/4	-11.7
A	OEAR8ORN-STORM	16- 26	17 1/8	- 3/4	-4.1
A	DPA, INC.	5- 8	6 1/4	- 1/8	-1.9
A	GRANITE MGT	5- 11	5	- 1/8	-2.4
A	GREYHOUNO COMPUTER	5- 11	4 5/8	- 3/8	-7.5
A	ITEL	7- 12	7 3/8	- 3/4	-9.2
N	LEASCO CORP	12- 24	11 5/8	- 7/8	-7.0
O	LEASPAC CORP	6- 15	7 1/8	+1 3/8	+23.9
O	LECTRO MGT INC	1- 4	1	- 1/8	-11.1
A	ROCKWOOD COMPUTER	2- 7	2 1/4	- 1/8	-5.2
D	SYSTEMS CAPITAL	3- 20	7 7/8	-1 5/8	-17.1
N	U.S. LEASING	19- 35	24 3/8	-1 3/8	-5.3

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
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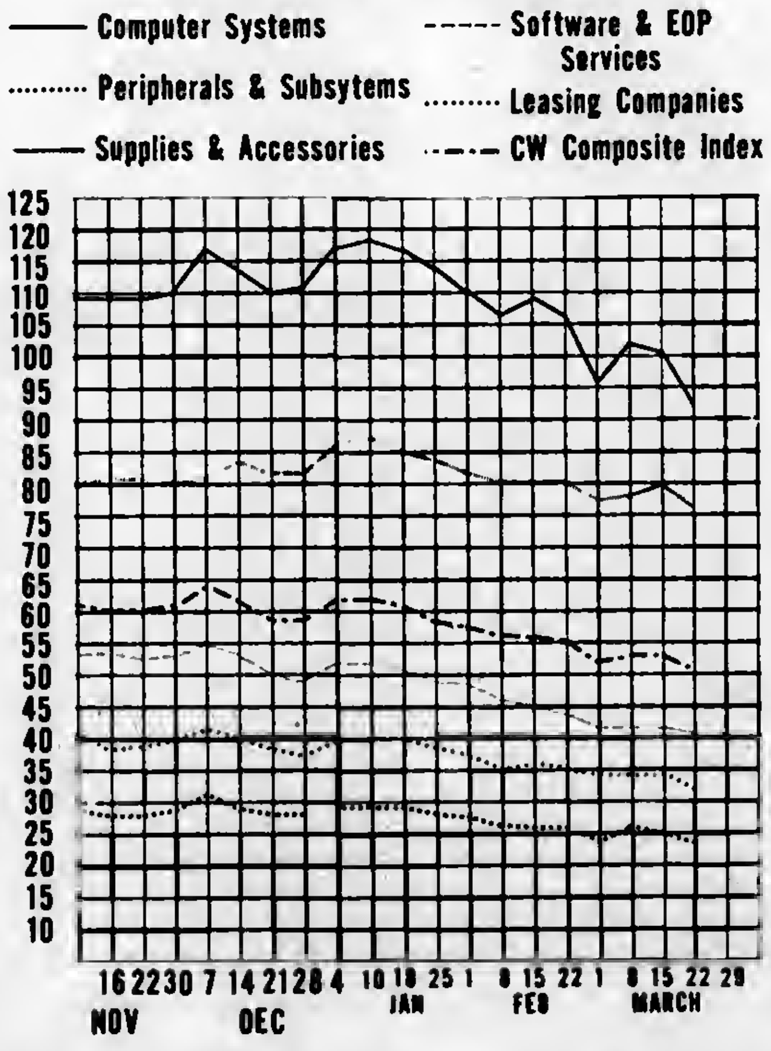
Computer Stocks Trading Index



Earnings Reports

ROCKWOOO COMPUTER
Nine Months Ended Dec. 31

	1972	1971
Shr Ernd	$.12	$.54
Revenue	34,016,040	36,568,115
aSpec Cred	200,926	395,295
Earnings	589,369	1,861,352

a-In 1972, consists of gain on repurchase of company's publicly held debentures, plus utilization of capital loss carryforward, less loss applicable to sale of assets unrelated to computer leasing and real estate operations; in 1971, gain on repurchase of company's publicly held debentures plus utilization of capital loss carryforward.

PLANNING RESEARCH
Three Months Ended Oec. 31

	1972	a1971
Shr Ernd	.....	$.16
Revenue	$22,764,316	20,417,555
Spec Chg	b6,572,000	.....
Earnings	(6,346,844)	1,007,909
6 Mo Shr	.....	.31
Revenue	45,683,263	38,039,879
Spec Chg	b6,572,000	.....
Earnings	(5,764,943)	1,951,066

a-Restated. b-Related to equipment and deferred software costs of International Reservations Corp. subsidiary.

OATA PACKAGING
Year Ended Dec. 2

	1972	1971
Shr Ernd	$.12	.....
Revenue	13,746,720	$10,917,778
aSpec Chg	76,275	62,000
Earnings	194,175	(20,553)

a-From writedown of investment to estimated realizable amount.

CALIFORNIA COMPUTER PROOUCTS
Three Months Ended Oec. 31

	1972	a1971
Shr Ernd	$.24	.....
Revenue	20,479,000	$11,985,000
Earnings	705,000	(277,000)
6 Mo Rev	33,471,000	25,468,000
Spec Chg	.....	b4,724,000
Loss	1,578,000	5,229,000

a-Restated to conform to current accounting practices. b-Cumulative effect on prior years to (to June 30, 1971) of changing to a different method of accounting for engineering and development costs and lease acquisition and installation costs.

ITEL
Year Ended Oec. 31

	1972	1971
Shr Ernd	$.24	.....
aRevenue	100,133,000	101,180,000
Oisc Op	.....	(7,273,000)
Spec item	b1,208,000	d7,708,000
Earnings	1,746,000	(5,901,000)
3 Mo Shr	.59	.....
aRevenue	37,451,000	20,092,000
Oisc Op	.....	(3,951,000)
Spec Item	b1,206,000	d7,708,000
Earnings	4,314,000	(10,712,000)

a-From continuing operations. b-Credit; tax benefit from discontinued operations. d-Oebit; related to discontinued office product manufacturing and marketing.

COMPUTER AUTOMATION
Three Months Ended Oec. 31

	1972	1971
Shr Ernd	$.15	$.09
Revenue	2,660,846	940,352
Tax Cred	16,000	53,700
Earnings	237,736	106,436
6 Mo Shr	.38	.13
Revenue	4,610,929	1,708,633
Tax Cred	183,000	73,000
Earnings	577,907	153,443

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NEWSPAPER

Graphic(s) Example

A paper "keyboard" placed on an electronic tablet, and connected to a computer, can convert freehand sketches to proportioned drawings. With an electronic pen, the user can specify dimensions and labels and such graphic details as broken or dotted lines, arrows or circles. The finished drawing can be displayed on a CRT or plotter. The system was developed at IBM's Thomas J. Watson Research Center in Yorktown Heights, N.Y.

Chief Teller Indicted

DA Charges DP Used to 'Shuffle' $1.5 Million Out of N.Y. Bank

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – "We don't know how it was done . . . or even how much was stolen." That is the admission of chagrined bank officials here who have launched an intensive investigation to try to find out how both computer and manual records were manipulated to produce what could be one of the largest embezzlements in history from a savings bank.

Officials at Union Dime Savings Bank and the district attorney's office here confirmed last week that Roswell Steffen had been arrested and charged with embezzling approximately $1.5 million from the bank.

No Direct Access

Bank officials noted that the case was not one solely of manipulating computer-based records, and said that Steffen, a chief teller in one of their branches, never had direct access to the computer room.

Officials said the embezzlement took place over a three-year period and was never caught by the bank's computer system or by its manual checks.

William H. Swezey, a vice-president of the bank, said, "No matter how it was done, it completely escaped our safeguards."

The checks and balances built into both the computer system and the manual auditing systems were both circumvented, bank officials admitted.

"We don't know how much is gone," bank officials admitted, noting that "it might even be a lot less than the $1.5 million" claimed by the district attorney.

According to District Attorney Frank S. Hogan, Steffen allegedly used the computer system to "shuffle" hundreds of accounts of individual depositors by feeding fraudulent information into the computer system from a terminal in the bank so that the accounts appeared up-to-date.

The district attorney said the money was taken out of the individual accounts, but that it was either redeposited briefly when the quarterly interest payments were computed or the money was indicated as redeposited without ever being put back. With each deposit or withdrawal the computer system was manipulated so that it appeared the account was correct, Hogan added.

The thefts went undetected, he said, because the computer records always carried the correct amounts that the individuals thought they had in the bank.

Records Forged?

The bank was not sure exactly how the computer had been manipulated, and Swezey indicated the embezzlement involved forging of manual records as well as entering false information into the computer system so they agreed with each other.

"The software and disks at the computer center," he said, "were not tampered with at all."

(Continued on Page 2)

42 Agencies 'Ineligible'

State Limits Crime File Access

By Molly Upton
Of the CW Staff

BOSTON – A recent state law restricting access to existing manual and future computerized criminal offender records has drawn complaints from several agencies which previously had access to these records.

The law, passed in anticipation of the implementation of a statewide information system that will be compatible with the National Criminal Information Center (NCIC), also specifies stringent guidelines on the contents of the future data base.

The Criminal History Systems Board, which is overseeing the conversion, has declared 42 agencies ineligible for access to records kept in courts, probation departments, state police and department of motor vehicle offices because they are not "criminal justice agencies" as required by the law.

The law defines criminal justice agencies as "those agencies . . . which perform as their principal function, activities relating to crime prevention . . . the apprehension, prosecution, adjudication, incarceration or rehabilitation of criminal offenders; or the collection, storage, dissemination or usage of criminal offender record information."

Civil Service Protesting

The U.S. Civil Service, which performs screening for several agencies that are themselves au-

(Continued on Page 2)

PDP-8 Users With 8K Core Get Fortran IV

By Don Leavitt
Of the CW Staff

MAYNARD, Mass. Fortran IV has come to the PDP-8 minicomputers, and the way Digital Equipment Corp. has implemented the new language processor, the user has the option of how fast he wants it to run.

In its primary implementation, the new Fortran IV runs under OS/8 on any PDP-8 with at least 8K words of core and a mass storage device. It jumps in power and runs 40% faster, however, with the KE-8E Extended Arithmetic Element on a PDP-8/E, and, DEC claimed, 2,000% faster with the FPP-12 Floating Point Processor (which can be attached to any "8").

The language processor in each of the configurations is identical so source programs are upward compatible, and users can start

(Continued on Page 2)

Cobol Standard Proposal Stimulates 481 Comments

By Alan Taylor
Special to Computerworld

NEW BRUNSWICK, N.J. – Four hundred and eighty-one comments have been received on the Cobol Standard proposal and 461 of them have been processed through the Ansi X3J4 committee. Three hundred and sixteen typographical errors are being corrected, and 37 substantive changes are being made to the 500-page document, according to Robert Kearney, committee chairman. The information was disclosed in Kearney's interim report to the parent X3 Committee.

He also said the majority of the comments came from people or organizations active in the Cobol standards area, such as the European Computer Manufacturers Association and the Japanese who together had generated 385 of the comments. Only 96 comments been received, at the midpoint of the review in January, from the general data processing community, including government departments.

Two Changes

Included in the Kearney report were details of seven substantive comments that were accepted, and 13 the committee had rejected. Kearney said only two of the substantive changes would have any impact upon the existing Cobol programs. These included a new requirement in the OCCURS clause (whenever the DEPENDING ON phrase is used there must now be at least one occurrence), and a change which permits a MESSAGE condition to be combined with other conditions to form a compound Cobol condition.

Other changes accepted include:

(Continued on Page 6)

Probe Points—Whose Data?

By Don Leavitt
Of the CW Staff

MONTEREY, Calif. – Is identification of meaningful probe points within a CPU proprietary information? Or is it information that should be available to any user who wants to do some hardware monitoring?

The question was raised at the government-wide Computer Performance Evaluation Users Group (CPEUG) meeting held at the Naval Postgraduate School here last month, and the answer depended on who was talking.

Users tended to back full disclosure; mainframe and monitor vendors went the other route.

Hardware monitoring is a technique of gathering data about the operation of a computer system by making direct though temporary connections with paths of electrical impulses in the system, and recording the presence or absence of the impulses over a given period of time.

Once reduced and analyzed, this data can be used to evaluate the system with the possibility of improving its operation

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State Limits Crime File Access, 42 Agencies Ineligible

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thorized to view the fields, has protested its exclusion and is "negotiating with the Criminal History Systems Board to see if we can qualify within the interpretation of the law," according to Leonard F. Cronin, New England regional director.

"This is the first time to my knowledge that we've had a whole state kept from cooperating with us," he commented.

"I don't know that you can say the Civil Service has criminal justice as the prime reason for its existence; it's one of the aspects of it," he said.

Cronin pointed out that the Civil Service does personnel investigations for most of the government services, including employees of the secret service, the treasury, intelligence, bureau of narcotics and dangerous drugs, many agencies which are "law enforcement agencies and which themselves have the right to review the records – yet we're frozen out."

Case Disposition

"This is a matter of very serious concern to us. We have every government employee fingerprinted the day he's appointed or even before, and it's important for us to know not only whether a person was arrested, but what the disposition of the case was," Cronin remarked.

For example, the charge of disorderly conduct "can cover a multitude of sins, from marital fights to preliminary charges filed for sexual perversion, so we want the details. Just knowing a person has been arrested isn't enough information," he said.

"A lot of people are complaining," noted Hank Shafran, assistant to the director of the Committee of Law Enforcement and Administration of Criminal Justice. "The problem is that up until this point anyone could walk in anywhere and get these records, so the complaints are coming from persons who previously had access to these records," he observed.

Old System Had 'Everything'

Under the old system, records contained "everything," including arrests without convictions, and mistakes, according to Shafran.

Now, only selected information is being converted, and there will be a mechanism to expunge mistakes, noted Director Arnold Rosenfeld.

In order to ensure that the file does not contain inaccurate or irrelevant information, the new law specifies that "criminal offender record information shall "be restricted to that recorded as the result of the initiation of criminal proceedings or of any consequent proceedings related thereto.

"It shall not include intelligence, analytical investigative reports and files, nor statistical records in which individuals are not identified and from which their identities are not ascertainable."

The criterion for conversion to a preliminary data base of the Criminal Justice Information file is all major motor vehicle violations and all felonies and misdemeanors, except for drunkenness, according to Steve Long, systems engineer for the committee.

In any case, juvenile records are excluded from the file, he noted.

In addition, the board is only listing those cases pending in court as of Jan. 1, 1973 which show a previous conviction in court, Long explained.

The case must also have a fingerprint card on file at the State Police Massachusetts Bureau of Identification," he said.

No first offenses will be included in the system until it is completely up and running, he added.

Right of Review

The law also provides individuals with the right to review their criminal records and to challenge the accuracy or completeness of the information.

If the agency declines to "purge, modify or supplement the record," the individual may take his case to the security and privacy council, which is charged with "continually studying the use of the system, and make recommendations concerning questions of individual privacy and system security . . ."

Furthermore, each agency receiving criminal offender record information is required to maintain a list of the agencies or individuals to which it has released or communicated such information.

The Criminal History Systems Board is empowered by the legislation to supervise the participation by state and local agencies in any interstate system for the exchange of such information, and is charged with making the system compatible with other state information systems.

The board may limit the "number and placement of such terminals to those for which adequate security measures may be taken and as to which the board may impose appropriate supervisory regulations."

The board is currently evaluating proposals for hardware for the system, and has been working on the software for the conversion of the data base for about a year, Long said. A Digital Equipment Corp. PDP-11 is being used in the conversion process.

Are CPU Probe Points Proprietary Information?

(Continued from Page 1)

through better workload balancing or a reconfiguration of the hardware itself.

At the CPEUG meeting, John E. Rehbehn of the Naval Command Systems Support Activity (Navcossact) held that a large base of sound technical information is essential to a monitoring project, especially in a multivendor environment.

To support its own work, he said, Navcossact has developed a computerized library of points, and their meanings, for a wide range of mainframes and peripherals. The listings show who identified the point and whether its proposed use is "untried" or "reliable."

As far as Navcossact is concerned, the library and its supporting software – currently implemented on a Univac 1108 is available, at least to all government users, through the Federal Simulation Center, on a minimal cost-reimbursement basis.

Rehbehn noted the list entries had been gathered from mainframe vendors, from independent peripheral makers, from Tesdata Corp. (which markets a range of measurement tools) and "informally" from Comress, Inc.

A Comress representative at the meeting, William Dowling, reacted sharply to the announced availability of the probe point library. He argued that the information was proprietary to Comress and that unrestricted disclosure could harm his company.

Later, as part of his formal presentation, Honeywell's Dr. Clair Miller raised the same basic argument (but with a twist) and then added some advice for those who would try to gather probe point information in a casual way.

Data acquired from a vendor's field engineer might be correct, he admitted, but not complete enough for the user to properly interpret the meaning of impulses – or their lack – at a suggested point.

The only reliable source of complete probe point information, according to Miller, is the original manufacturer of the mainframe or peripheral unit, and not the monitor vendor. But "since complete disclosure of all possible probe points and their meanings would amount to disclosure of the system's architecture," he noted, it is unlikely the manufacturers would release this information voluntarily.

Nonetheless, mainframers recognize users' growing interest in evaluation and they are concerned about "uneducated" users making mistakes in attaching probes.

That may lead, Miller speculated, to the inclusion of monitoring units as part of the complete computer system as it comes from the manufacturer, or the clear identification of basic points to which users can safely attach probes from their monitors.

More information about the Navcossact probe point library programs is available from Ruth Bromen, Federal Simulation Center (AY), Washington, D.C. 20330.

DA Says DP Used to 'Shuffle' $1.5 Million Out of N.Y. Bank

(Continued from Page 1)

Currently, he said, the bank feels false information was entered into the system from the bank's Park Avenue branch where Steffen worked.

In periodic audits, the manual documents apparently checked out with the computer-based totals, and therefore were thought to be correct, officials indicated.

The embezzlement was so well hidden within the computer system that District Attorney Hogan said the crime might never have been discovered if Steffen's name had not come up in an investigation of a large bookmaking operation here.

Apparently, Steffen and his family (wife, two daughters) lived on his $11,000 salary and his alleged embezzlement funds went for large-scale gambling which reportedly involved bets of as much as $30,000 daily on horse races or professional sports.

Several weeks ago the district attorney's office raided a large bookmaking operation that had been under investigation by state, local and federal authorities for some time.

In poring over the records confiscated in that raid, it was discovered that Steffen was making daily bets of around $30,000.

The size of the embezzlement is said to be one of the largest, if not the largest, in history from a savings bank even though there have been some larger at other types of banks.

In addition, some officials indicated an embezzlement of this size would probably have been noticed much sooner if the system had been entirely manual.

PDP-8 Users Offered Fortran IV

(Continued from Page 1)

with a small system and move up as workloads grow, a DEC spokesman noted.

Used with the FPP-12, OS/8 Fortran IV is fast enough, he claimed, to execute ten 25x25 matrix inversions in slightly more than one minute. In fact, that configuration allows the PDP-8 to outperform both an 1130 and a 360/30, according to benchmarks reported by DEC.

OS/8 Fortran IV is said to use a particularly powerful overlay system to run large programs in very small memories. As an example of this capability, DEC said that Cogo-8, the coordinate geometry program, employs about 200,000 machine instructions and runs in a 16K word PDP-8, with the new Fortran support.

The system permits generalized array subscripting, the company said, and supports one- to 12-dimensional arrays. Virtual file capabilities are available using the direct access I/O feature of the Fortran IV processor, a spokesman added.

Though it includes all the features of the 1966 ANS Fortran, the new DEC implementation also provides stronger editing features, detecting, flagging and explaining many format errors in clear English comments.

It is also said to provide complete error traceback, so that when a program "blows," the user is shown the entire flow of program control that terminated in the faulty statement.

OS/8 costs $300 and the Fortran IV software an additional $700. The KE-8E hardware is available for $1,080, while the FPP-12 enhancement costs $7,450.

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ALBUQUERQUE, N.M. – Data from over two million documents fills a data base at the Technology Application Center (TAC) at the University of New Mexico.

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Worried About Future Support

Move to 3d-Party Installation Puts Firm 'Out on Limb'

By Michael Weinstein
Of the CW Staff

EAST PEORIA, Ill. – From a "safe, IBM rented 16K 360/30 and two 2311s four years ago at $5,900/mo," Chris Hoerr & Sons has "gone and purchased third-party, independent core, foreign peripherals and outside hardware installers," and the firm is worried.

The move to outside sources was done in spite of efforts of local IBM personnel to guide the account into a 370/125, according to Farrell Lord, DP manager.

Configuration	Cost
128K IBM 360/30 (third party)	$1,400/mo
174M bytes three Itel files two-year lease	$1,800/mo
1403N1, 2841 Control Reader, Cartridge, Fixed Term	$1,602/mo
Ten 3277s, 3272 Control, 3284 Printer and CICS Entry	$1,815/mo
Total	$6,617/mo

Basic System Chosen by Firm

Even though the third-party system will save the company $180,000 over the next five years, Lord is worried about future support and the finger pointing that sometimes occurs in mixed-vendor installations.

"We are out on a limb and the wind is blowing," Lord stated, but "we believe we have decided the correct course for us."

The basic system chosen by Lord has a total rental cost of $6,617/mo.

Comparable Rental

A comparable 370/125 would have cost Lord $9,600/mo plus any required software.

While it would probably do a better job for the company, this improvement would not be worth the $3,000/mo times 12 months times five years, or $180,000 extra, Lord stated.

Lord said he was the first local user to rent a central processor from a third party and to go on a third-party lease for 2311 disk subsystems.

Support Problems

If Lord is worried about IBM support, he is equally worried about support problems from smaller vendors further away.

Despite fears, contracts have been signed and installation dates set.

> *"We are out on a limb and the wind is blowing . . . but we believe we have decided the correct course . . ."*

The core selection was based on two reasons, Lord said. "Peoria is a boondock location and Data Recall has agreed to have Honeywell locally service the core." Further, the Data Recall core was cheaper by about $2,000, had upgrade capabilities and a transparency switch, he added.

Itel files were selected even though local service is not available. Lord feels this is "a definite disadvantage, but being able to reassign down units would hopefully get us by. Local service may be available later."

Since that time, Lord feels the marketing arm of IBM has treated the firm as "black sheep" while IBM maintenance personnel have offered continued excellent performance.

"IBM has supplied many subtle and some not so subtle pressures on us such as long response time to questions concerning DOS, etc.," he added.

Despite these feelings, the substantial savings realized has caused many users in the area to consider breaking the cord and going to "other" sources, he noted.

March 9, 1973	Data Recall Core Upgrade of 64K for a Total of 96K – Cost $22,000 Purchased
April 14, 1973	CHCS will add storage protect and interval timer to the CPU
June 9, 1973	Three Itel 3101 Dual Density Files on a Two-Year Lease, Total Capacity 174 Mbytes – Cost $1,800/mo
Nov. 1, 1973	(Planned) Additional 32K Data Recall Core Depending on the Outcome of IBM CICS Requirements
Feb. 1, 1974	IBM 3270 CRTs and one Printer
April 1, 1974	Three IBM 3270 CRTs
June 1, 1974	One IBM 3270 CRT
Aug. 1, 1974	Two IBM 3270 CRTs

Installation Dates for Chris Hoerr & Sons

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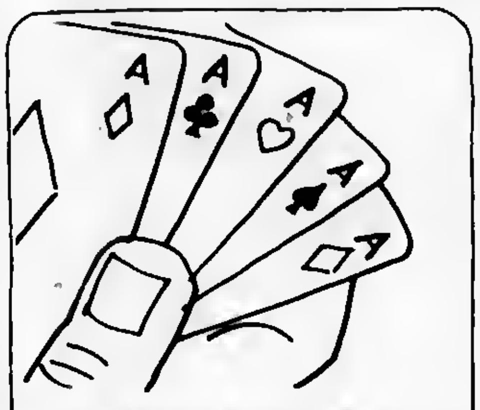

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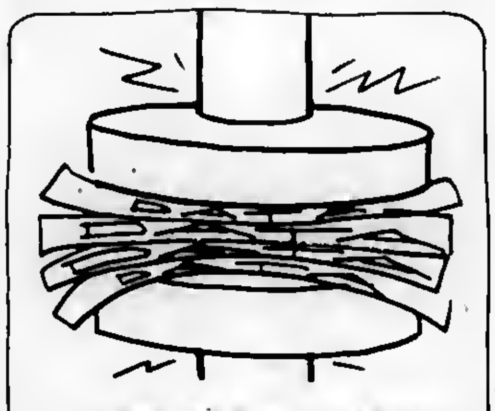

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State Zip
370 on order installed
Model Due Date

Intelligent Terminals for Remote

Key-Disk Best for Central Uses

By Michael Weinstein
Of the CW Staff

ANAHEIM, Calif. – In evaluating alternatives to keypunch operations, shared processor key-to-disk is better for a centralized operation while intelligent terminals provide superior operations when data is coming in from remote locations, according to users at Computer Caravan/73's data entry panel here.

A restriction mentioned by users of key-to-disk systems was that key stations could not be located more than a few thousand feet from the shared processor.

Also, because of the central computer it was necessary to have computer expertise nearby in case of system problems.

But this restriction had minimal impact compared to the benefits users found.

Jim Feeley of Philco-Ford told how he had taken six applications and divided the input operations. The first group was entered on standard keypunch while the second was entered using an Inforex key-to-disk system.

Caravan/'73

A comparison of the time needed to enter all data indicated that key-to-disk had taken 45% less time than keypunch, according to Feeley.

Another advantage of key-to-disk, Feeley explained, was the ability of the central shared processor to perform functions other than entering data.

At Philco-Ford the data-entry system produces reports showing the amount of data entered by each operator with error rates. Using these and similar reports, Feely stated he is able to evaluate individual operators and test various formats for source documents.

"Probably the most important consideration to management has been the ability to reduce the number of operators needed," he added.

With the system's ability to provide for verification, balancing, etc., "we have been able to get the same throughput with eight operators that used to take 13 keypunch operators," he attested.

But despite these advantages, Feeley appeared hesitant on the reliability and sticking power of key-to-disk operations.

For example, he advised users to set input formats in standard 80 columns. The advantage of this was that if the shared processor did develop problems it would then be easy to go directly back to keypunch either for short periods such as crashes or other unforeseen problems.

Contrasting Feeley's support for key-to-disk, Lou Morton told users why his company had gone to intelligent terminals.

Morton, a programmer/analyst for Kaufman and Broad, explained that his firm was in the home construction business with many remote offices with small non-computer-oriented staffs.

"On one hand we needed to get fast turnaround of information," he related," but on the other we did not want to put a computer out in the field."

Morton's first attempt at getting data to the Los Angeles headquarters was to install paper punch equipment at each branch office. After the tape was prepared, it was mailed on Monday and if all went well it arrived in Los Angeles by Wednesday, he related.

"But this was not an adequate answer, as we had to spend sometimes up to eight hours splicing and sorting tapes. Further, as the remote sites could not read the punch marks, the error rate was too high."

At this point, Morton moved to Sycor intelligent terminals with "gratifying results."

Sycor was chosen, he related, because at the time "we needed a printer at the branches and Sycor was the only system considered with this capability."

The advantages of intelligent terminal operation were noticed immediately, Morton said.

It was very easy to program the terminals so that a clerk could call the program wanted. On the screen an image of the form to be filled in was viewed by the operator who then merely typed in the data required.

If an error occurred, a diagnostic was visible immediately and the correction was effected, he added.

...Going to San Francisco

ANAHEIM – The 3,000 attendees at the Caravan bring the total for the six cities to 18,000. The three-day conference/exhibit moves on to San Francisco April 3-5.

How to Change Smoothly

ANAHEIM – When the computer department wants to install a superior system, it should not give other departments excessive leeway to bicker, Jim Feeley of Philco-Ford told users at a Caravan/73 session.

"There is a natural hesitancy of other departments toward change," he related.

"For example, when we were going to start key-to-disk operations, other departments did not want to give up keypunch operations."

The main reason for the desire to remain static, cited by Feeley, was that the departments had grown accustomed to keypunch operations and were frightened that key-to-disk might endanger current jobs.

"Rather than enter into arguments with each user department, the computer facility should make the change and have done with it," he advised.

If changes come as directives as opposed to proposals open for discussion, users will see smoother transition periods, he concluded.

Making Your Own Music

HOUSTON – Data users in this state have their share of problems because there is no state regulatory agency to oversee local phone companies. City fathers in each town decide what rates the phone company can charge, according to Dr. Dick Simmons, director of DP at Texas A&M University.

Southwestern Bell makes more money in Texas than in any other area and it has more lawyers in this state to deal with local town governments, Simmons charged.

There are about 150 phone companies including independents in the state and many of these have never had to provide service to data users, Dr. Simmons said.

"We deal with 15 independent phone companies," Joe Hopkins told attendees at a Caravan session. "These firms don't run into data every day, and you have to talk to them on a very low level," said Hopkins.

One user recited his own tale of woe in attempting to get a conditioned private line from an independent phone company. "They didn't even have the necessary specs to condition the line nor the required test equipment," he said.

But rather than taking the time to educate the local independent phone company, the user came up with a unique solution. "We finally rented a wire from Muzak (musical transcription service) and it worked just fine for data," he smiled.

Outside Software? Check Legal Aspects, Functional Abilities, Watch for Frills

By Ronald A. Frank
Of the CW Staff

HOUSTON – Users considering commercial software packages should fully investigate the legal and functional aspects of the program before making a decision.

In the area of functional capabilities, it should be possible to integrate this software into the hardware and operating system of the mainframe without causing major upheavals, users at the Computer Caravan/73 related.

Protecting Oneself

In the legal area the user may be stuck with the standard software lease forms of the vendor.

But if clauses in the vendor's contract displease the potential user, it would be better to straighten out any problems before installation, rather than challenging an agreement after the fact, the users said.

Many of the available software packages contain more "frills" than are required by the user, the panelists agreed, and this adds unnecessary cost.

The user who installs outside software should demand that the vendor insure the system is properly supported. Software houses often fail to provide the required support so the user has to involve personnel from his own staff.

The amount of assistance or support that can be expected from the supplier is often tied directly to the terms of the contract. All user agreements for the utilization of outside packages should be reviewed by a lawyer, according to David Larrabee of Getty Oil Co.

"You can train a lawyer to think like a DP manager," Larrabee said, "but if you are depending specifically on the terms of your software agreement, then you probably are already in trouble with your system."

Consider Alternatives

One of the major factors in selecting commercial packages is the cost to the user. The proposed software should be compared with the price of developing a software capability in-house. And the installation of outside packages should be coupled with an agreement that will require the vendor to supply system updates when necessary.

A typical problem with an outside package was described by C. Metcalf of the Bank of the Southwest. For the past two years, the package under discussion (a payroll system) caused tax problems with year-end financial statements, Metcalf said.

The package cost the user about $1,200/yr and this presumably included latest updates. But each year, as part of the year-end financial statements, the user found the package was simply dropping the names of employees who had been terminated during the year. Although a relatively simple fix was developed in-house by the user, and relayed to the software supplier, the information was apparently not passed on to users of the package, Metcalf said.

The only time that software contracts and their provisions become important is "when the whole thing goes up in smoke," he affirmed.

Metcalf cautioned users not to send a staff programmer into the field to evaluate a package under consideration. The DP manager is the one who is going to have "to live with" the software, and its potential management and other operating problems.

Users See 'Interim' 3705 Overshadowed

HOUSTON – The IBM 3705 programmable communications processor may well be only "an interim machine," according to users at the Computer Caravan/73 here.

Current 3705 users agreed the machine can be more cost-effective "than several 270Xs" when operating in emulation mode." All current 3705 users attending a session on front-end processor selection said they were operating in this emulation mode.

'Just Wait . . ."

"When the 3705 begins operating in its Network Control Program (NCP) mode, some very interesting software problems are going to develop for users," according to the session's leader, Dr. Dick Simmons.

Although the 3705 may be competitive today, in two to three years it will be overshadowed by advancing technology, Simmons predicted.

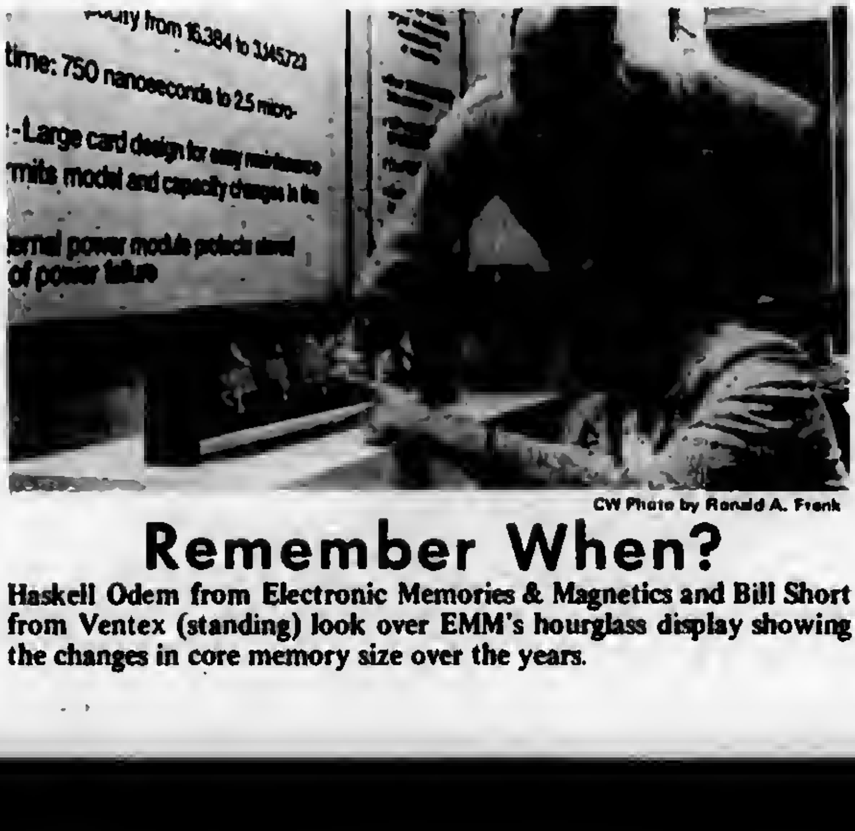
One of the most crucial problems for any front-end user is adequate software, Simmons said. Users should insist on obtaining turnkey systems from the front-end vendor. "And if the supplier can't demonstrate his communications software rather than talking about it, I would be suspicious," he added.

One of the problems in selecting a front end is that most users don't really know "what the final network design will be." Therefore the user should try to get some assurance that the supplier will be able to properly support network configuration expansions, he said.

For critical operating networks where downtime cannot be tolerated, Simmons said two front ends were mandatory.

Describing how easily potential users can misjudge proposed front-end processors, Simmons advised careful evaluation.

"I cannot overemphasize the need to talk to other users. Whenever possible try to talk to an existing user who was not recommended by the supplier," he suggested.


time: 750 nanoseconds to 2.5 micro-
-Large card design for easy maintenance
mits model and capacity changes in the
ernal power module protects stored
of power failure

CW Photo by Ronald A. Frank

Remember When?

Haskell Odem from Electronic Memories & Magnetics and Bill Short from Ventex (standing) look over EMM's hourglass display showing the changes in core memory size over the years.

Faster Memories Due

S/3's Lifespan Expected to Be Long, Eventful With Many Enhancements

ENCINO, Calif. – IBM made a big mistake in that it did not build obsolescence into the System/3, according to David E. Ferguson, Group/3 president, who addressed a workshop of the National Association of System/3 Users recently.

"The S/3 will be with us 30 years from now," Ferguson said, "since the equipment is, at the present time, being used to only a small percentage of its capability."

"Also, the 370 line is really an enhancement of the 360 which means that that particular IBM line could very well reach the 30-year figure. So, it's not so strange that the S/3 will be around for the same length of time."

Ferguson pointed out that when the S/3 was first introduced it had a maximum memory size of 32K bytes (with a possible nine million disk bytes), although 12K and 16K memories were more usual.

More Ahead

"Today the S/3 is an entirely different machine," he said. "It can accommodate 64K bytes in memory and 50 million disk bytes. In addition, tape drives, an 1,100 line/min printer and equipment to read 80-column cards are available. And there will be more in the future.

"This means, as the S/3 user becomes more and more sophisticated and extends the use of his machine through the utilization of more efficient languages, that the S/3 is really going to be with us for a long, long time."

Software Competition

Unbundling, he emphasized, has stimulated competition in the software field and he stated that a wide variety of application packages other than IBM's would be available to S/3 users in the near future.

"However," he added, "the S/3 is memory-bound at the present time. But it will be only a matter of time before the independent manufacturers come up with faster memories and will have the ability of extending the S/3 beyond its present 64K, regardless of what IBM says now."

Come See

Quantor

as an exhibitor in

The Computer Caravan/73

Quantor will be displaying a fully operational 105 off-line microfiche recorder/processor. The Quantor 105 converts computer output tapes to finished microfiche in one rapid operation. It delivers cut, dried microfiche ready to display or duplicate. The 105 contains its own automated photo development lab. Also displayed will be Quantor microfilm viewers.

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DP-Based Techniques Of Risk Prediction Should Aid Business

SANTA MONICA, Calif. – Computer techniques of risk prediction and assessment, formerly used only to examine the financial and technological uncertainties in large-scale defense development programs will be increasingly widely used in business, according to Dr. Eugene P. Durbin of Technology Service Corp.

"Businessmen in highly competitive industries confront decisions at an increasingly rapid rate regarding new products or new production methods where the technological approaches are not well proven. They are also faced with new and rapidly changing social and environmental concerns that further complicate the decision process," Durbin said.

To deal with this new level of complexity, computer-based risk prediction techniques developed for military program managers will soon be supplementing traditional commercial profitability analysis, market analysis and financial planning in business, Durbin added.

"The increasing power of computers allows the use of comprehensive and high-powered mathematical algorithms to compare products and evaluate the relative risks of alternative approaches," he claimed.

"These techniques are being widely taught in the business schools, and as managers brought up on these techniques move up the corporate ladders, use of the techniques will become commonplace in corporate planning."

Two Railroads Consolidate DP for Train, Car Movements

JACKSONVILLE, Fla. – Seaboard Coast Line and Louisville and Nashville railroads have consolidated computer operations for all train and car movements.

Railroad executives said this means all records covering train operations and car movements throughout the approximately 16,000-mile network are transmitted directly into a computer installation here.

This reduces communications requirements by as much as 50% for shippers who previously had to query both railroads to obtain information about shipments, officials said. Both sources furnishing current car location data to many shippers daily resulted in a substantial duplication of effort, they said.

Many major shippers can make inquiries directly into the data banks to obtain freight car movement information, enabling shippers and receivers to schedule orders and deliveries with greater precision and conduct many operations with smaller inventories, they added.

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Cobol Standard Proposal Draws 481 Comments, Changes Accepted

(Continued from Page 1)

- File Status – Provision was made in all three I/O modules for an implementor-defined category in the status codes.
- Conformance – Provision was made for implementor definition of the relationships between Cobol names and external operating system names.
- Declaratives – Segmentation is now permitted in the declarative portion of the programs; however, at the same time recursivity is specifically forbidden.
- Punctuation – The delimiter for pseudo-text was changed from the double-slash (//) to a double-equal-sign (==).

Kearney said many comments had fallen into "how does it work" and "why" categories. All these cases, he reported, were able to be handled satisfactorily.

Opposition to some aspects of the specifications – the inclusion or exclusion of a given feature, the deletion of some existing standard feature or the decision as to which module a given feature was placed – was considered substantive.

In the case of additions to the language, however, the committee was unable to act upon these comments, and proposed to have them forwarded to the Codasyl Programming Languages Committee (PLC) for consideration.

The committee rejected suggestions that the conformance section (the section that defines what is, and what is not entitled to be called an Ansi Cobol compiler) was too permissive, and also one suggestion that said it was too strong.

The draft standard permits any compiler, which includes some complete modules of the standard Cobol, to be labeled as Ansi standard, even though it may use non-standard "extensions."

The committee also rejected comments opposing the current restriction that a report produced by the Cobol Report Writer could only be directed to a single file, objecting to the elimination of the NOTE, TALLY and EXAMINE items, and their cutback in the suggested label-processing concept.

The new label processing available in the suggested Cobol draft provides only minimal capabilities and drops the use of the USE . . . label statement and the LABEL RECORDS IS . . . clause, both of which are included in the current standard.

Action is continuing on other comments that have been received since the X3 meeting, including a suggestion that a Collating Sequence be defined as a part of the new standard. This is being referred to the PLC for action, Kearney reported.

X3J4 action on the draft, including all comments, is scheduled to be completed by the May X3J4 meeting, at which time an updated status report will be used as a basis for an X3 letter ballot.

Police Network Goes to the Country

ELIZABETH CITY, N.C. – A computerized police information network has given police in this state's rural, isolated communities the ability to check license plates and licenses, identify wanted persons, trace stolen weapons or property, help catch car thieves and consult other police departments across the country, all in a matter of minutes.

"There's no question of the value of the computer in helping us enforce the law, acting as a deterrent to crime and aiding communications," observed Robert Morgan, the state's attorney general.

Established in July 1969, the North Carolina Police Information Network (PIN) is built around the Univac Law Enforcement Application Package (Leap).

PIN is tied into several other information systems, such as the Department of Motor Vehicles, providing a quick check of all registered vehicles, registered drivers and previous driving offenders.

The North Carolina Highway Patrol's communications center is linked directly to PIN and makes the link between the system and the FBI's National Crime Information Center.

The system is currently making 30 to 40 successful matchups per day. One of the biggest hits occurred when Winston-Salem police used PIN to check the serial numbers of vehicles in a local used car lot. The National Crime Information Center flashed back that 47 of the cars had been stolen in the Chicago area.

"We plan to enlarge PIN into a comprehensive criminal justice information and statistical system," said Howard M. Livingston, director of the system. "Each component of the criminal justice community, including law enforcement, courts and corrections, probation and parole, will be interfaced in an integrated system providing complete information on offenders."

Bill Would Restrict Medical Data Exchange

Special to Computerworld

SACRAMENTO – The issue of privacy and the computer has been reintroduced into the California Legislature and this time the target is medical records.

Sen. Peter H. Behr has introduced a bill in the Senate to stop insurance companies from circulating confidential medical records in the open market "for sale, barter and exchange."

Behr claims numerous California insurance companies, after acquiring medical histories, feed this information into a central computer where it is available to other insurance companies.

The bill would require insurance customers to be told who would see their medical records and for what reason.

Software Lives . . . at DPMA

PARK RIDGE, Ill. – "Live software demonstrations" at the exhibit hall during the Data Processing Management Association's '73 international conference and exposition will offer attendees a chance to learn more about prospective software purchases.

The DPMA show will be held at the Conrad Hilton Hotel, in Chicago June 26-29.

DPMA is at 505 Busse Hwy., Park Ridge, Ill. 60068.

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University to Model Child's Learning Ability

PITTSBURGH – Carnegie-Mellon University has received a $130,500 grant from the Spencer Foundation to make computer studies of how a child's learning capacity develops.

Dr. David Klahr, associate professor of industrial administration and psychology, will direct the research which involves building computer models of a child at various levels of development.

Basically, this is done by building a computer program which includes all stored information and processing routines a child needs to perform a specific task, Klahr explained.

"Once precise models of different performance levels have been constructed, we can begin to examine the difference between them," he said. By doing this, the researchers hope to determine what is needed to stimulate a child to move from one developmental stage to the next.

Included in the work will be experiments with adults and children.

Stolen From Police Department

Cops Reach for DP After Heroin Heist

By E. Drake Lundell Jr.

Of the CW Staff

NEW YORK – A computer has been called into service here to help a special squad of detectives solve one of this city's most bizarre and embarrassing robberies.

The robbery involves over 390 pounds of heroin and cocaine that were stolen from the police department itself. The department was keeping the drugs as evidence against alleged drug dealers or users.

Since it appears likely the theft was an "inside job," the case has proven doubly embarrassing to police Commissioner Patrick Murphy who has described it as the "worst instance of police corruption" he had ever seen.

Closing In on Suspects

The computer has been used, Murphy revealed, over the past month and a half to analyze the records of over 1,000 policemen in order to narrow down the possible list of suspects.

The information fed into the computer about the policemen who were assigned to certain suspect units includes when they entered the department, where they worked during their police careers, their associates, the cars they drove, the license plates assigned to these cars and other data.

The police hope that by using the system they can narrow down the number of police who would have had access to the drugs over the entire period.

According to Murphy, this was the first case he knew of where a computer had been used for the specific investigation of a particular case, even though the systems are widely used to retrieve such information as license plates of stolen cars or serial numbers of stolen guns.

However, he indicated, the police here have never used a computer for cross-checking on suspects in a particular case as widely as they are doing in this one.

In-House Fear

Apparently the case has made the police department wary of its own computer complex – possibly out of fear that the individuals who stole the drugs would have associates working in the DP center, sources said.

Thus the police department here is not using its own in-house computer systems for this case, but is using a system at Grumman Data Systems.

"The police department in this town has a lot of computer power which they could have used for the investigation," one source said. "Their choice of using an outside vendor for this investigation makes you wonder how deep they think the corruption in the department goes," he added.

Sources said the use of the computer had enabled the department to narrow the list of suspects to only a small number of policemen.

Medical Information Library Expanded To Access 140 Sites

By Peggy Zientara

Of the CW Staff

ALBANY, N.Y. – The State University of New York and the National Library of Medicine have joined electronically under terms of a $240,000 contract to double the capacity of Medline, a nationwide computer medical information system for researchers.

University Chancellor Ernest Boyer explained the new system gives doctors and researchers access to 1.7 million articles published in 2,300 medical journals during the last decade.

5-Second Reply

At peak periods the expanded system can respond in five seconds to 90 simultaneous requests from users for information stored in 140 medical libraries, including four in France and Canada.

The university's computer center will provide its Medline users with about 93,600 "connect hours" Monday through Friday on a yearly basis. The biomedical network will continue to provide its users with 49,140 "connect hours" a year. Last year contract users completed over 21,000 searches.

trolled by the interaction of magnetic forces between the linear motor and the table platen. The linear motor which carries the drafting head is separated from the platen by an air-cushion to eliminate friction completely. The result? A highly reliable high speed magnetic system with no moving parts making metal-to-metal contact. Compare this to gear train, cable system or lead screw designs. Lots of moving parts. All subject to wear, out of tolerance performance, and mechanical failure leading to costly maintenance and downtime.

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Purchase/Lease/Rent? Don't Forget Residual Value

By Dick H. Brandon

Special to Computerworld

The purchase/lease/rental decision on computer equipment is receiving more and more attention, and deservedly so, since better than half of all users to date have made the *wrong* decision.

An unknown factor in this analysis for making this decision is the residual value of a computer – that is, what will be the open market value of a computer system in future years?

Although this question might be regarded as a prime candidate for the crystal ball, it can in fact be answered realistically. For one, there is a market for used equipment today, and even a "blue book," which gives indications of current pricing, which in turn can be applied to potential future value. In addition, vendor marketing strategy can be assessed, and from it an indication can be obtained of industry direction.

Obsolescence comprises three factors:

- Physical obsolescence – wearing out – on which little data is available. In any event, it does not appear as if computers wear out in less than 15 to 20 years.
- Technical obsolescence – the appearance of a replacement so superior that it invalidates continued use of an existing model. Since the manufacturers design their computers for an eight to 12-year life, this too is not a major factor in new equipment.
- Economic obsolescence – when the user can no longer use the equipment economically.

It is the last case which creates the shortest life, and in turn creates a used equipment market. The adjoining table is one example of a residual value table, for an IBM 370/158 purchased today.

It assumes an investment tax credit availability (which immediately drops the price by 14% on day one since a second purchaser would not obtain it), a warranty (which drops the price by 1-1/2% after year one) and a mix of peripherals as indicated.

The greatest drop in value, perhaps like an automobile, is on the first day of use. At that point, a second purchaser would feel that he might not be able to call on the necessary IBM support, as a second user. This is, of course, not true, but since the salesman on the second purchaser's account has not received the bulk of commission, his interest might be less.

Furthermore, as already mentioned, the investment tax credit of 7% has been forfeited; this represents a pretax 14% value for those organizations in the 50% average tax bracket.

Residual Value as a Percent of Purchase Price

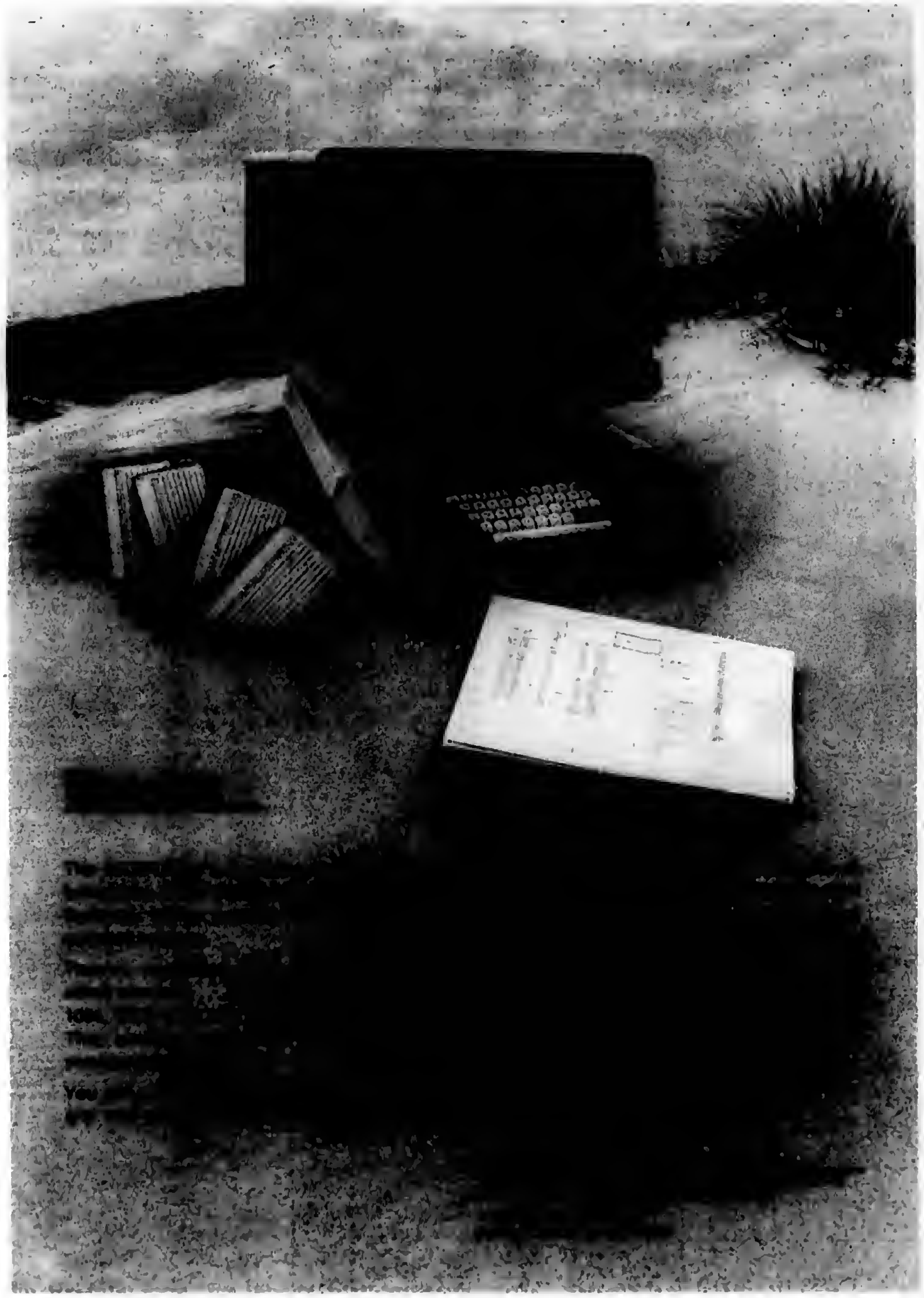
At End of Year	370/158 CPU	3330 Disk 3420 Tape	2314/19 Disk Other Tapes	Card Readers/ Punches Printers
1	78	80	70	70
2	70	70	60	60
3	65	60	55	50
4	55	50	45	40
5	40	35	30	25
6	35	25	20	15
7	30	15	10	10
8	20	10	5	5
9	10	5	0	0
10	10	0	0	0

Factors taken into account in the structure of this table include popularity of the system; tax credit; date of originial announcement; possible physical obsolescence; anticipation of new announcements; warranty on mainframe; age of the system; expected marketability; and availability of vendor maintenance.

In subsequent years, depreciation flows reasonably even, until a major announcement by IBM. Thus, the table expects a 1977 announcement which will strip 25% of the value of the system in two years. However, it is expected that a 370/158 mainframe will be marketable for more than 10 years at 10% or so, if only for use as a 380 front-end processor.

This is not the case with the peripherals, whose physical wear factors would increase maintenance costs beyond a point of economic return after 10 years.

Brandon is president of Brandon Applied Systems, Inc.



Here's a Magazine Tailored to Individual

PHILADELPHIA – Is the computer depersonalizing the entire population, reducing each of us to slots in a punch card? Not at all, according to Lane Palmer, editor of *Farm Journal.*

In fact, a computer makes it possible for his magazine to be published in as many as 200 versions with different editorial and advertising content under the same cover, tailored to a reader's particular needs.

"To make sure that you get the right edition, at the right address for the right number of months, we ask each subscriber for as many as a dozen different pieces of information, keeping track of them all with a computer," Palmer said.

The 1973 Computer Caravan is coming

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* * * * *

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2:30 p.m. . Data Communcation Planning
Day 2:
9:00 a.m. . . . . Data Communications
2:30 p.m. . . . . Software Evaluation Panel
Day 3:
9:00 a.m. . . . . . Installation Management
2:30 p.m. . . . . Small Systems Panel

*Entry to the morning sessions is $25 per day, which includes all workshop materials, luncheon, and admission to the Exposition Hall (see pre-registration form on page 12). Afternoon sessions are open to all – free of charge.

* * * * *

Exposition Hall

10 a.m. to 6 p.m. daily. Tickets are $5 per person and should be purchased at the door.

Foundation Societies Urged to Pay DPMA $2,500 Each for CDP Exam

Special to Computerworld

SAN DIEGO – Lynn M. Maier, president of Automation 1 Association, has suggested that each of the 10 non-DPMA societies in the Computer Foundation pay $2,500 to DPMA for the rights to the CDP exam. This figure could be increased later if it is determined the exam is worth more.

In an open letter to the other members of the Foundation Organizing Committee Maier said, "We suggest that it might be a mistake for the Computer Foundation to accept the CDP as a gift [from DPMA]. Because gifts frequently have strings attached . . . and although the strings may be only implied . . . they are strong nevertheless."

In the same letter, A1A also expressed concern over recent developments within the foundation and suggested it may have to withdraw from the project.

The financial impact of the sale of the examination could apparently help DPMA. During the 1969-1972 period the losses from administering the examination amounted to $40,000, and appears to have been a factor in the serious losses suffered by the association during the same time period.

In the past, DPMA had hoped to make testing programs substantial contributors to association funds, but when the Registered Business Programmer exam fell $150,000 short of budget in 1971 these hopes appeared to have been abandoned.

In the meantime, the debate continued over the position of Quality Data Processing, one of the seated members of the committee, when committee chairman John Swearingen insisted that QDP "had not been accepted as a member," although the minutes show it had been.

Sources on the committee suggested Swearingen's refusal to accept QDP could be based upon a misunderstanding of QDP's nature.

It was thought that Swearingen believed QDP was not an actual group, and so could not be eligible for membership on the committee. It was found, however, that QDP has a 10-year history, and has many unusual characteristics – no officers, no membership dues and yet an active program of contributing to professional life.

Heavy Security Keeps Underground Firm Safe From 'All but A-Bomb'

By Ken Shonk
Of the CW Staff

ROSENDALE, N.Y. – A service bureau here owned by and operated for a consortium of two savings and loan associations and 10 savings banks in the central Hudson Valley area of New York, has located its computers in a cave.

Security was the primary reason Thrift Data, Inc. went underground. "We located underground for the same security reasons that banks store microfilm records in underground vaults," said George Sudlow, president of the data service. "The location gives computers the same security from catastrophic events."

For anyone to gain access to the 30-acre cave, a participating company must notify New York Underground, operators of the cave facilities, by writing ahead of time. When the visitor arrives, the company is then checked to confirm the visit.

The cave, with a 10-ton lead-lined steel door, provides a constant temperature, and has a backup electrical generator for all facilities.

Atomic Bomb

"The location is safe from all but a direct hit by an atomic bomb," pointed out H. Van Wyck Darrow, executive vice-president of Savings and Loan Association of Kingston and treasurer of Thrift Data. "A consideration of this kind of security is important because of the vital nature of the records.

"Since not as many people can get access to the building, the crime element isn't here as it would be outside," noted Sudlow. "It would be harder to get into the underground facilities than it would be to get inside the White House."

Thrift Data began to service the members of the consortium Jan. 1 of this year and expects to have all 12 members on-line by May 1. Since the service bureau has about a 66% excess capacity, the consortium will offer Thrift Data services to other area banks, featuring security as one of its selling points.

The system, which had start-up costs of around $600,000, consists of two NCR 315 computers.

So You Want to Be a Technical Writer?

BOSTON – If you want to write for a technical publication, but don't really know the ins and outs of getting into print, two one-day seminars, sponsored by Boston University Science Communication Division of the Graduate School of Journalism May 25 and Oct. 19, may be of help.

Editors of 14 national technical publications headquartered here will explain what they're looking for and how to get stories into the news and feature sections of their publications.

Participants will have lunch with one editor and dinner with another.

Among the topics to be discussed are:

- How to determine which publications are more likely to be interested in what kinds of articles.
- How to deal with the editors of these publications.
- What kind of help and guidance is to be expected from them.
- How to start a book with a series of published articles.
- How to become a newsmaker.
- How to become an occasional staff columnist or guest editorialist.
- How to get different versions of an article in two or more publications as "in-field exclusives."

Publications participating in this seminar include *Circuits Manufacturing, Computer Design, Computerworld, Data and Communications Design, Design News, Digital Design, Electrical Design News, Electromechanical Design, Laser Focus, Microwave Journal, Modern Data, Modern Materials Handling, Plastics World* and *Telecommunications.*

The seminar, "How to Write for Publication," will be held at Boston University's George Sherman Union. The registration fee of $75 includes lunch, dinner and cocktails.

Checks should be made payable to Boston University – SPC and sent to Shirley Coyne, Boston University School of Public Communication, 640 Commonwealth Ave., 02215.

The Infotron not-so-free trial:

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☐ Send more information on your equipment and the Not-So-Free Trial.

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City________ State________ Zip________

Editorials

Ending a Problem?

Computerworld rarely has guest editorials, and rarely takes apparently frivolous approaches to issues. We did both recently – in an editorial prompted by a complaint from Robert M. D'Unger that his name was frequently being misspelled by computers. We did it deliberately because we felt that the mere publication of his complaint simply would not attract the attention the problem deserved.

In this we appear to have been correct. We have received many comments about the editorial, but only one other suggestion for D'Unger. This was to write to the president of the offending company.

The time has passed when writing such letters should be considered as a necessary chore to be undertaken by the public. If there is in fact confusion in handling names, then it is up to the data processing profession to handle them properly, if technically possible.

Our editorial was designed to determine whether there was confusion — and whether there was any particular reason for the lack of a practical solution. We could see no technical reason for the confusion, but we could not be certain!

The letters we received certainly indicated confusion. The position for "D'Unger" was stated to be between DUM and DUO, after Czardas and before Damon, after the DZ's, before the DAs, etc.

Regrettably, only one person — writing from England — apparently had realized the clue deliberately included in the editorial regarding the data capture situation.

H.R. Sides correctly noted the names "Dunger" and "D Unger" would appear in our character strings, as well as "D'Unger." He noted that we would have to deal with the whole situation as well as with the single case of actually receiving the D'Unger string. Our congratulations to him!

We would add also that DP professionals may not be assertive enough in demanding general solutions to general problems such as this — they sometimes accept patchwork solutions that buy convenience for in-house use, but only at the cost of ignoring the real need.

What is needed is a set of standards that puts the public interest first.

Now is the time for action to end D'Unger's problem. He has lived with it quite long enough.

IBM and Its Employees

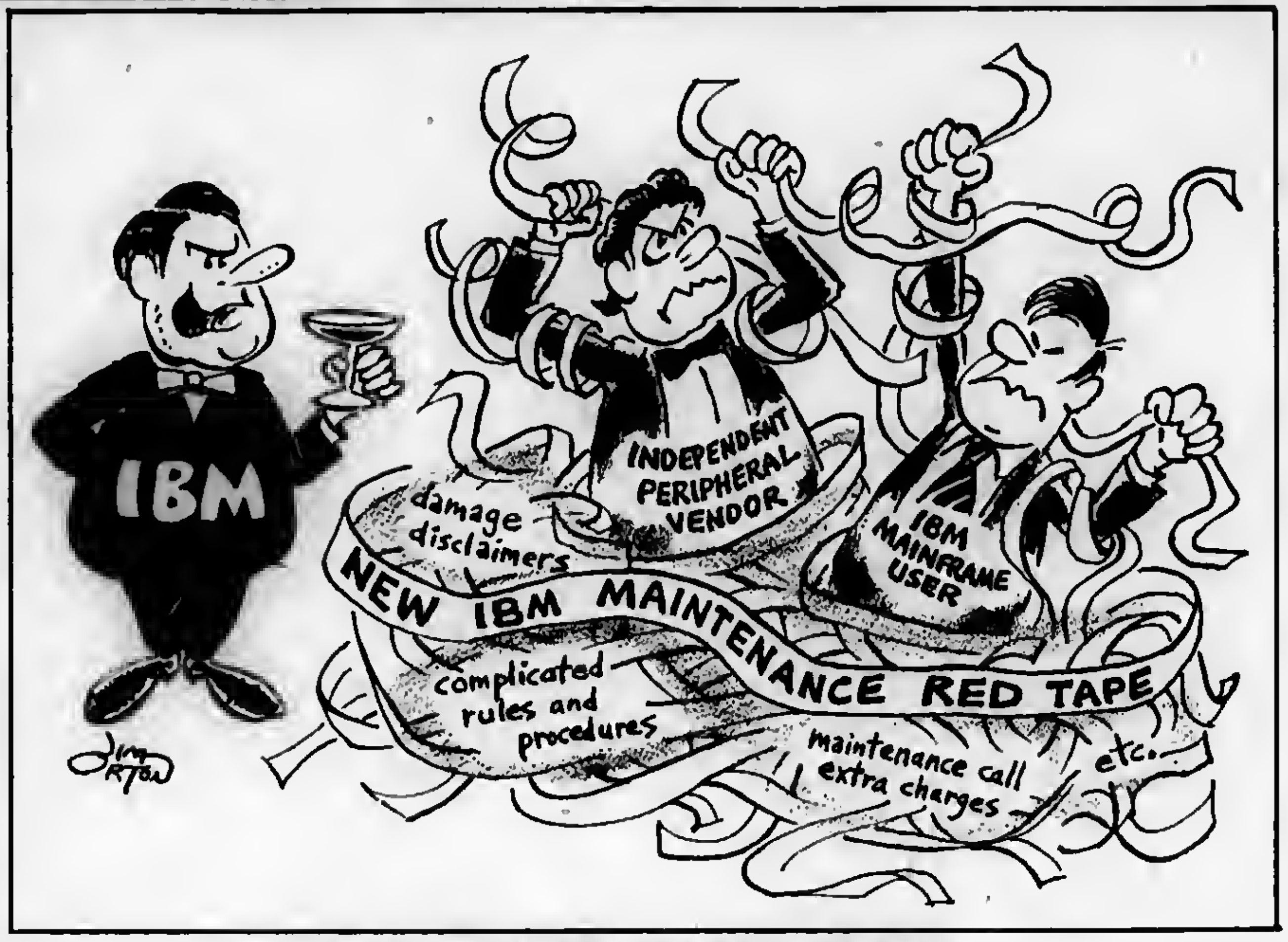
Recently several employees of the Service Bureau Corp. filed a class action suit against their former employer, IBM, because of their "involuntary transfer" from an employment that they respected and had anticipated to continue in indefinitely.

Whether they were legally or morally justified in bringing the suit we do not know — but we cannot help but think that another group of IBM employees might well consider such action in the face of the attacks their employer has made upon their professional skills.

We refer, of course, to the field engineers. The recent action by IBM in equating "practical" maintenance with maintenance exactly as laid down in the IBM procedures is an insult to the professional skills of these employees, suggesting that they are no better than robots, unable to deviate even the slightest from the path conceived for them by their employer.

Some engineers may be so dead — and some may give the appearance of being so when observed. In general, however, the ones we have known have been live human beings who find it practical to use some initiative, and to learn new skills.

Apologies are due them from their employer.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maintenance call extra charges
etc.

'Here's to a Binding Agreement, Gentlemen'

Letters to the Editor

...On Robert M. D'Unger's Problem

(The following letters are comments on a March 21 editorial in Computerworld on the inability of a computer to spell Robert M. D'Unger's name correctly. A second editorial on this issue appears on this page.)

Gigo Returns!

Poor Robert D'Unger has a real problem. Telling him to "live with it" is not constructive and, I hope, not what most DPers would consider a proper professional comment.

The system design problem should be quite simple: Consider the name field to be alphameric rather than purely alphabetic. This will also take care of people with names like Smythe-Jones.

In an EDP environment, "D'Unger" should now come before DA or after DZ, depending on whether special characters are low or high in the collating sequence. Things are not quite so nice in an environment using card sorters.

On an IBM 082, D' still comes before DA, but D- comes between DI and DJ. Even so, any name should still be spelled correctly – yes, length is a serious problem in a fixed-field environment.

I suspect the real problem is not with the computer or program, but rather in the area of data capture or preparation. Insufficient instructions to or training of personnel in this area would explain the dropping of the apostrophe and the resulting "DUNGER" or "D UNGER."

Also, certain equipment might conceivably have character limitations which cause the apostrophe to be lost.

Thus it seems to me the main part of the problem is not poor system design – nor is it an individual's failure to be given a name which is "sensible" to our friend the computer – instead, it is our old enemy Gigo.

H.R. Sides
Heywood Lancashire, England

...Lazy Programmers

. . . There is no reason, Robert D'Unger, why your name should be spelled by a computer any differently than the way you want it. The reason it is always misspelled is that our programmers are too lazy, or too pressed for time, to write decent programs for keeping machine-readable records.

William Lee Valentine
New Orleans, La.

A Workable Sort

. . . A standard sort on our computer would place him ahead of other "D" names – not according to Bell System rules, but in-house as workable a scheme as any for readability and communication.

A suggestion for people-oriented firms is to use character sets and printer graphics that contain apostrophes.

Douglas D. Cuthbert
Rock Island, Ill.

Using a Tag Sort

. . . When we want a list in alphabetical order, we do a tag sort. Before the name is entered in the sort, it is stripped of such things as apostrophes. The source for the sorted printing is the correct name from the disk. In this way D'Unger would print between DUM and DUO where someone would expect to find it on an alphabetic list.

R. Peter Ericson
Hartford, Conn.

Write to President

. . . I would suggest two approaches. First a letter to the president of offending companies to the effect that he employs very expensive people to offend the really important people – you the customer.

Second, play their game, write to them about your account, without the apostrophe as Robert D. Unger and as Robert M. Dunger. If that doesn't drive them to correcting the situation, then they probably do it by hand anyway.

Jim Fetergale
Richmond, Ind.

Change the Computer

. . . You are telling a man that because his name is different he doesn't belong in this country and, therefore, he should change his name if he wants to stay here. I say let's change the computer to recognize the people and not require changes in names that may be centuries old and recognized, in some cases, on a worldwide basis just by humans but not necessarily by the monster machines put out by U.S. industry.

Henry L. Valo
Minneapolis, Minn.

Or Printer Chain

. . . I know of no technical reasons for denying D'Unger the proper spelling of his name in computer-produced documents, unless there is no apostrophe on the printer chain.

John B. Beall
Fraser, Mich.

Programmers Again

. . . A little less laziness on the part of programmers, systems analysts and data preparation people, and there would be no apostrophe problem.

T.E. O'Connor
Mountain View, Calif.

Placing the Apostrophe

. . . I only know IBM sorts, but if the apostrophe were put in D'Unger's name in the proper place and the sort was done on the last name field defined as CH or BI ascending, rather than customer number or some other control field as is usually done, his name would appear in the right place in the sorted list.

It would come after Cyrus and Czardas and before Damon and DaVinci. What about two capitals in a name. The collating sequence of an apostrophe, a 5-8 punch in an IBM card, if the sort was done ascending, is before both alphabetic and numeric characters.

Stuart O.F. Brand
Syracuse, N.Y.

(Other letters and viewpoints on Pages 11, 13 and 14.)

Documentation Standard Needed

Grass Roots Take Next Step on Professional Road

The Taylor Report

By

Alan Taylor, CDP

The road to professionalism is really not a very long one, at least not in terms of the number of steps involved. The first step is always to find a body of professionals. The second step is to find functions for them to perform which when performed benefit both public and professional alike.

The third step is to describe the functions well enough so they can be performed economically. The fourth step is to implement these functions.

A month ago the DP profession had only taken the first step. Even that was not clearly taken. We did have a number of people picked out, by one means or another, who could be called "professionals."

We had the memberships of our professional societies, the computer science graduates, the holders of the CDP and the people who were successfully practicing. All these groups could be seen, in one way or another, as "professional persons."

During the last month, however, leaders of both CDP holders and DP practitioners have suggested a second step. They have, in fact, suggested the function which is needed to bring professionalism to us.

Documentation Standard Needed

Ron Stewart of the Society of Professional Data Processors (SPDP) made the first suggestion. He was commenting on a paper on enforceable standards written by SPDP President Hamilton Armstrong. Armstrong had suggested that part of any data processing standards enforcement procedure would have to be the provision of a list of the application documentation, together with the location of each study listing.

Armstrong pointed out that anything that had a responsibility for quality also had a responsibility for the quality to be monitored economically.

Stewart went further. He saw such a list not just as part of an enforcement procedure, but as a necessary part of any data processing application. In reviewing Armstrong's ideas he said, "Perhaps this documentation list should be the first real data processing standard that the profession should enforce."

He has a point there. It is hard to see how any data processing operation – such as school reports, payrolls, inventory control – can be really controlled by its management, let alone inspected by auditors, unless there is a list of all the essential documentation involved, and details of where it is currently kept. The requirement for such a list would make an excellent standard.

At the same time, the new president of the Society of Certified Data Processors, Jerry Martin, came up with an idea for two types of certificates which he feels can greatly improve data processing professionalism.

Interestingly enough, in view of the fact that his organization is made up of certified people, neither of Martin's recommended certificates is a certificate of people. One is a certificate of documents, and the other a certificate of application testing.

Martin's documentation certificate would say that someone had looked at the document, and had also looked at such working papers available to support the statements in the document. It would simply record someone's opinion as to whether these working papers support all the figures in the document, and whether the document itself is a "fair" presentation.

Martin's suggested documentation *certificate* is very different from Stewart's suggested documentation *standard*. Martin's certificate is more like the certificate given by an auditor, and in fact appears to be modeled upon the CPA certificate.

Like the auditor's certificate, Martin's idea is not to have the inspector replace the document's author. The inspector merely looks at the figures, looks at the data in the working papers, and says whether or not one supports the other. The outside public – or management – should then value the word of both men more.

Testing Certificate

Martin's second idea argues for a certificate of testing for an application. This states that the application has been tested in an appropriate manner while it is running. Martin compares this to the testing given to most elevators every year. In elevator-testing the elevator is run with a known load, and the speed and acceleration factors are noted.

Similarly, Martin is arguing that a data processing application could be regularly tested by means of simple tests to see how long it takes money to be posted, how easy it is to obtain a correction, etc. He does not go into details as to what the tests should be, but merely argues that certification that the application has been tested would itself be of great value.

Standard Could Be Test

Martin's and Stewart's proposals do, in fact, fit together. For instance, Stewart's documentation standard could well be one of the items to be checked before Martin's documentation certificate could be given.

I think it would be quite reasonable for an examiner to test an application by looking to see if adequate documentation is listed and is in its proper place. This would, after all, test whether the application is capable of responding quickly to emergencies that have not yet occurred – a very necessary test.

But I can see even more possibilities in Martin's certificate. For instance, I see a test of credit card operations which would check on the length of time it takes to post money to someone's account. This is something which should never be delayed so much as to cause an improper finance charge.

It is the function of the total data processing system to get the money posted in time, once the customer has delivered it in time. Testing that this is occurring should be fairly simple.

The documentation certificates could also be given on such items as recommendations for the procurement of data processing equipment, or for the budgeting of sums of money for such equipment. Here the certificate would show that the analyses claimed to have been carried out in the final report, had in fact been carried out and were included in the application documentation.

As I said in the beginning, the first step towards professionalism is picking out the right people. This has been done.

The second step is to provide a general mechanism which can improve the quality of data processing. Between them, Stewart and Martin appear to have made this step, with their mechanism consisting of two certificates, and an undefined number of potential tests within the certificates. This is a step that only needs the involvement of a few people.

The third step, and the last one before the actual implementation can start is for someone to describe what should be handled in the certificate operations. This involves the profession as a whole. You must say when the certificates are needed, who should give them, who should pay for them and how much, how the area should be controlled, etc. The grass roots should decide what standard of support is needed in the working papers, what testing is needed, etc.

This is your opportunity to take a stand and make your contribution. If you speak up now, the profession will be well on the way to having taken the third of four steps toward data processing professionalism.

Please write or use the above questionnaire. I know it will be of great assistance to the profession. (If you want free copies of either Stewart's or Martin's ideas in detail, send a stamped, self-addressed envelope to me.)

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Questionnaire on DP Certification

1. Do you agree that any data processing application should have an essential documentation list, noting the documents involved and saying where they are?

☐ Totally Agree ☐ Partially agree ☐ Do not agree at all

Please give reasons____________________

2. Do you agree that data processing reports and recommendations should be properly supported by the contents of the working papers that detail the work undertaken in the preparation of the reports, and should fairly represent the data in the working papers?

☐ Totally agree ☐ Partially agree ☐ Do not agree at all

Please give reasons____________________

3. In what cases do you think documentation and testing certificates should be compulsory or optional?

(a) Compulsory____________________

(b) Optional____________________

4. Do you agree that operational data processing applications should be regularly tested?

☐ Totally agree ☐ Partially agree ☐ Do not agree at all

Please give reasons ____________________

If you agree, under what circumstances do you feel operations should be tested, with what type of tests and how often?

Other Comments____________________

Name____________________

Address____________________

Society Memberships____________________

Professional Position____________________

After completion, please return to the SCDP/SPDP, c/o The Taylor Reports, Computerworld, 797 Washington St., Newton, Mass. 02160.

Letters to the Editor

Major Revisions Needed To Improve CDP Exam

I was among those who took the CDP exam this year. Because Alan Taylor, through *Computerworld*, so strongly advocated professionalism in data processing and the value of the CDP as a means to that end, I felt it desirable to register my disappointment with the exam.

Of all the exams I have ever taken, this was perhaps the most poorly constructed. Specifically:

- How can we test the competence of a "DP professional" with 300 vaguely worded multiple-choice questions?
- How can we justify questions which in reality ask for opinions, but offer no chance to defend one's opinions?
- How can we call someone a "professional" when no effort has been made to test his ability to express himself in clear, concise English?
- Is Cobol the only language that professionalism can be based upon? In fact, can knowledge of programming be shown at all if no programs are required?
- Aren't there techniques (flowcharting, for example) which are important enough to programming, systems analysis and management that they should be tested in a problem format?
- Aren't some very important areas being skipped (e.g., security and business law)?

In short, what I am saying is this: If the CDP is ever going to be data processing's equivalent to the CPA or bar exams (as many of us would like it to be), it must be revised to include essay questions, problems and programs (none of which lend themselves to machine grading); it must be more difficult and more comprehensive; and it must include options (after all, our field is vast, and all of us have areas of strength and weakness).

It is the writer's hope that the new Computer Foundation being formed by DPMA, ACM, et al., recognizes the problems I have described. Employers, the public and data processing professionals alike will benefit from a sound certification program.

Joseph A. Leubitz
CPA

Skokie, Ill.

Here's just some of what's happening at the 1973 Computer Users' Forums.

…TON – Dial-up communicati… quality of private line… This was one of the… If a… of… lines… effici…

BOSTON – Despite the proli… non-Bell data equipment… still reluctant to… communicati… ca… ment… d… a Computer C… ance advant… to important… on d… comm… dependent

BOSTON – "Conditioning" – to … is sure effective data transmission – is often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning. … Overisn, assistant telecom. … manager for First National … ton, told a Cara… … sh… on leased-line usage.

"A small computer… handle an on-line … Syste… Model 10 couldn't handle an on-line… without a major upgrade… minal system" without a major upgrade of the system, Jester said. Intelligent terminals allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

BOSTON – A major … the process line data entry is that the process… out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank. … real-time system at the bank … receivables, stock transfers … mutual funds. … ders' 720 … fr… …'s which … Cronin … 370/155 … real-t… systems.

Thibau… o Mix or Not

Thibault advised users who cho… multivendor systems to bring each vend… in one at a time and explain what is expected from him in the mix. "Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain th… … rules of responsibility. op.

…ning U… … workshops … particu… … and … ls … experien… … their … potential problem … of … of … ent… lar area d… warning other… areas.

In all, more than 30… data communi… … ment, each sessions on data entry… tions and installati… given on a separate…

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never contract for custom programming of an application that he knew was going to entail heavy maintenance, such as payroll, with its … tax routine… house, he … programm… the … in…

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the … o… avail… at the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

char… as a … as an omnip… Zayre Corp. has found the … lation of an IBM 1287 more than justified on one application alone.

Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

…OSTON – Sometimes all the in-ho… staff knows – even after a packa… system has been considered operation… for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

And it'll be happening soon in a city near you:

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: Kansas City. And here are some of the panelists who will be there: Dick Baker, Chemagro; Dave Setty, Cessna; Jim Rooney, Massey Ferguson; Lee Stevenson, First National Bank of Kansas City; Carl Barron, Smak's Inc.

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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COMPUTERWORLD

Computer Users' Forum Registration

Name____________________________________

Title____________________________________

Company____________________________________

Address____________________________________

City____________________________________

State__________________Zip__________________

1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:________________

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:________________

2. Please check the appropriate city:

____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
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The Professional's Viewpoint

Progressive Certification Plan Would Identify Skills

By Mike Gates

Special to Computerworld

Joseph Rigo's letter [CW, Jan. 24] was very interesting. The arguments he presents against a data processing certification program are certainly novel.

His first argument, that DP persons deal only with knowledgeable managers and do not come in direct contact with the public is, to say the least, naive. Granted, DP personnel do not generally deal directly with the public. But one of the most vexing problems facing DP managers today is the lack of standards for identifying various levels of skills in prospective employees. (who are members of the public?)

How many DP managers can be sure, even after the most exhaustive of interviews, of the depth of knowledge of the prospective job applicant? Any of us who have served in that capacity have had the experience of hiring an applicant we felt confident about, only to discover quickly that the applicant (now the employee) has only a superficial understanding of the areas he had discussed in the preemployment interview. The possession of a certificate would surely give employers some protection.

> *". . . one of the most vexing problems facing DP managers today is the lack of standards for identifying various levels of skills in prospective employees."*

The argument that employers might drive off the top-notch applicant by placing importance in certification leaves me puzzled. Many professions use certification programs to identify varying skill levels without a noticeable recalcitrance among the highly qualified practitioners of the trade.

It would seem to me that any applicant who terminates an interview process because of this kind of attitude would probably quit the first time you asked him to work through his lunch hour.

I really believe Rigo has missed the point. No responsible person claims that a data processing certification program will be a substitute for competence. No responsible person can say that the possession of a certificate will grant magic powers to the bearer.

And certainly no responsible person would contend that possession of a certificate should be a substitute for the manager's judgment in selecting job applicants.

What a certification program will accomplish is to uniformly identify a group of individuals possessing certain levels of skills in the data processing field. It will assist the industry in standardizing job definitions and job descriptions in a manner that should lighten the burden of management in identifying competent people. That is a worthwhile goal, I believe, and its achievement is the real point that should be addressed.

I am not claiming that the CDP or the RBP is the final answer in the area of certification. I do feel the current approach leaves a great deal to be desired. To begin with, the CDP is too general and too easy. It seems to me that a set of progressive examinations given over a period of years culminating in a CDP would more closely identify truly dedicated and competent people.

There should be separate certification paths for programmers and analysts. These should be progressively more difficult and should eliminate the less dedicated and skillful. The joint ACM/DPMA council would do well to study the certification program leading to the Fellowship in the Society of Actuaries. A program like this would truly identify exacting knowledge levels.

But this kind of program will work only if the industry adopts a strong posture towards it. Management must get behind a program of this kind. Raises and promotions would have to be based on successful completion of another level of success in the program. Companies would have to get behind such a program, and the plethora of DP societies would have to end their intramural squabbling and get behind the effort 100%.

We in the profession of data processing now are extremely fortunate. We can mold the shape of the profession for many years to come. Or we can sit back and let it run loose as we have in the past. I think we have a rare opportunity to accomplish something most people never experience – the forming of a new profession.

Mike Gates is a senior systems analyst in the Insurance Application Group of American National Insurance Company, Galveston, Texas.

. . . For Men Only

WASHINGTON, D.C. – A recently released Census Bureau report on "earnings by occupation and education" showed a great discrepancy between earnings of men and women in the computer and other fields.

The report, based on the 1970 census, revealed women computer specialists earned $8,531 in 1969, while men in the same occupation earned about 25% more, or $11,422.

In general, women's salaries were about half that of their male counterparts, the report said.

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Letters to the Editor

IBM Fixed-Term Plan A 'New Encroachment'

IBM's new fixed-term plan on CPUs is a new encroachment in a new monopolistic area by IBM. It must be assumed that the reader understands and comprehends the plan.

Primarily it is an attempt to dissuade potential purchase customers from purchasing IBM central processing units. Secondly, it is an attempt to eliminate all OEM and peripheral vendors from encroaching on central processing unit hardware, software and memory components.

Lastly, it is an attempt to eliminate all potential leasing companies and lessors from virtual memory machines, eliminate companies from purchasing machines for their own use, eliminate the add-on memory companies, eliminate the future of the used computer marketplace and gain total control of the hardware for IBM over its customers.

IBM should rent computers to all customers on the basis of current rent minus maintenance. Maintenance should be charged separately for the number of hours used by any customer depending on the usage and not tied to extra-shift rental. IBM should reduce rental on all computer systems for all customers based on the period of retention of such systems.

IBM should allow rental features to be attached and removed from purchased systems as IBM announces new products and peripherals. IBM should charge property taxes, where applicable, on systems to those companies and customers that have property taxes applicable and remove them from current rentals where not applicable.

No one can deny that IBM is the smartest organization in the U.S. The question is how it uses its power. No one could exist if IBM were split into four vertically integrated data processing companies as the U.S. Justice Department suggests.

George S. McLaughlin Jr.
Summit, N.J.

On IBM Bias and Need For a Strong DP Firm

I was indeed delighted to find, in reading the letters to the editor in the last several issues, that there are a number of people who indeed do agree with what I consider tremendously "biased" reporting on IBM and its activities in the computer industry.

It is my opinion that the need for a strong computer company in the U.S. is becoming more apparent each day, each month with the ever-increasing penetration being made by the low-cost peripherals, and in some cases, CPU manufacturers outside of the U.S.

Again, as stated once before, I enjoy generally what is in the paper, and definitely feel that the good does off-balance some of the biased writings that are published.

James P. Boyle
Vice-President, Marketing
Addressograph Multigraph Corp.
Data Systems Division
Cleveland, Ohio

...And on Being Fair

There is no question about the validity of W.R. McCartin's remarks in his letter [CW, March 7]. However, I have a good guess for the reasons behind the *Computerworld* anti-IBM bias: good business, since the people who buy advertising space represent the real profit for the publishers. And IBM (if it bought space) would be only one buyer – while the others are of course much more numerous.

The key, of course, is in being fair (which I feel would also satisfy all those advertisers) instead of being so anti-IBM (which makes them gleeful).

A case in point is the article on the 370/125 [CW, March 7] which Marshall E. Maynes has decided is a step backward. But the experience of those with big installations belies his view – when were 1401s used to back up 7094s? And how many 7094s were there with no 1401 (practically none)?

When company X makes a product of limited flexibilty, it is called progress, and when IBM makes a small product, that is called a step backwards. This is what McCartin meant, and I agree with him.

Eugene Amazon
Geneva, Switzerland

Over the last several years Computerworld has been accused of being anti-IBM, anti-NCR, anti-Burroughs, anti-Honeywell, anti-CDC, anti-Univac, anti-RCA, anti-XDS, anti-AT&T, anti-West Coast, anti-Mid-America, anti-Afips, anti-DPMA, anti-ACM, anti-Acpa, anti-Computer Sciences, anti-Storage Technology, anti-Varian, anti-Hewlett Packard, anti-Data General, anti-leasing firms, anti-Nixon Administration, anti-etc. But in spite of all these allegations we have not been accused of being anti-user, nor anti-truth.

IBM unfortunately does get the lion's share of bad press because it is in the news often and has the lion's share of critics.

But to further clarify our position, we are not "anti-IBM"; we are pro-user. Marshall E. Maynes is not "our reporter." Maynes is a user like yourself and was not paid to write his feature on the 125 that appeared under the "Professional Viewpoint" label. Computerworld does not solicit anti-IBM stories.

It is inherent within the definition of "newspaper," however, that Computerworld publish articles and letters of opinion from our readers.

This we endeavor to do and we identify opinion by placement either on the editorial page or on one or two pages following the editorial page or by clearly labeling this material "Viewpoint." Ed.

The 360 in 1978

With regard to the article concerning the reappraisal of 360 computer equipment [CW, March 7], our corporation, Data Processing Financial & General Corp., was not one of the companies Peat Marwick & Mitchell audited. I think the confusion is with DPF, Inc. which was formerly known by the name mentioned.

While much smaller than DPF, Inc. we have no reason to think that our assets are going to be at zero in 1978. I am sorry these other companies in the business cannot decide what their assets are worth on their own.

Alvin J. Borenstine
President
Data Processing
Financial & General Corp.

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Joseph B. Pomeroy
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Boston College
Chestnut Hill, Mass.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

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Random Notes

Sequential, Isam Files Planned by $95 Package

WILLINGBORO, N.J. – The Disk Volume Calculator (Volcal), a $95 package from Apparel Systems Development Co., aids analysts in planning and converting sequential and index sequential files between IBM 3330, 2314 and 2311 disks.

Control card entries define the files, including records required or tracks available. From these, Volcal calculates capacities and track requirements for index, prime and overflow areas, based on the analyst's choice of blocking factors. The package operates in 12K under DOS and requires a 132-position line printer. Apparel Systems is in the Garden Plaza Bldg., 08046.

Independent Produces 'Micos' Operating System for Novas

SCARSDALE, N.Y. – To support development and execution of on-line retrieval applications on Data General Novas, Mini Computer Systems, Inc. has introduced Micos, which includes a multiprogramming operating system, a data management subsystem, a generalized disk sort and an output print spooler.

Micos includes Extensive Basic, an outgrowth of the original Basic, which is said to facilitate data capture from a range of terminals including CRTs, teletypewriters and "intelligent" units. Data management includes reentrant code for file accesses, data sharing and security checking. Micos costs $8,000, but lease terms are also available from 1075 Central Park Ave., 10583.

'JCL-omatic' Builds Control Streams Triggered by Codes

ST. LOUIS – An OS Job Control Language generator for 360 or 370 users, JCL-omatic, has been introduced by McDonnell Douglas Automation Co.

Functionally, the package retrieves groups of JCL statements from file tables, based on the programmer's entry of a unique code. Each installation determines the contents of its own JCL tables.

JCL-omatic requires 90K, runs under OS and is available for $5,000 (paid-up license) or $170/mo (yearly license) from P.O. Box 516, 63166.

'Roscoe' Operates Under VS1

PRINCETON, N.J. – Applied Data Research, Inc. has announced that Roscoe, a conversational remote programming system, is operational on 370/145s under OS/VS1 Release 1. Roscoe, which runs as a standard problem program in a virtual partition of 128K, is monitored by the VS1 paging supervisor.

Roscoe is available for $18,000 under a permanent license agreement, or for $1,000/mo. ADR is at the Route 206 Center, 08540.

Study Shows Pros, Cons

How Useful Is Modular Programming?

By Don Leavitt
Of the CW Staff

LONDON – Almost half of all "third-generation" installations are using some form of modular programming, and easier maintenance and amendment, better program design and easier program testing are the major benefits, according to more than 75% of those users.

A study recently completed by John Hoskyns and Co. Ltd., a London-based research organization, confirmed the continuing argument over a detailed definition of what constitutes modular programming, but not over the benefits that can be gained – or the possible costs.

For purposes of the study, which Hoskyns conducted last year in both the U.S. and the UK for the British Civil Service Department, modular programming was defined simply as the organizing of a complete program into a number of small units, where there is a set of rules which controls the characteristics of those units.

There are in fact two methods of constructing modular programs, the report found. They may be either independently compiled subroutines or sectional subroutines, which can be entered only by an instruction (generally a PERFORM or a CALL) contained in the same compilation unit.

Using independently compiled subroutines "can provide considerably more flexibility" in program design and support, Hoskyns noted, but these gains were not without cost. The independent modules can significantly increase the core required for the program, and can extend the execution time, the study showed.

Source Lines Increased

This approach will also increase the number of source lines that have to be written and therefore add to the data preparation resources needed to get the operation up and running, Hoskyns added.

The report noted, however, that with either approach, users usually found modular programming provided better project control, higher programmer productivity and more reliable programs.

Because the units being developed are smaller, programmers are more likely to meet target dates, and managers appear to agree they have an easier time with resource allocation.

Grumbling in the Ranks?

If the technique is not introduced correctly, however, Hoskyns warned, it can cause widespread dissatisfaction among programmers. The number of comments on this problem exceeded the number of comments on any other subject, the report noted.

Programmers who had previously written monolithic programs complained more coding was required, particularly for linkage data definitions in independently compiled modules, and more test data was needed, even if a test data generator was used.

They tended to dislike the increased amount of documentation required, although this was often an indirect offshoot of modular programming, caused by the simultaneous imposition of programming standards. The lessened opportunity to indulge in the use of "clever" coding techniques was also decried by a number of programmers.

But these problems for programmers are often seen as advantages by managers. In fact, where the technique was introduced carefully, job satisfaction often rose as users avoided crises caused by compounded software errors, and frustrations of waiting for enough computer time to compile and test monolithic programs.

There is evidence to suggest that well-run modular installations are more productive than non-modular installations, the report concluded.

Copies of the 160-page report will be available shortly from Hoskyns Systems Research, Inc., 600 Third Ave., New York, N.Y. 10016.

'Tirs' Reviews Text, Context; Builds Own Retrieval Index

LONDON, Ontario – Users who need to maintain large-scale narrative data bases and to retrieve material from those bases can perform those functions without having to manually encode an accession index, by utilizing the Textual Information Retrieval System (Tirs) from Peter T. Mitches & Associates Ltd.

Tirs and other textual systems are designed to overcome the basic problem of most record-based file systems.

Tirs – and the others – allow the storage of free-form narrative text, and the recapture, on demand, of information from the text.

Until the development of Tirs, however, users have generally had to build their own concordance file as they added to the narrative storage. This, as various antitrust litigants are now discovering, can be a mammoth operation.

Build-In Concordance

Tirs, on the other hand, builds its own concordance as new material is added to its data base, and the user doesn't have to do anything before he uses the data.

The system is said to provide unique identification in human language of each character of text in the data base. Tirs also stores indications of the context of words and phrases from the text.

As currently implemented, Tirs maintains the integrity of the user's original language, including the selective use of capitals and lower case letters, punctuation, paragraph and sentence length.

There is, likewise, no limitation on the type of hardware that can be used to support a Tirs operation.

The complete Tirs software, including on-line support, can be stored in a problem partition of some 76K bytes on an IBM 360; the basic package, including concordance maintenance and batch retrieval, can fit in less than 50K bytes, the company said.

The complete system is available now for $4,000/mo on a five-year lease plan. The basic, batch-only system can be acquired for about half that price, for the same five year period.

Mitches is at 376 Richmond St., N6A 3C7.

Payroll Geared to Health Care

ARLINGTON, Va. – A payroll/personnel system that can be adapted to meet the differing requirements of several hospitals, clinics and other organizations involved in health care is now available for 360/370-based service bureaus, from OLI, a subsidiary of Datatel, Inc.

The OLI package includes support for special overtime and average differential pay rates, for tax-sheltered annuities and for calculation of on-call hours.

A full range of more conventional payroll/personnel capabilities is also included – such as vacation and sick leave accruals as well as generation of paychecks, check registers and the various government reporting forms.

The personnel aspects of the system include fields in each employee record for data on education, years of service, anniversary dates and types of insurance coverage. The system produces "reminder lists" for each client, noting which employees should be scheduled for review during the following month.

Written in Cobol and distributed in source code, the system can be installed on an IBM 360 or 370 in as little as 18K bytes exclusive of the supervisor.

The package costs $5,000 and is shipped from 400 Army Navy Drive, 22202.

For MMS General Ledger Users 1973 Will Be A Happy Year.

Since January, 10 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the $800 million class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

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COMMUNICATIONS

Data Briefs

Com/Tech System Offers Series of Data Scramblers

NEW YORK – Com/Tech Systems, Inc. has introduced the Secre/Data Series 102 Data Scramblers providing security for data users. Included is a synchronous scrambler requiring no external timing. The 15 models in the series contain automatic cipher synchronization for on-line or off-line operation. Prices range from $1,100 to $1,800.

There are over 200 million code settings for scrambling the data. One million codes are selectable by thumbwheel switches and the rest are internal settings.

The synchronous models can operate up to 1M bit/sec with external timing and up to 9,600 bit/sec if no external timing is available. The asynchronous models can operate with standard code formats and speeds, the company said.

Half-duplex, full-duplex and simplex versions are available with EIA or TTY interfaces.

The S102H is a synchronous, half-duplex unit with automatic cipher synchronization and can be used with a Mohawk Data Systems 6403 magnetic tape key station (or equivalent) and a 202C data set. This unit is available at $1,350 with a 30-day delivery. Com/Tech Systems is at 15 Williams St., 10005.

Uniscope Gets Cassette Unit

SALT LAKE CITY, Utah – Univac has added the 610 tape cassette system to its Uniscope 100 display terminal.

The system can provide up to 1.4M characters for local forms creation in data entry applications. The dual-cassette system includes local forward and back paging of cassette data. An address or content identifier allows the operator to perform on-line searches for specific information.

The system can transfer data with the Uniscope at 4,800 bit/sec and handles Ascii code. The 610 costs $70/mo to $85/mo under Univac's one-year rental contract. Purchase starts at $1,800.

Datran Granted More Permits

DALLAS – Data Transmission Corp. (Datran) has been granted additional construction permits for its data network by the Federal Communications Commission.

The permits encompass 34 microwave radio station sites between Dallas and St. Louis. In April 1971, the FCC granted permits for construction between Palo Alto, Calif., and Houston. A portion of the initial permits covers the segment of Datran's network from Houston to Dallas.

The addition of the 34 new construction permits brings the total to 97 – or nearly half of the 214 sites the company plans to construct between San Francisco and Boston.

Multiplexer as Front End

NCR Terminals Interfaced to 360/30

By Ronald A. Frank
Of the CW Staff

CLIFTON, N.J. – When a network of terminals from one supplier has to be interfaced with a mainframe from another company, problems can occur. But these problems can be avoided when the terminal supplier provides the proper interface unit.

Financial Computer Corp. was serving a network of banks in northern New Jersey with IBM 2980 terminals transmitting data to Financial's IBM 360 Model 30. Financial was providing complete DP capability on-line to the banking customers.

But many of the banks decided to switch to NCR 270 teller terminals which left Financial with a potentially noncompatible device to its IBM mainframe. The solution came from NCR with its 754 multiplexer, according to Nick Libassi, vice-president of programming at Financial.

"The 754 is actually a front-end processor," Libassi explained. "It controls the polling of all the terminals." Financial now has 26 NCR 370 terminals on the network and another 25 are scheduled to be added soon.

In addition to handling the polling operation, the 754 performs vital code conversions that enable the NCR terminals to talk to the IBM CPU. The 754 receives asynchronous Ascii data and converts it into bisynchronous Ebcdic format for entry into the 370/135 which Financial is now using.

Adapting the Adapter

The move to the 135 occurred about the same time as the switch to the NCR terminals, Libassi said. The 135 installation was accomplished with few problems except in the integrated communications adapter.

"Because not too many people had used the integrated adapter, IBM didn't really know what had to be defined in the control unit program," Libassi said. This has since been resolved "and as long as you specify the correct unit out there, it will work," he said.

Financial is planning to expand its net further with the addition of a 370/145 and 2780 terminals. The IBM 2780s will be added for mortgage applications because these types of institutions want to handle much of their own transactions, Libassi said. That is why they need the printer and card reader capability included with the 2780.

The mix of NCR and IBM terminals should pose few problems, Libassi said. Together with the new terminals and mainframe, the company will add CICS along with one of the VS operating systems.

Asked why the banks moved to the NCR 270, Libassi said it was "a better banking terminal than anything IBM had to offer. The 754 multiplexer was purchased for $30,000 and it allows Financial's network to achieve a "three to four second response time."

As the system expands, "we will be able to multidrop 754s on our 4,800 bit/sec lines," Libassi said. Data is transmitted to the IBM CPU through ICC 4,800 bit/sec modems.

Right now Libassi is using Btam for network queuing and scheduling. But when the 145 is installed he intends to move to Vtam and possibly also the IBM Network Control Program NCP/VS. An IBM 3705 has been considered but no decision has been made yet, he said.

Among the applications handled by Financial for its customer banks are savings transactions, certificates of deposit, mortgages, passbook loans, Christmas clubs, and check cashing, Libassi said.

Now Is Time for User to Learn How to Pick Interconnection Unit

By Tom Richfield
Special to Computerworld

If all predictions are correct, the interconnection of non-carrier equipment will continue to grow rapidly in the next decade. With the proliferation of new products being offered by various vendors leaping into the market, a valid method of product selection and system design will be required by communications users – not to mention the problem of determining how interconnected equipment will be supported.

With all this innovative hardware, a user must become more aware of his technical foresight, his understanding and finally his education on interconnection products. Preparation for this could mean special training in telecommunications technology.

More Confusion

Some vendors also add to the confusion of users by permitting sales people to begin marketing a sophisticated interconnected system with unsophisticated sales training. This only results in more confusion for more users.

It would seem that the most successful companies entering the interconnect market will have well-trained salesmen. They will also provide service from reasonable distances to the installation site.

Viewpoint: The Right Connection

The user must "brush up" on his knowledge of interconnection hardware, systems analysis, connection and installation before he attempts to make a logical purchase decision.

By choosing the interconnection route he may save money, but he probably will not have the luxury of "on-site" customer service technicians. This will be because of the competitive nature of the interconnection market.

A list of his system requirements, based on an in-house survey might be in order, serving as input to outside consultants.

Their job is to make evaluation and recommendations, but their inside knowledge of his operation will only be as good as he might convey to them.

User Decides

In the final analysis, the user will decide what interconnection system he chooses, if any. The alternatives will be vast, the prices widespread and knowledge of his system requirements will be essential.

If the user has not yet begun his search to understand the various types of interconnection equipment available, now may be the time to learn.

Tom Richfield is executive director of Communications Systems Management Association, 1102 West St., Suite 1003, Wilmington, Del. 19801.

Interim Satellite System Coming?

NEW YORK – RCA Global Communications Inc. and RCA Alaska Communications, Inc., a subsidiary, have filed an application with the Federal Communications Commission for authority to build and operate an interim domestic communications satellite system which could begin providing service as early as Aug. 1, 1973.

The $7.4 million system would utilize the Telesat Canada satellite in conjunction with five earth stations to carry message traffic between the East and West Coasts and between both coasts and Alaska.

"The interim system is designed to provide early satellite communications service in the U.S. until the RCA domestic satellite system, which was proposed in 1971, is approved and begins operation," an RCA spokesman said.

The earth stations to be used in the interim system would be incorporated into the domestic system and traffic would be shifted over at no material cost, RCA told the FCC.

IT TAKES A SMART DP MANAGER TO PICK AN INTELLIGENT TERMINAL.

And the reason is surprisingly simple.

Once you lease a communications terminal for a specific job, you'll be asked to use it for other applications, as well.

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Like sophisticated binary synchronous communications procedures to catch transmission errors and retransmit data automatically.

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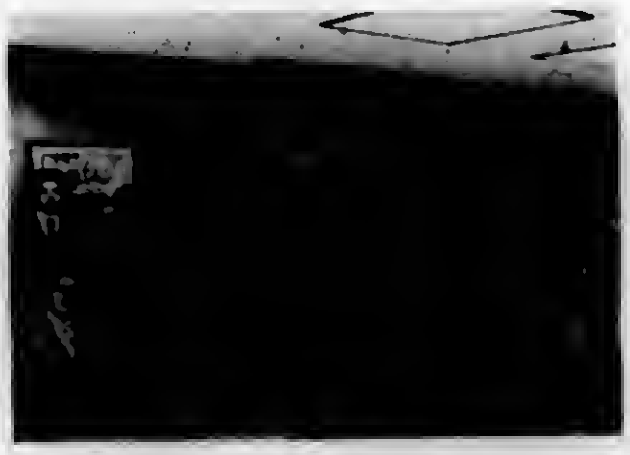
"Shukan Computer" means "Computer Weekly" in English. In Japan, it means a whole new way to communicate with the world's most rapidly growing computer market.

As a joint venture of Computerworld, Inc., and Dempa Publications, Inc., *Shukan Computer* will provide the only newsweekly for the Japanese computer community. Like its sister, *Computerworld, Shukan Computer* will cover the latest developments in all aspects of the computer industry; including hardware, software, services, application techniques and industry trends.

Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld's* editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.



The Staff of Dempa Computerworld Inc.

Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities: Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.

Don't you always celebrate a birth with a cigar?

Shukan Computer hopes for best of both.

As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempa Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"

COMPUTERWORLD

To: Neal Wilder
Vice President
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Bits & Pieces

GA SPC-16 Minicomputer Can Use IBM 1403 Printer

SANTA MONICA, Calif. – Users of the General Automation SPC-16 computer can attach IBM 1403 printers through the Spur 1403 controller from Spur Products, Inc.

An off-line mode incorporated in the interface allows the user to print a typical spooling tape with little computer intervention, leaving the computer free to operate on other tasks, a spokesman said.

The Spur controller, with the SPC-16 interface, sells for $11,760 from 2928 Santa Monica Blvd., 90404.

Telefile Disk for Interdata Users

IRVINE, Calif. – Telefile Computer Products, Inc. has a complete disk system for Interdate computer models 3, 4, 5, 50, 70, 74 and 80, and GE PAC Model 3010/2.

The system consists of Telefile's Model DC-16-1 Disk Controller and up to eight Telefile Model DD-215 dual density disk drives produced by Century Data Systems. The system will provide dual-density storage of up to 116M 8-bit byte/disk.

The DC-16-1 Controller costs $8,200; the disk drives are $22,000 each. Telefile is at 17795 Sky Park Circle, 92664.

Tape System Fits Most Minis

PLAINVIEW, N.Y. – A plug-compatible 74 in./sec tape system for most minicomputers is available from Infotec.

Tape systems are also available at lower speeds, in either rack or console cabinets, and include tape controller, interconnecting cables and all software, a spokesman said.

Prices for single-drive systems for most minis start at $8,500. The IBM 1130-compatible system starts at $11,000 for a single tape drive, $15,000 for dual drives.

Lease and lease/purchase plans are also available from 70 Newtown St., 11803.

Unifile Integrates Hospital Data

KING OF PRUSSIA, Pa. – Unifile, from Shared Medical Systems Corp., is an information handling system designed for hospitals and medical centers.

Unifile is based on a single, fully automated and integrated data file. The system features a variety of input and output devices, a microfilm storage system, and a retroactive updating feature that keeps patient information current, the firm said.

Read All About It

PHILADELPHIA – Users interested in the practical aspects of information system design are offered a publication from Auerbach Publications, Inc. – "Information Retrieval" by Basil Doudnikoff – for $19.95 from 121 N. Broad St., 19107.

Users Disagree

Have 155s, 165s Been Outdated by VS?

By Michael Weinstein
and Toni Wiseman
Of the CW Staff

A majority of users who purchased IBM 370/155s or 370/165s before the announcement of the 370/158 and 370/168 appears to feel that IBM's proclamation of virtual memory as the trend of the future will have no detrimental effect on their operations, according to a *Computerworld* survey of 15 users.

Most users were satisfied with their older machines, unimpressed with virtual memory and undisturbed by the fact that the 155s and 165s use core memory while the 158s and 168s use semiconductor memory.

Users surveyed were asked:

- Whether they had any bad feelings toward IBM for selling them a batch-oriented machine when in all probability the corporation knew the virtual 158s and 168s were just around the corner?
- If they had known the 158s and 168s were coming, would they have bought a 155 or 165?
- Did they intend to spend the estimated $200,000 to $400,000 to add a Dynamic Address Translation (DAT) box to their existing computers to give them virtual memory capabilities?
- Did they feel that changing memory technology between machines would reduce the future resale value of their computers?

About two-thirds of the users surveyed were content. These users stated they had bought the system to solve particular problems in their particular situations.

Typical of these users was G. Evinger, DP director for United California Bank, who noted, "It's a nice toy for programmers [virtual memory], but we don't need it. The 155 is handling our needs and as we're doing a lot of compute-bound jobs on a larger system [with more real memory] virtual memory would not help us one iota.

"Men on our staff who had been associated with some of the software companies around the country wrote some papers and documented the fact that they thought it was an interim machine [the 155], so we went into the purchase knowing what we were doing," he continued.

And L.L. Hodge of Government Employees Insurance Co. echoed Evinger's feeling that virtual memory was not for everyone, claiming "many people won't go to virtual techniques and will be more interested in the 155 and 165."

There appeared to be no middle ground of user reaction: either users were content or they were definitely angered by IBM's apparent marketing strategy.

One disconcerted user, Dr. Stuart Schlesinger of Aerospace Corp., felt IBM was culpable in selling a machine that many users would not have bought had they known of the impending release of the 158 and 168.

"When we learned of the new release and the intention to make virtual memory standard," Schlesinger stated, "we went to IBM and they responded with long faces and no help."

When asked why the 155 would not be resalable, he explained that the change to MOS memory technology would make his core-oriented machine less desirable in the future.

"Now we're considering going to non-IBM sources for components to upgrade to virtual capabilities, and initially it looks like we may end up with a machine which is cost-effective when compared to the 158."

English 155, 165 Users Alarmed by Effect of VS

While most U.S. purchasers of the 370/155 and 370/165 seem undisturbed by the later release of the 158 and 168 virtual memory computers, their English counterparts are less passive.

Users of 370/155s who were peeved at the timing of the 158 announcement worked through their IBM Computer Users' Association to get IBM to respond to various charges.

Allegations ranged from the feeling that the release of the 158 would make current machines obsolete in five years to demands for an answer to why users must pay at least $200,000 to add the required DAT box if they want virtual capabilities.

IBM stated it reviewed each case separately and demonstrated – to the users' satisfaction – that the addition of the DAT box would still result in a cost-effective machine.

The rationale used by IBM is that a 512K 370/155 purchased at $2,364,000, plus maintenance and $237,600 for the DAT box and subtracting corporate tax, results in a net cost over five years of $1,680,000.

IBM compares this with a company that starts from scratch and wants to install a 370/158. First it has to install a 512K 145 pending availability of a 512K 158. Thus, net cost over the same five years would be $1,754,400, some $74,400 more expensive.

Of interest is that Schlesinger was one of only two users surveyed who showed any intention of spending the additional money – about $200,000 from IBM – for a DAT box.

Another user who was upset, but asked that he not be identified, said no indication was given to him of a future CPU release when his firm purchased a 155.

When he confronted his salesman, the IBMer said he had no knowledge of the 158 when the had sold the 155.

"While my salesman may not have known, the big guys knew and they should have told us before we paid for a machine that will be antiquated in five years," the user said.

Another user who faulted IBM, Amos Smith of Southern Natural Gas, was more philosophic and stated, "I don't like it, but I have to live with it."

One user was upset at the timing of the releases but felt the government was at fault. "In view of the way the Justice Department has imposed its will on IBM with the Consent Decree of 1956, they couldn't have done anything else but what they did do. If we've been hurt, it's the result of the consent decree," stated V.A. Courtney of Kemper Insurance.

Microdata Unveils Mini Series

IRVINE, Calif. – Microdata has announced a new series of microprogrammable minicomputers which use an asynchronous data bus (Monobus) to channel all communications between processor, main memory and I/O modules.

The basic mini in the series is the Model 3200 which is a 32-bit microprogrammable processor with a 16-bit data path.

The Model 3230 is a microprogrammed 3200 designed to be compatible with existing Microdata 800s and 1600s.

The third model in the series – the 32/S – is designed especially to make use of Microdata Programming Language (MPL), a derivative of PL/I.

Since MPL is a block-structured language, stack processing is fundamental to the 32/S and is being used for the first time in a minicomputer, a spokesman said.

The 32/S performs arithmetic and logic operations in the stack with fewer accesses to main memory, he added.

From the basic 3200 system, other models can be configured and expanded by adding modules to the Monobus, the firm said.

Control memory for the 3200 can be made up of read-only, programmable read-only and read/write storage modules.

The 3230 architecture employs a repertoire of 110 instructions.

The 3200 includes 32 general-purpose registers and three working registers plus the data, address, instruction and program pointer registers.

All three models will be available this summer with prices ranging from $8,000 to about $10,000 depending on the amount of control memory.

Microdata is at 17481 Red Hill Ave., 92705.

We're making history with this new member of the Data Products family. It's the *first* high-performance printer for small computer systems and terminals at a within-reason price. That's our new Model 2230 line printer, the first of a whole new family. It's a real breakthrough with

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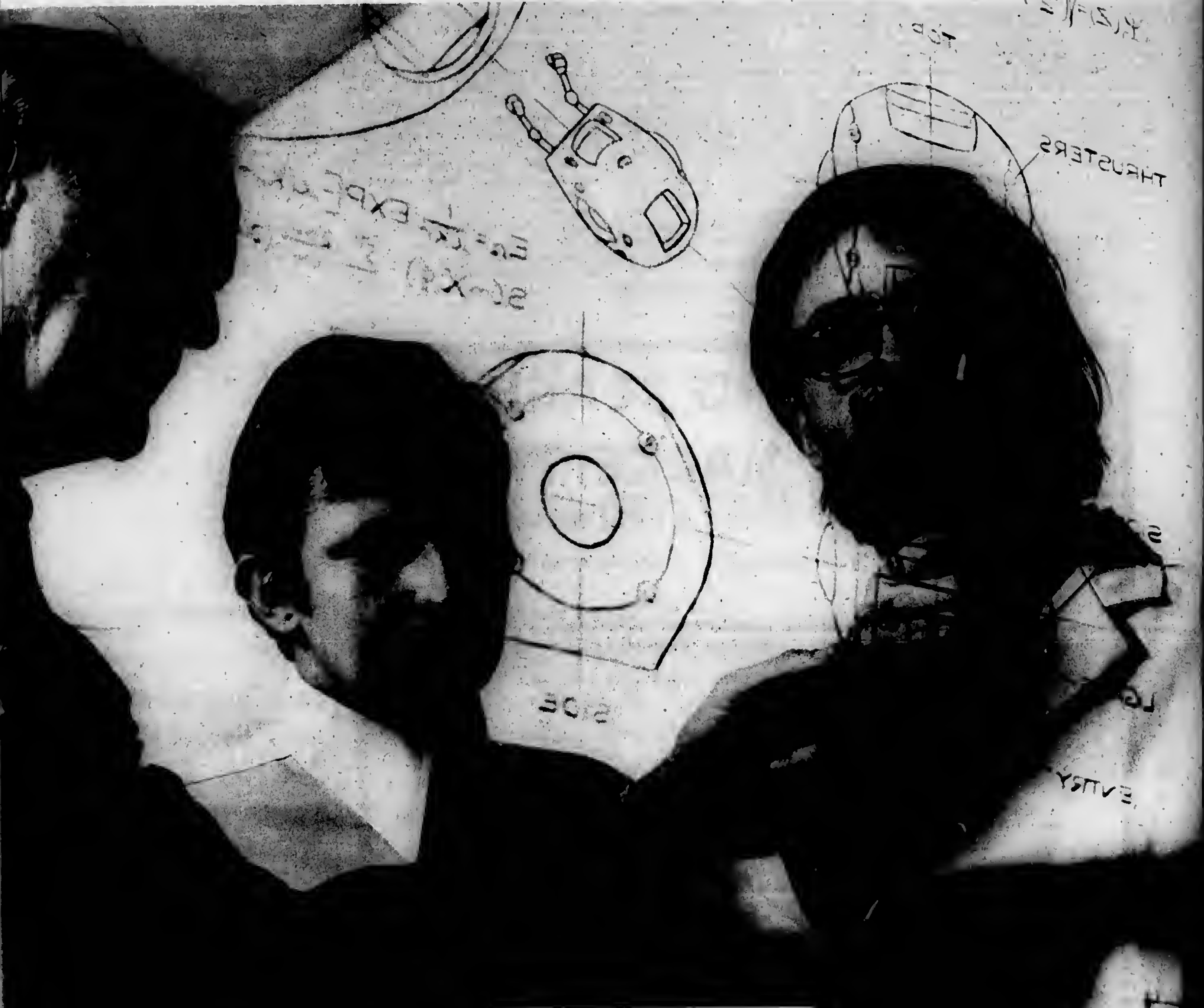

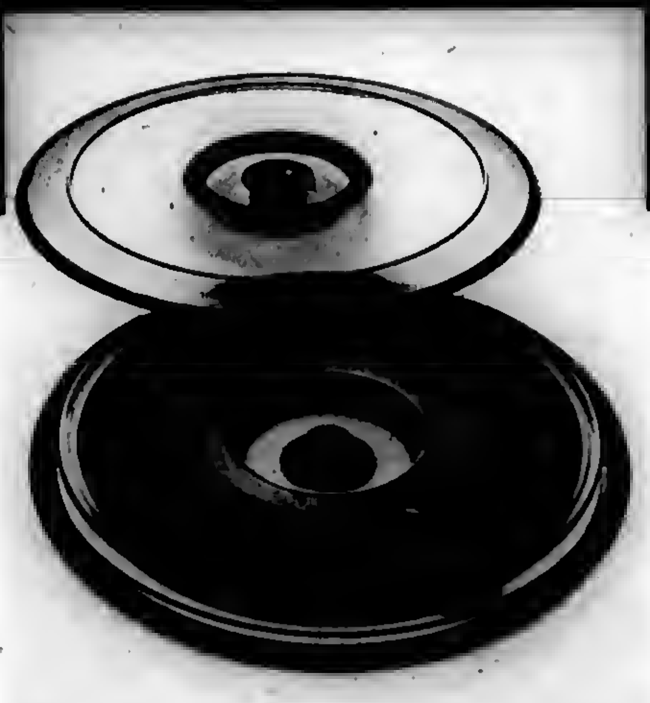

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U.S. Agency Finds 6400 Reliable, CDC Responsive

By George A. Dubinskl
and F. James Hughes
Special to Computerworld

PORTLAND, Ore. – Our five-year old CDC 6400 is an interesting machine – very flexible, with an acceptable reliability record. We expect to use it for another five or more years. CDC is a responsive company with a friendly staff, but at times appears to lack the resources to go as far as we would like; i.e., it does not have a great enough variety in hardware and software. But if we had to do it all over, we would again select the CDC 6400.

The Bonneville Power Administration is a Federal Government Agency within the Department of Interior whose task is to market the electric power generated by dams of the Federal Columbia River System. Bonneville has about 3,500 employees with headquarters in Portland, Ore.

A CDC 6400 was installed at Bonneville in July 1968. It had 65K of 60-bit words of central core memory, two card readers, two printers, 10 tape drives, a 130 M-char. fast-fixed disk and several time-sharing CRT terminals.

Bonneville purchased most of the equipment because of the cost savings over the life of the installation. Since that time it has doubled the main memory, added 250K words of secondary core memory and doubled the disk storage.

Also, the T/S network has expanded to 30 terminals, mostly CRTs operating at 2,000 baud. The 6400 is used five days a week, three shifts per day, for batch jobs, remote job entry and interactive T/S. About 65% of the work is with Fortran and 35% with Cobol.

The overall design of the system consists of a fast central processor and 10 small peripheral processors, a total of 11 computers run as a true multiprogramming system with dynamic memory allocation.

Some Reservations

The mainframe, core memories and disks are solid. The lack of a parity check in memory can leave the user in the cold because sneaky errors may show up only as incorrect answers on job output.

Our customer engineering service has been excellent although the complex nature of the machine has led to some tricky problems that have taken a long time to cure. In summary, the hardware ranges from satisfactory to excellent.

Each of the two types of processors has its own language and each of the 11 processors functions as a completely independent computer, tied together by an executive program (monitor).

Only the peripheral processors have operations that can access the input/output units – tapes, disks, etc. Thus the central processor is free for computation.

This complex of computers working together makes the 6400 an excellent computer; but sometimes cooperation is lacking.

In a system like this with many computers operating simultaneously on the same job, timing becomes a very critical item. And when timing breakdowns do occur, it is usually because of a conflict over the use of system resources.

One of the things the software and operations people particularly like is the two large CRTs which, with the console keyboard, form the operator's interface with the computer.

True Multiprogramming

One of the outstanding features of the 6400 is that when it was delivered in 1968, it had the ability to run those seven jobs or partitions simultaneously in a true, dynamic, multiprogramming mode. (The current operating system supports 15 "partitions.")

A drawback of 60-bit words is that character manipulation (10 six-bit characters per word) is done by shifting and masking (no character hardware commands) so Cobol and other DP-type jobs run slower than they would in a character-oriented machine of similar power.

This unfortunate hardware oversight was remedied about two years ago by the announcement of a "business" box for CDC Cyber machines. No retrofit is possible for our older machine.

No compiler was operational when we bought the machine. The last five years has seen monumental effort by CDC to catch up with the rest of the industry and with fair success. One of the advantages of coming along later, however, is that it gives one a chance to profit from other user pioneering efforts. For example, CDC's indexed sequential system beats Isam hands down.

Another advantage of working with CDC is its smallness. Can you imagine the feeling of people who in the past have attended those tribal rituals called IBM user group meetings, when they realize that the actual head of the CDC group developing the Cobol compiler is willing to spend hours with them discussing problems.

Dubinski and Hughes are on the DP staff of the Bonneville Power Administration.

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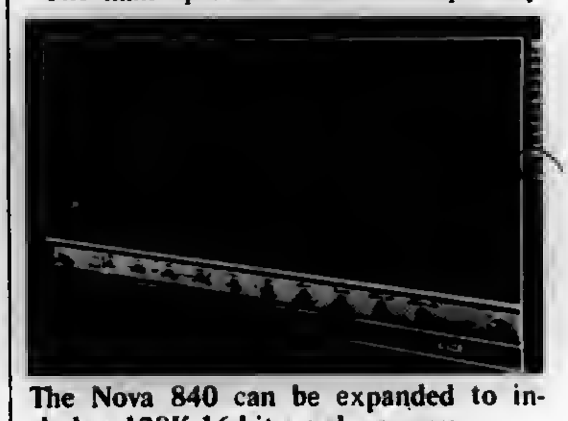
Dual Programming Joins Nova 840 Mini

SOUTHBORO, Mass. – Data General unveiled the Nova 840 for users who want a protected dual-programming capability and/or the ability to expand memory to 128K 16-bit words.

Dual programming capability allows one user to share the computer's capabilities with a second user, or applications needing a foreground/background capability, where the foreground job has priority over the background job.

The mini operates in the dual capability under control of the Real Time Disk Operating System (RDOS) which will support the 840 mainframe with up to 72K words of memory.



The Nova 840 can be expanded to include a 128K 16-bit word memory.

Expansion of Main Memory

The Nova 840 holds up to 64K 16-bit words of core memory in the main chassis, and permits the user to expand with add-on memory up to 128K words.

The 840 is compatible with other Data General computers in the 800 Series.

Cost for the 840 with 16K words of core memory and the hardware memory management system is $16,530.

For use with RDOS, users must add the cost of the necessary disk subsystem. There is no cost for the RDOS software.

Production Up, Keystrokes Down

Page Reader/Mini Star at Newspaper

WILMINGTON, N.C. – During 1972 the *Wilmington Star-News*, a daily newspaper with a circulation of 36,000, increased its total production by an average of 114 pages per month over the previous year. Yet this growth did not require any additions to the *Star* production staff.

Instead, production manager George Hutchinson purchased an optical page reader system supervised by a minicomputer.

According to Hutchinson, the system can not only handle the current production rate, but can also accommodate anticipated future growth. "We would have had to hire at least four more teletypewriter operators to handle just last year's growth," he said. "With this system we've cut keystrokes on locally generated copy by 50%."

Now news reporters and classified ad takers type original copy on conventional IBM Selectric II typewriters equipped with a standard printing and publishing font. An optical scanner converts this typewritten text to clean computer tape at the rate of over 5,100 char./min.

The six-level tape is then run into an IBM 1130 which controls the newspaper's Photon and Compugraphic phototypesetting machines.

The optical page reader system takes a standard typewritten text and converts it to computer input tape at the rate of 5,100 char./min.

A Data General Nova 1200 minicomputer which supervises the system is equipped with 8,000 words of core memory and the necessary software to allow a typist or editor to make copy changes quickly and easily. It provides five different editing and correction modes, both on-line and offline.

The Small Systems User

In addition to the minicomputer, the Compuscan page reader system consists of a desk-sized scanner console and a set of peripheral devices. The optical scanner uses a solid-state electronic read head for recognition. No precision focusing is required. The scanner features an optical display and retractable keyboard for on-line editing, plus a small CRT display.

Available peripherals include a high-speed paper tape punch, a paper tape reader, magnetic tape and a telephone modem.

Thinking DP? Don't Neglect Forms Design

BURLINGTON, Iowa – Small companies contemplating "joining the computer generation" with their first computer are advised by Gary McKune to "make sure the paperwork joins, too."

A recent conversion of an almost totally manual billing procedure to one incorporating a small computer was predicated on a desire for increased speed and efficiency, McKune, DP manager of Winegard Co., related.

The objective was to replace an awkward, 11-part form processed manually on an accounting machine, with three conveniently handled computer forms.

But the key to the success of the new machine was not only the addition of computer techniques but careful consideration of new forms design, he added.

Through consultation with design personnel from The Standard Register Co., McKune was able to make the transition smoothly and realize an overall savings of $1,000/yr.

McKune adhered to the System/3 recommendation of a maximum of four copies per form and has implemented procedures with a two-part packing list, a four-part invoice and a two-part statement.

Restressing the importance of the forms design, McKune stated, "It is a matter of matching the hardware with sophisticated forms design and paperwork procedures.

"For example, an analysis of our old form indicated we could reduce the number of invoice copies to two. Also, because less than 20% of our shipments required bills of lading, we eliminated these copies entirely – creating a separate manual operation."

On the left side of the form, McKune lists the invoice dates, references and codes along with the current invoice amounts.

Three columns are given to aged balances – 30 to 60 days, 61 to 90 days and over 90 days. To focus attention on these, they are printed in deepening tones of a second color, red. A total is shown at the bottom.

A payment stub is on the right side of the form and can be removed easily.

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And because System IV/40 is intelligent, it doesn't need to be on-line to solve the kinds of problems typically found throughout business. Things like helping a branch clerk enter orders in displayed replicas of your standard forms. Checking input data for errors while computing price/quantity totals, discounts, and taxes. Printing picking lists for warehouse stock. Retrieving and updating order files to show quantities actually packed. And generating invoices for inclusion with shipments.

But System IV/40 can go on-line too. Whenever you or the central computer decide to transmit records back home. Or to receive reports from headquarters. During data entry in the day. Or when line costs are low at night. Even when no one's there.

Need even quicker turnaround? System IV/40 also simulates remote IBM 3270's and 2260's for real-time data base access. But with several intelligent extensions. Like single-key message generation for push-button report retrieval. Local format storage to keep line loads down and response time up. And a store-and-forward capability for nonstop data entry during periods of line failure or central site down time.

Fully supported software is part of the Four-Phase package. Including DATA IV/70 for conversational source data entry. On-line terminal simulators field proven in three million hours of operator use. Plus terminal-oriented COBOL for easy development of both batch and multiterminal applications.

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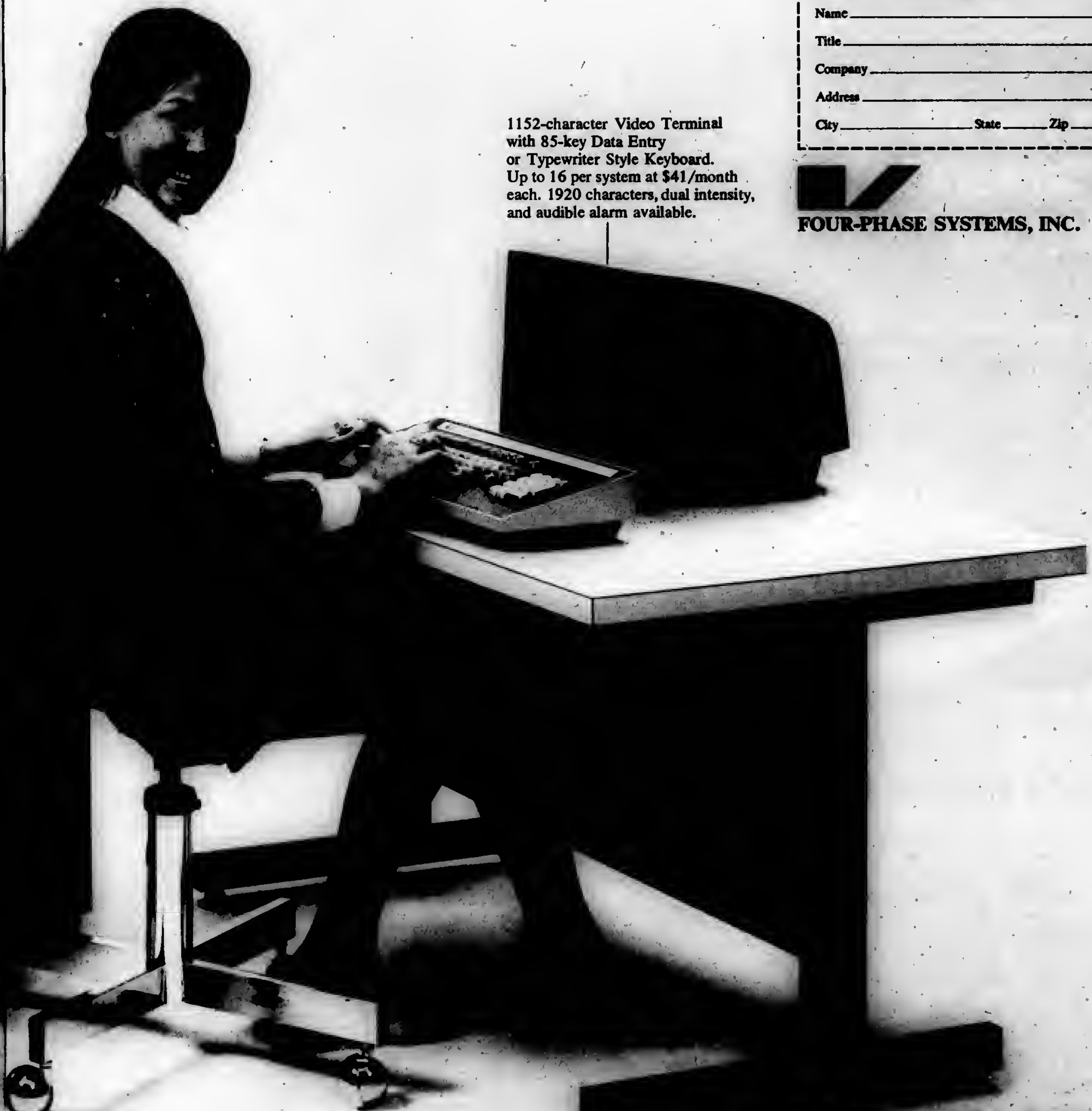

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Managers Brace for Future DP Shock

BOCA RATON, Fla. – "Future shock" may have only just begun to set in in the U.S. with respect to the world of the computer, according to discussions held here by some DP executives, members of the advisory council on management systems and sciences to the American Management Association.

Changes in the management systems field are coming "computer-fast," and the need is urgent for competent, qualified personnel, particularly at the management level, according to the council.

The management of systems, it was pointed out, has been perhaps the weakest link in data processing operations to date, with far greater emphasis having been placed on technology, hardware and technique than on people, especially the user.

Tomorrow's need, the executives pointed out, is not so much for information or intelligence, but what to do with it. The role of "data manager" in future systems, they said, is crucial as those systems increasingly incorporate the use of highly sophisticated minicomputers in complicated hookups for distributive information systems.

Tomorrow's world of distributed intelligence, they claimed, will find information turned on like electricity. Minicomputers will cost less than today's electric typewriter – and will be just as much a convenience item.

Long-range planning and the recruitment of first-rate personnel, however, are essential to map these new systems.

American management, the council said, will have to "think things through" and relate the capabilities of these new systems to the problems that will be at hand – "an area in which we have been remarkably remiss in large measure."

The council also discussed the growing need for legislation protecting the rights and privacy of the individual as the information explosion continues and widens.

One 'Lunar' Step May Be a Leap For Input of 'Natural' Language

By Ken Shonk

Of the CW Staff

CAMBRIDGE, Mass. – Geologists at the second annual Lunar Sciences Conference in Houston recently made the most of the opportunity to talk directly to a computer in English and access all the chemical analysis measurements on the Apollo moon samples.

"They became so interested in asking questions that they forgot they were using ordinary English to query the computer," said William Wood, a senior scientist at Bolt, Beranek and Newman here and one of the developers of the Lunar Sciences Natural Language Information System (Lunar).

The Lunar program's success brought the development group to work on a program for continuous speech understanding for the Advanced Research Projects Agency (Arpa) network, using Lunar's semantical and syntactical (meaning and structural grammar) system as the base for their approach. The BBN group, said Wood, is shooting for speech input into a computer for a large variety of subject areas.

"English (or any spoken language) is a natural for use with computers," he emphasized.

He said the need exists because of Arpa and similar systems. "Someone can get on a computer 3,000 miles away and have no technical assistance available for the system the particular computer uses."

Although the Nasa-sponsored prototype development is probably not a system geologists will use, the Lunar project was aimed at real people. It allowed geologists to access 13,000 measurements with questions such as, "what is the average concentration of aluminum in high alkali rocks?" or "what are the potassium-rubidium ratios for breccias?"

'Breadboard Structure'

"Since we had no restrictions on memory or efficiency," Wood explained, "the entire program has a breadboard structure, built up gradually by accumulation. The average question takes 10 or 15 seconds of central computer time to pass through the program which is written in BBN Lisp for a PDP-10 running on Tenex time-sharing. We could cut the time by a factor of 10 or 100 if we reprogrammed in machine language."

The system's data base was constructed to correspond to the way geologists were expected to speak, with a vocabulary of about 3,500 root words and complex English grammar.

Bureau Caters Only To Blind DP Users

WATERTOWN, Mass. – A service bureau has been started here to cater solely to blind users.

The basis of the American Systems, Inc. system is the use of audio response as the standard output media.

Users access the central computer from any remote location with a standard-type terminal. The blind user then transmits his inquiries or commands by typing requests from the keyboard.

The audio-response facility responds to the typist by telling him what he has typed – to verify input – or giving him the results of indicated commands or computations.

Other optional outputs available to the blind user are Braille copy or an ink-print copy.

For example, a secretary using the system is provided with a program enabling her to type letters, articles or other office material. She may proofread her work, make corrections and request printed copies on office letterhead stationary.

Testing has shown that blind persons with no computer background can be trained to use the system effectively in a few hours, the developer said.

Hardware consists of two interconnecting digital minicomputers. The first is an audio-response unit which receives information from 16 or more remote terminals and transfers the information into voice for immediate playback to the user. Speech information is stored on a disk subsystem.

The other minicomputer is dedicated to applications and operates with service bureau programs.

The basic applications system is a Data General Nova 800 with 16K of core memory, a high-speed disk with 512K words and a moving-head disk for data storage.

Under present funding, each user pays an initial cost of $450 for his console unit, constructed with either a standard or Braille keyboard.

He then pays an hourly rate of $1.50 for use of the computer.

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Improvements Boost APL Availability

J. Daniel Couger On Education

Until recently, discussions on the elegance of APL were similar to discussions on the benefits of mingling with the jet set; although delightful to contemplate, the experience was just not accessible for all those who would like to benefit by it. Since APL was originally available only through IBM and since, unlike the industrial market, the college and university market is not dominated by IBM, APL was not available to most instructors and students.

Whether an appropriate substitute for "jet-setting," APL is now available for a much wider range of users. Granted, some APL systems provide less than the full capability of the language; nevertheless, the APL experience is available for most persons in the academic and business environments.

Although proponents of Algol and Fortran may scoff at the descriptive term "experience," advocates of APL insist that the language is the nearest form to machine-independent communication, a truly unusual experience.

As proof, some persons are so desirous of utilizing APL that they will even use a non-APL teletypewriter keyboard, resorting to all forms of strange combinations of characters to simulate APL symbols.

Improvements in the Terminals

Belatedly, the Teletype Corp. has announced the availability of APL keyboards. Other terminal producers have followed suit. For the results of a survey of APL-compatible terminals, see the article by H.P. Macon in *Sigplan Notices*, Vol. 6, No. 10, pages 78-86 (a publication of ACM, 1133 Avenue of the Americas, New York, N.Y. 10036).

Likewise, APL interpreters are being developed for a variety of non-IBM computers; in particular, for some configurations produced by Xerox, Burroughs, Digital Scientific and Honeywell.

Finally, many APL time-sharing services have sprung up, providing support to campuses where APL capability is not available through the computer center. In addition, services are now available in Europe and Australia.

Improvements in the Language

The very dedicated and enthusiastic APL user group is constantly developing sophistication in the language and software. For example, APL capability with file system now exists, making the language much more appropriate for business and social science applications.

Language improvements are reported in *Quote-Quad*, a publication of ACM. The publication also provides sections on APL algorithms and APL student problems.

A final illustration of the missionary zeal of APL users is provided by the list of approaches to "selling APL," derived from a Share APL/Project:

- Hold back exposure to a full APL program and do not introduce all the symbols too fast.
- Give a live terminal demonstration – a purposely tailored mini demonstration package proves particularly useful.
- Users want *their* problems solved. A communciation problem exists between the application of real needs and the formulation of the program. Selling APL is getting involved in applications.
- Where a choice has to be made between TSO and APL, stress that the logic of a Cobol program, for example, can be developed in APL on-line and the detailed coding written in batch mode almost bug-free.

Couger is professor of computer and management science at the University of Colorado.

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Afips Sets Up Hotline For NCC Registration

MONTVALE, N.J. – Advance registration for the National Computer Conference and Exposition, June 4-8 in New York City is now possible through a "hotline" number to the conference sponsor, the American Federation of Information Processing Societies (Afips). The number, set up for residents of the Continental U.S., except residents of New Jersey, is 800-631-7070, while New Jersey residents should call the Afips business number, 201-391-9810.

Callers will be sent the conference program and registration and housing forms. The cutoff date for advance registration is May 15.

The fee for the conference is $50 for Afips members and $60 for nonmembers. The fee includes the $40 price for the copy of the proceedings. A one-day pass to both the exhibits and the programs is $20 while a five-day exhibits-only pass is $15. A student pass is $5. Afips is at 210 Summit Ave., Montvale, N.J. 07645.

Societies/ User Groups

Acpa Takes Privacy Stand, Forms Committee

KENSINGTON, Md. – The Association of Computer Programmers and Analysts has established a standing committee on privacy and published a position paper on privacy.

The group intends to serve as a collection and dissemination agency on information concerning the privacy issue.

On the premises that an individual is innocent until proven guilty, and should not be required to prove his innocence, the group recommends the following:

- All data banks must be registered with a central regulatory agency and their existence be made public.
- All citizens must be made aware that they may examine data in dossiers compiled on them.
- Access to all detail-level data must be made economically accessible to each individual.
- All information stored in a data bank must be marked either as "hearsay" or "documented" (i.e., notarized).
- An individual must be able to change or delete all hearsay information about him in any data bank at his own discretion.
- If an individual disagrees with documented information kept about him, the collecting body must prove that this information is valid.

The group further stated: "Any criticism of these requirements, such as 'these points would make it impossible to run a data bank,' should be met with the reply that if you cannot safeguard the civil rights of the individual, then you should not maintain a data bank."

Acpa can be contacted through P.O. Box 95, 20795.

Microfilm Show a 3-Track Affair

SILVER SPRING, Md. – "Compact Efficiency" will be the theme of the 22nd Annual Conference and Exposition of the National Microfilm Association, April 10-13, at Detroit's Cobo Hall.

This year's session areas range from the fundamentals of micrographics to highly sophisticated systems applications. A three-track approach will allow participants to select the sessions best fitting their individual needs.

The Track No. 1 fundamental sessions are designed to provide an overview of microfilm for those interested in obtaining a basic working knowledge of the technology. The seminars in this track will cover retrieval systems, fundamentals of COM and systems design.

A case studies seminar on the third day will look at applications in the fields of engineering, medicine, banking, insurance and proprietary micropublishing.

The intermediate sessions of Track No. 2 will start out with a seminar analyzing information problems. John Rymer, Florida Power and Light, will discuss the role of the system analyst, project planning and the gathering and organization of data for microfilming.

Wednesday's sessions will include an overview of COM, with an analysis of available hardware and software.

Thursday will be devoted to COM systems design, covering cost comparisons, microfilm preparation and system evaluation.

The final day's seminar will deal with COM applications and trends.

Track No. 3 advanced sessions will feature panel discussions. "Micrographics in Perspective" and "Information Technologies – Competing or Compatible?" are the topics for the first day of the conference.

Office systems and Microform/Computer interface are the scheduled subjects of the Thursday and Friday seminars.

Further information on the conference may be obtained from National Microfilm Association, 8728 Colesville Road, 20910.

Asis Paper Contest Gets May 1 Deadline

WASHINGTON, D.C. – May 1 is the deadline in the American Society for Information Science contest for student papers.

The contest is open to Asis members who are student members in 1973, or were so in 1972; papers may be on any topic of interest to information scientists.

The contest winner will receive round-trip travel expenses and full registration for the 1973 Asis annual meeting in Los Angeles, Oct. 21-25.

More information and contest rules are available from Robert McAfee Jr., Asis, 1140 Connecticut Ave., N.W., Suite 804, 20036.

NMA, Uaide May Affiliate

WASHINGTON, D.C. – Terms for affiliation have been agreed upon by the boards of directors of the National Microfilm Association and the Users of Automated Information Display Equipment.

Formal balloting for ratification of the affiliation will be conducted by both groups soon after the NMA annual conference, April 10-13.

"The unification of NMA and Uaide will enable both groups to serve their members better, as well as to promote the technology, growth and development of micrographics and the industry," said Milton Mandel, NMA president.

According to Uaide President Mel H. Rice, the proposed affiliation would make the COM user group "the nucleus of NMA's first division, tentatively named the Computer Image Processing Division."

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Chicago Conference
ACM Looks at Virtual Memory

CHICAGO – The North Central Region of the Association for Computing Machinery will hold a conference on virtual memories and systems May 18 and the morning of May 19 at the La Salle Hotel here.

Designed for EDP managers, systems analysts and applications and systems programmers, the conference will include presentations on techniques for evaluation of virtual memory cost/performance and on systems productivity. Other discussions will cover programming and systems design techniques to enhance performance under virtual memory.

Tony Dundzila, conference general chairman, stated that the conference provides both the technical understanding and the managerial perspective needed to evaluate, select and install virtual memory systems. Virtual memory systems offered by all major computer vendors will be included, organizers said.

Conference costs are $40 for ACM members and $50 for others. Further information can be obtained from Tony Dundzila, data systems and services manager, Purdue University Claumet Campus, Hammond, Ill. 46323.

Hopper Award Nominees Wanted

PROVIDENCE, R.I. – ACM is soliciting nominations for the Grace Murray Hopper Award for the outstanding young computer professional of the year.

The recipient, who must be 30 or younger, will be selected on the basis of a single, recent, major technical or service contribution.

Nominations should be accompanied by a detailed description of the accomplishment, and a biographical sketch of the nominee, including date of birth.

Deadline for the receipt of nominations is April 30.

They should be mailed to Prof. Walter Freiberger, Center for Computer and Information Science, Brown University, 02912.

Paper Industry Talks DP

CHICAGO – The Fifth Annual EDP Conference of the Paper Industry Management Association, here, April 10-11, will focus on practical, implemented, paper industry applications.

This year's presentations will stress the role of the DP user in the development and implementation of DP systems.

Discussions about paper industry systems and procedures will be of interest to all DP users, DP specialists, or managers within the paper industry, according to R.T. Reilly, 1973 conference chairman.

The association is at 2570 Devon Ave., Des Plaines, Ill. 60018.

Board on Social Implications Of Technology Formed by IEEE

NEW YORK – An Ad Hoc Committee on Social Implications of Technology (C-Sit) has been formed by the Executive Committee of the Institute of Electrical and Electronics Engineers (IEEE).

The committee's purpose is to provide a forum for discussion on topics ranging from: professionalism and social responsibility in engineering; understanding the interaction between technology and society; and predicting the impact of technology on society.

The group is publishing a newsletter, which may be obtained from 345 E. 47th St., 10017.

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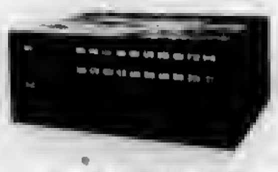

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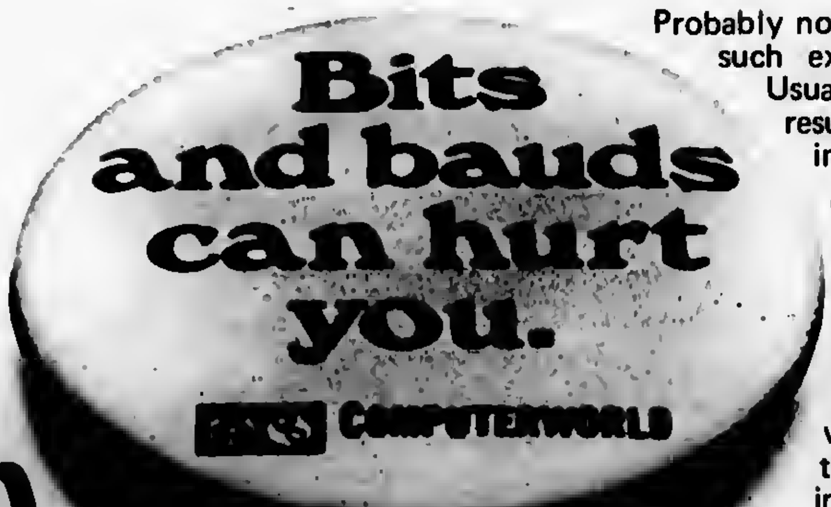
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Computerworld's communications specialist, Ron Frank, takes a close look at this very complicated area in our April 25 supplement. It will include information on how to go about configuring a data communications network that will solve your particular problems. We'll describe some successful communications networks and discuss the utility of various kinds of equipment. When we put it all together, you'll have an excellent overview of this increasingly important EDP tool.

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COMPUTERWORLD
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CI Notes

Nixdorf, Entrex Sign Pact

BURLINGTON, Mass. – Entrex, Inc. has signed an agreement with Nixdorf Computer AG for the annual sale of $4 million worth of equipment.

The agreement, valued at $8 million, gives Nixdorf exclusive marketing rights to the Entrex 480 key-to-disk system in continental Western Europe, Australia and South America. The system will be called the Nixdorf 620, and marketing will begin in German-speaking countries.

The agreement also provides for joint product development and research efforts.

Data Products Printers in Japan

WOODLAND HILLS, Calif. – Data Products Corp. has licensed Tokyo Juki Industrial Co., Ltd. to manufacture line printers for the Japan and Far East markets.

Tokyo Juki will manufacture the 2000 series of medium- to high-speed printers. Data Products will continue to manufacture its Mark IV hammer banks used in the machines. The printers will be marketed by Marubeni Electronics Co.

WU Encourages Competition

UPPER SADDLE RIVER, N.J. – Western Union Telegraph Co. has encouraged other retailers of teleprinter terminal equipment to compete for the market of customer-provided terminals linked to its Telex and TWX networks.

"We believe that retail suppliers have the capability of providing rapid growth to our integrated network, allowing Western Union to concentrate its capital and engineering on expansion and improvements to the exchanges and transmission facilites," explained Delmar Harmon, group vice-president, exchange services.

Supershorts

Ampex has licensed Xerox to use its single-capstan drive patents for tape drives.

– – –

Optical Scanning Corp. has licensed Data Business Forms Ltd. as Canadian representative for its OCR and optical mark reading forms.

– – –

Teijin Advanced Products Corp. a subsidiary of Teijin Ltd., will market Microdata Corp.'s Series 1600 minicomputer in Japan.

– – –

Measurex Corp. has agreed to purchase Versatec, Inc.'s Matrix 200A printer/plotters for incorporation in its process control system.

– – –

Tally Corp. has signed a $600,000 contract for the sale of Tally Series 2000 line printers and Datascribe terminals to Japan Radio Co., Ltd.

IEEE Attendees Told

New Firms Should Avoid IBM Competition

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – There are significant opportunities for new firms in the computer field today as long as they do not compete directly with IBM, panelists at an IEEE/Intercon session here agreed.

The panelists agreed that entry into the computer business was relatively easy and that financing was available for new firms with unique ideas.

However, they warned against direct competition with IBM in any area and outlined future possible problems for the new businesses in the data processing industry.

Ryal Poppa, formerly with Mohawk Data Sciences, who recently formed his own firm to compete in the peripherals area, noted it is "one thing to compete in the DP industry and quite a different one to be successful."

He said the definition of success in the industry was the profit line and continual profit growth.

Those who have been successful and shown profit growth have done so "either because of forebearance on the part of IBM or legal constraints on IBM," he noted.

Once a firm is established in a unique non-IBM segment of the market, it would be very difficult for IBM to knock it out of that market, he said, even though IBM's entry might slow down its growth.

He suggested that areas where IBM is not strong are small ticket or low price items that are hard for the IBM salesmen to sell.

However, he warned, IBM might be developing a lower-priced sales staff to handle these items and said this could cause problems in the future.

IBM reacts to competition when it feels its profit projections will not be met and not specificially when it sees its share of markets declining, he pointed out.

Secret to Success

Poppa said the two secrets to success, in addition to not competing directly with IBM, are strong marketing and sound financial plans to enable a firm to compete in the lease oriented computer business.

Dan McGurk, president of the Computer Industry Association, noted that while the computer industry was a highly concentrated one, relatively easy entry into the marketplace still exists for many firms.

But, he indicated, the easy entry could sometimes be a trap because manufacturing costs are a small part (20%-25%) of the selling price of products in the business.

So while a firm might be able to build a product and enter the market fairly easily, it would be much harder for it to stay in the market for a long time.

In order to get a significant volume of sales, he indicated, a firm would probably either have to be acquired by or else acquire a larger entity with the financial muscle to allow it to compete in the capital-intensive computer business.

Nooks and Crannies

Dave Goodman of Goodman and Mautner, a venture capital firm, told the group there are many holes in the market that are noncompetitive with IBM or are compatible with IBM marketing strategy.

Venture capitalists look for firms that will compete in these non-competitive areas, he said.

Even though investors seem somewhat disenchanted with the computer business today, he said, "there is always plenty of money around for a good deal."

Generally, he said, venture capitalists like to see a firm with some edge in the market such as a patented product, and one with good management skills.

However, Goodman noted, there is some concern over whether the public market will hold up for computer related stocks. He said Wall Street was very down on computer stocks at present, and noted that if the market for such stocks drops radically, venture capital will dry up for new computer industry firms.

New Pack Design on IBM 3340 Leaves Independents Troubled

CW Washington Bureau

Marketing Analysis

WASHINGTON, D.C. – The long awaited IBM announcement of the 3340 disk unit [CW, March 21] has produced somewhat of a dilemma for the independent disk makers.

They had generally expected a system with double the recording density of the IBM 3330, which the 3340 has, and were readying products to compete with it. However, they did not expect a unit with the new pack design that IBM incorporated in its new device.

So the problem now is whether to introduce a comparable unit that is not strictly compatible with the IBM unit or to offer an exact replica of the IBM device at a later date.

One Vendor Decides

Vermont Research Corp. has decided to offer a comparable product and is already on the market with one – in fact, it was three months ahead of IBM in offering a device which gives users the same performance and density as the IBM unit, but does not use the same type of disks.

The Vermont Research device uses a pack that costs $350 compared with $2,200 for a 3340 module. The capacity per drive of the Vermont unit is 62.2M bytes, while the 3340 holds up to 69.8M bytes.

The Vermont 5018 uses a hybrid configuration, combining a 5440-type pack with a 3316-type disk which is designed for the 3330 disk system, a Vermont spokesman said.

But in the past, manufacturers have found it hard to attract user interest in products that were not strictly compatible with the IBM units being replaced.

In fact, the independent 2314-type disks, which were not plug-to-plug replacements for IBM's product, were only moderately successful for most of the manufacturers in the business and were viewed primarily as a stopgap measure until the independents could get their own 3330-like devices on the market.

Users Leery

Users, manufacturers said then, seemed to be leery of devices that were not offered by IBM.

However, the 3340 offers most manufacturers a chance to come into the market with a comparable product early in the life of IBM's product, while some might have to wait and delay their entry if they decide to produce an exact replica.

"Our problem," one said last week, "is whether the market has matured to a point where the user will accept a product from an independent that is not made by IBM.

Telex to Build CPUs, Hitachi Aids Design

TULSA, Okla. – Telex Corp., a longtime peripheral supplier, has decided to enter the mainframe market, and has revealed an agreement with Hitachi Ltd. for the joint development of a machine in the size range of the IBM 370/135 to 145.

Hitachi has done a lot of the basic design, and Telex will assist in the further development, according to a Telex spokesman. Both firms will probably construct prototypes about the same time, he said.

It is anticipated that the product will be ready for marketing in the third quarter of 1974.

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Industry Not Responsible for Use Of Products, SDC Head Maintains

By Marvin Smalheiser

Special to Computerworld

LOS ANGELES – The problem of transferring aerospace computer technology to business and commercial uses could well pose a greater problem – are the new applications good for society?

That was the feeling at a meeting of the Los Angeles Chapter of the Association for Computing Machinery, when a talk by Dr. George E. Mueller, president of System Development Corp. (SDC), evolved into a discussion of the computer industry's responsibility to society.

"I don't think it is the proper role for a corporation to decide what is good and what is bad for society," Mueller said.

"It is a mistake, in my view, to think that industry should override the desires or wishes of the public. Industry ought to be a responsible citizen, but it should not be the decision-making citizen as to how products are used."

Mueller was asked about uses of computer technology for applications such as those involving giant data banks. The industry should make the government aware of the dangers, it was said.

But Mueller, who described the federal and state governments as a "silent partner" of industry, said the corporation is not a "super being" and is "not responsible for anything other than the quality of its products . . . not the uses . . . nor can it be.

"Industry doesn't have any more responsibility to the body politic than handing over half of what it makes . . . right off the top," he said.

More Research Needed

Mueller called for a greater research effort, saying there is a "need for a continuing infusion of new technology," especially with the pressure on the nation's resources."

He predicted a growth in government spending on computer products of 20% per year in real dollars over the next five to 10 years since the lack of funds requires greater efficiency.

Formerly an associate administrator for manned space flight at Nasa, Mueller described the development of a 1-in. cube computer for Apollo and said it could be adapted for home use or for design purposes in industry.

The benefits of the transfer of technology, Mueller said, are often obscured by the 10- to 20-year time lag from the inception of an idea until it becomes a product.

SDC is now doing 87% of its business with the government – 75% of it with the military, Mueller said.

Fairchild to Produce Two GE Components

MOUNTAIN VIEW, Calif. – Fairchild Camera & Instrument Corp. has agreed to take over the manufacture of GE's GE-PAC and GE-TAC control and communications components.

Under the agreement, Fairchild said it will set up a subsidiary in Phoenix which will use GE's manufacturing facilities.

The products are used in GE systems to monitor and control electric utility plants and other industrial processes.

GE will continue to design and maintain such systems and to distribute the GE-PAC and GE-TAC products, the firm said.

Fairchild will initially own 81% of the new subsidiary, with GE retaining the other 19%. Fairchild has agreed to acquire that portion by the end of 1977, and to pay GE about $8 million.

Orders & Installations

Brooklyn College, Brooklyn, N.Y., has installed Education and Economic Systems, Inc.'s Base Data Extractor program to be used in demographic research projects by faculty and students.

Butte Knitting Mills, Spartanburg, S.C., ordered a Univac 9400 to be used for inventory control, sales analysis, payroll and general accounting.

The Old Stone Bank, Providence, R.I., has signed an order for Datatrol TIS-370 Teller Information Systems to be installed in 28 branches throughout the state.

The Military Traffic Management and Terminal Service, Washington, D.C., has installed a Burroughs B5500 to expand its program of developing an integrated transportation data system.

Government Employees Insurance Co. has installed a Control Data 921 OCR Document Reader to help process premium notices and policyholder inquiries concerning rates and coverage.

Boise Cascade has purchased the AR-70 Accounts Receivable Software System from Computer Systems and Education Corp. The system will be used in Boise Cascade's Container Division for management reporting functions.

Fruehauf Corp., Detroit, has installed Action Communication Systems, Inc.'s Telecontroller communications processor to manage data traffic throughout the firm's 167 offices and plants.

The Carolina Bank of Sanford, N.C., has installed an NCR Century 200 system as the nucleus of a central information file to process checking and savings accounts and mortgage loan payments.

Expansions

The Weiland Computer Group, a banking software firm, has relocated its headquarters to a Schiller Park, Ill., office.

Intermark Electronics, distributor of high-technology semiconductor devices, is expanding its Santa Ana facility to establish one centralized location serving the Los Angeles area.

Computer Machinery Corp. has moved its corporate headquarters to 100 Wilshire Blvd., Santa Monica, Calif., and consolidated its manufacturing, training and service facilities.

Beehive Medical Electronics Inc. has a new Salt Lake City facility to house its marketing, engineering, accounting and prototype fabrication departments along with corporate headquarters.

Inforex, Inc., manufacturer of shared-processor data entry devices, is leasing a new building to expand its manufacturing and warehousing facilities to 130,000 square feet.

Tesdata Systems Corp. has opened a new office in Ontario for the marketing of its products in Canada.

Basic/Four Corp. has leased a 22,000-sq-ft building in Anaheim, Calif., for portions of its small business computers manufacturing operations.

Centronics Data Computer Corp. is constructing a 24,000-sq-ft plant addition for production of its serial impact printers.

Odec Inc., manufacturer of line printers, has acquired a 20,000-sq-ft plant adjacent to its present facility in Warwick, R.I.

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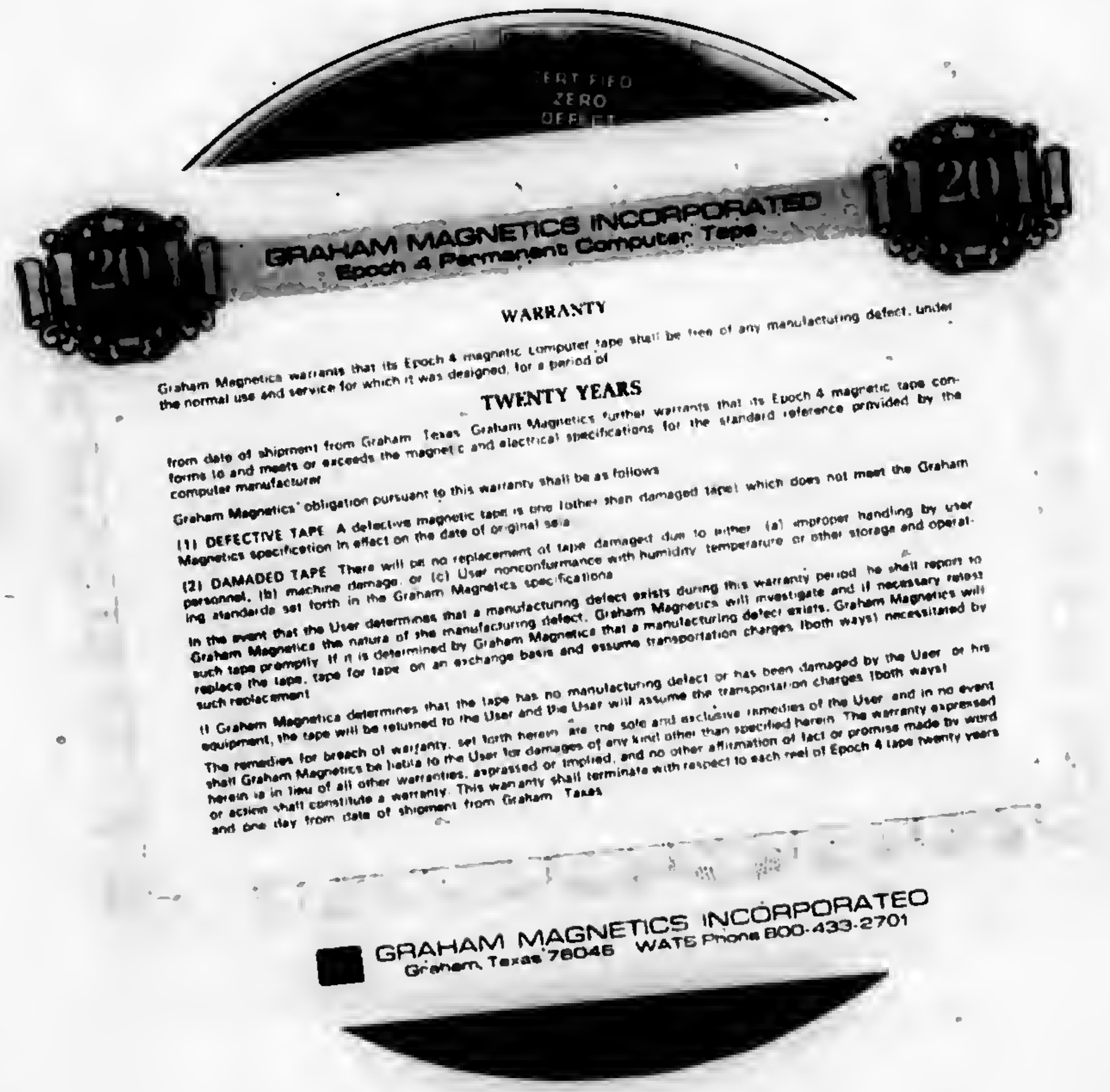

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Contracts

The Rand Teleprocessing Division of Brandon Applied Systems, Inc. has received a contract from the Hartford Insurance Group to convert its Bond Investment System to a 370 operation.

Computer Sciences Corp. of Falls Church, Va., has been awarded a contract by the Communications Satellite Corp. to design a data transmission error rate monitor for the International Telecommunications Satellite Consortium (Intelsat).

Western Union International will provide seven alternate voice/data circuits for Nasa's Skylab program. The circuits will connect a terminal on earth to the manned space station for transmission of scientific data.

Raytheon Data Systems signed a $2.6 million contract with the Midwest Stock Exchange for PTS-100 programmable terminals to be used in the exchange's order-processing and communications network.

Orbit Instrument Corp. has received a contract from IBM for magnetic variation and slew control units to be used in its Grumman A-6 aircraft computerized system project.

System Development Corp. has been awarded a multimillion dollar contract by the U.S. Air Force to develop, install and test an integrated satellite data processing system at the North American Air Defense Command's Cheyenne Mountain complex.

Century Papers, Inc. has signed a facilities management contract with Sterling Computer Systems Inc. for billing and inventory services.

Era of 'Involved Vendor'

Mixed-Media Growth Tied to Applications

By E. Drake Lundell Jr.
Of the CW Staff

BURLINGTON, Mass. – The day of mixed-media data entry systems combining OCR and key entry is definitely here, but the market for such systems is highly applications-dependent, according to J. Robert Taylor, vice-president for marketing at Inforex here.

The time has come for people in the data entry and data management fields to "look at alternative ways to capture and use data," Taylor said in a recent interview.

There is presently enough knowledge of OCR to begin to combine the technique with key entry devices and to "start looking for and finding applications that need a better way to handle and capture data," he asserted.

This was the strategy followed by Inforex, he noted, in introducing the Keyscan system aimed at large users of turnaround documents such as banks and credit card companies.

But, he noted, the mixed or multimedia systems have to be aimed at specific markets and applications. He indicated that the mixed-media systems might not be ready yet to operate in a strict keypunch replacement mode.

In addition, he predicted, the future product lines of both Inforex and the other successful firms in the data entry business will have to follow the same applications orientation if the firms are to remain successful in the business.

Complete Packages

"We will have to stress applications orientation," he said, "and offer users complete hardware and software packages that solve their individual applications problems."

Talor does not foresee the day when OCR will begin to replace key entry devices, but rather he sees the two coexisting.

The prime growth in the data entry business, he indicated, will come in the areas of mixed-media systems and with systems that have a communications capability, even though he predicted the growth in the straight keypunch replacement business would remain strong in the near future.

Marketing Profile

This is because, he said, mixed-media systems and communications capabilities open new market areas to the data entry companies that they could not have penetrated with the older types of systems.

Market Still Young

However, the key-to-disk market in the traditional sense is not drying up or peaking, he said, disagreeing with some market forecasts which see it peaking in about 1975.

Presently, he said, the key-to-disk makers have only penetrated about 15% to 20% of the true keypunch market, which is defined as installations that have over 7 keypunches installed.

He said the recent move by IBM into the business helped confirm the view that it was a market that would be around for quite a while.

But in order to keep the market growing, the manufacturers will have to be innovative in developing applications oriented products, he said.

The requirement of developing systems for specific applications places a great burden on the manufacturer because the manufacturers will have to know the applications and the industry they serve as well as possible, he noted.

They need this knowledge, he said, so they can develop systems requiring little or no programming on the part of the user. The days of just giving a system to a user and expecting him to program it are over, he said.

The vendor has to completely package the system for the user, he said, which will call for "a certain amount of vendor responsibility" for how the system actually works.

In addition, Taylor said, data entry people should not be extremely worried about the threat from on-line data entry to the more traditional types of data capture since many users really do not need on-line systems and are buying only what they need.

He also indicated the processors in the key-to-disk systems might get more powerful in the future to help meet users' new needs.

In the future, manufacturers may want to develop systems that also enable the user to use the data more efficiently, such as massaging small data bases at the point of the data collection.

He indicated a data management concept appeared to be viable and that there were a lot of specific applications for such a concept or system that would help firms cut down on their paper output and put data bases at the remote locations where they are often needed.

Inforex is looking closely at the data management area because "why stop with the input, when we can also find ways for users to use the data more effectively," he said.

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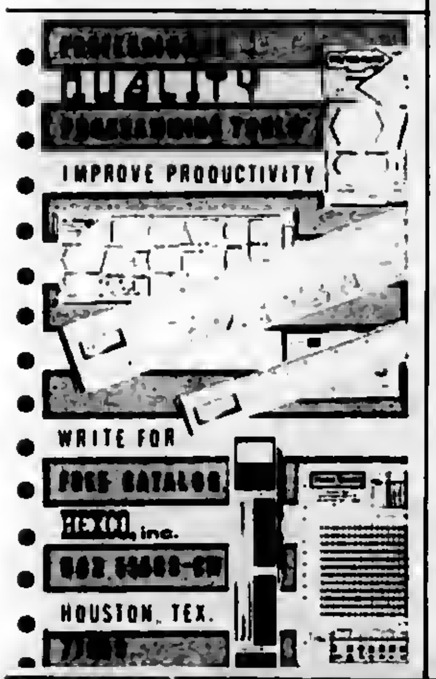

Report Sees $25 Million by '75

DP Enlarging Role in Patient Monitoring

NEW YORK – The data processing equipment sector of the patient monitoring systems market will reach $25 million by 1975, a 400% growth over its 1972 base, according to a report by Frost & Sullivan, a market research firm here.

However, the combined DP sector will level off and remain essentially the same through 1980. But the various segments within the DP segment show considerable changes in rates of growth. Time-sharing, which currently has sales estimated at $500,000, is expected to reach $5 million in 1975, a 900% growth rate, and spiral to $10 million in 1980, for a 1,900% growth rate compared with its 1972 base, according to the report.

Hardware sales will initially grow to $15 million in 1975 from its 1972 base of $3 million, a 400% increase, but decline by 1980 to $7.5 million, or 150% growth compared with 1972, the report stated.

The report cited "full market penetration" and substitution to T/S services as reasons for the decline in sales volume of hardware.

Software, which is becoming an increasingly important component of systems in the medical field, will reach $5 million in 1975, a 223% growth rate over the 1972 base of $1.5 million, and keep growing to $7.5 million by 1980, a 400% rate over its 1972 base, the firm said.

Data processing will continue to hold an increasing share of expenditures made in the total patient systems monitoring field, growing from $5 million of the total $98.5 million in 1972 to $25 million of the total $158.5 million projected for 1975.

In 1980, $25 million in DP expenditures will still comprise a significant part of the total $181 million market, the report indicated.

"The key to a widespread acceptance of data processing in the industry is good software," the report noted. Most manufacturers' sales have been to "research" facilities who then "develop their own software, either with the manufacturer, a private software house or their own staff."

Time-sharing sales are expected to expand dramatically as hospitals understand the economics of a T/S system and as T/S EKG services "gain wider application and are expanded to cover other physiological parameters."

The report noted that the DP segment of the patient monitoring systems is "still a very small new market," with 1972 the first year manufacturers began to sell their systems commercially.

Although physician acceptance of the systems appears strong, two drawbacks to growth could be that the systems would give doctors and nurses "more information than they are capable of understanding" and "in situations where the computer may be used for diagnosis and dispensing (blood and drugs, etc.) the programs still need further refinement to eliminate machine and programming errors," according to the report.

Patient monitoring systems are defined as linking bedside monitoring devices with a terminal (usually CRT) at a central console station.

IBM Gets NOAA Nod for 360/195s

SUITLAND, Md. – The National Oceanic and Atmospheric Administration (NOAA) here has ordered two IBM 360/195 computers to aid in its weather prediction and research programs.

The computers carry an overall price tag of $22.7 million over the next five years, the General Services Administration said in announcing the contract, and will increase the computer power at Suitland by a factor of five. The 195s replace two Control Data Corp. 6600s.

The systems will be used to analyze global weather observations and prepare forecasts, process triangulation data for Earth measurement studies and for mathematical modeling of hurricanes, NOAA said.

The increased computer capacity will allow the organization to run complex global weather forecasting models that have been developed but which could not be run previously for lack of computer power.

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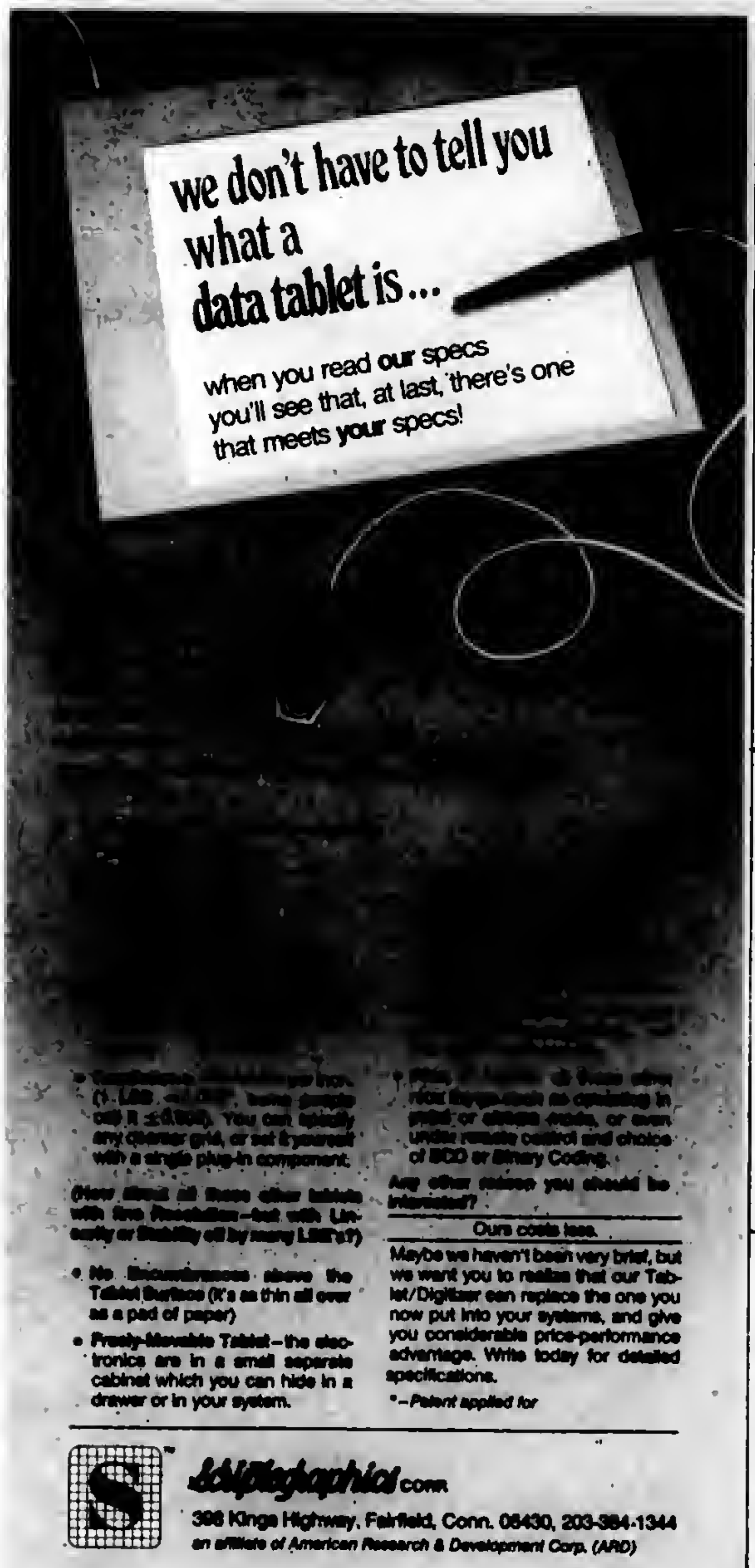

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Earnings Rise at 3 Time-Share Firms

The timesharing segment of the compter industry seems to be sharing in the upward thrust of the economy, judging from reports by Comshare, Inc., Rapidata, Inc. and Keydata Corp.

Comshare's earnings in the six months ended Dec. 31 jumped to $270,258 or 22 cents a share from a loss of $15,880 or 2 cents a share in the comparable year-ago period. Revenue rose to $4 million from $3.2 million last year.

In the second quarter, earnings rose to $146,785 or 12 cents a share from $88,408 or 8 cents a share in the comparable 1971 period.

Revenues climbed to $2.2 million from $1.7 million.

The reported increases in revenues and operating profits were "as expected" and further increases, although at a lower rate, can be expected during the balance of the fiscal year ending in June, according to President Richard L. Crandall.

Rapidata showed earnings for the year ended Dec. 31 rising to $1.1 million or 58 cents a share compared with $567,644 or 33 cents a share the previous year. Revenues increased to $7.7 million from $5.4 million.

Rapidata Software Costs

Rapidata expensed about $600,000 in software development costs during the year, and results should begin to appear in the current year with the full-scale marketing of new application packages, according to President Stewart B. Gold.

The firm plans to instell a Decsystem 1070 and an IBM 370/145 during the year, he added.

Keydata scored a record second quarter and six months ended Jan. 31. Revenues in the quarter totaled $2.3 million, a 28% gain from $1.8 million in the comparable 1971 period.

Earnings jumped to $201,000 or 7 cents a share from $42,000 or 2 cents a share.

In the half year, earnings totaled $377,000 or 13 cents a share compared with $140,000 or 6 cents a share in the year-earlier period. Revenues rose 27% to $4.4 million from $3.5 million.

New customer contracts in the first half were substantially above the total in the corresponding period a year earlier, according to President John T. Gilmore Jr, "When fully implemented, these contracts will generate approximately $2 million in repetitive annual revenues," he added.

Nine-Month MDS Earnings Plummet, Costs of Rental Program Cited

UTICA, N.Y. – Nine-month earnings at Mohawk Data Sciences Corp. plummeted to $55,000 from $1.6 million in the year-ago period.

The earnings reflect the high costs of establishing a rental base with the System 2400 as well as the cost of normal discontinuances in the Data Recorder base, according to President R.P. Rifenburgh.

Leaning Toward Leases

"Despite the broadening of our markets for outright sales," he said, "we expect that the System 2400 and other rental programs will impact our lease-to-sales ratio heavily toward leases over the next several quarters. The front-end costs of building a new lease revenue base has tended in the past to obscure MDS's dedication to profitablity.

"We have restructured our organization and resources and instituted significant cost reduction programs to capitalize on our rental base and achieve our profit objectives. We believe those objectives will be met in fiscal 1974," Rifenburgh concluded.

In the nine months ended Jan. 31, rental and service income comprised $59.9 million of the total record revenues of $104.4 million.

Equipment Sale

Also included in total revenues is about $7 million from the sale of rental equipment to Randolph Computer Corp. In the same year-ago period, revenues totaled $87 million.

Earnings for the period totaled $55,000 or 1 cent a share compared with $1.6 million or 28 cents a share in the comparable year-earlier period.

"While the costs of establishing a broader systems rental base have now peaked in the U.S.," Rifenburgh stated, "This burden continues at MDS-International as a result of the accelerated marketing and installation of System 2400s overseas."

MDS has shipped 1,000 System 2400s and has a backlog of about 900 systems.

Strong 4th Quarter Turns STC Around

LOUISVILLE, Colo. – A strong fourth quarter helped Storage Technology Corp. finish the year with a hefty turnaround for the 12 months ended Dec. 29.

Earnings, including a $1.4 million tax credit, totaled $3.7 million or $1.14 a share compared with last year's loss of $4.1 million or $1.53 a share.

Revenues soared to $26.3 million from $3.7 million in the previous year.

The fourth quarter benefitted from a lower-than-estimated effective tax rate, the firm noted, and earnings in the period totaled $1.8 million or 51 cents a share compared with a loss of $231,000 or 8 cents a share in the year-ago period.

Revenues totaled $9.1 million compared with $1.9 million.

The firm also indicated third-quarter earnings were overstated by $190,000, owing to overstatements of both revenues and costs and expenses. The revised figures are earnings of $1 million and revenues of $7.6 million in the period ended Sept. 29.

As of Jan. 29, 1973, the annual revenue value of company-owned equipment on rent was about $13 million and STC had orders for the rental of additional equipment with an annual rental value of about $5.7 million, the firm said.

Sycor Has First Profitable Year

ANN ARBOR, Mich. – Intelligent terminal maker Sycor, Inc, has achieved its first profitable year, with revenues 87% above those for 1971.

A strong fourth quarter contributed revenues of $5.7 million and earnings of $716,600 or 30 cents a share.

Year-ago revenues totaled $2.9 million with earnings of $38,700.

In the year ended Dec. 31, earnings totaled $1.2 million or 47 cents a share compared with a loss of $1.4 million or $1.11 a share. In 1972 tax credit totaled $570,000.

Revenues for the period soared to $15.7 million from $8.4 million in the previous year.

President Samuel N. Irwin noted the planning of "several years began to reach fruition during 1972 and the worldwide market acceptance of Sycor intelligent terminals has created the momentum for a continuing improvement."

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New Registrations

DATA PROCESSING SECURITY, INC., 1674 Wolf Road, Wheeling, Ill., filed to register 180,000 shares of common. The proceeds, at $3 per share, to be used for working capital. The underwriter is Jay W. Kaufmann & Co., 111 Broadway, New York, N.Y. 10006.

MOHAWK DATA SCIENCES CORP., Utica, N.Y., filed to register 368,048 shares of common, in connection with the proposed merger of Computing Efficiency Inc. into MDS-Bucode, Inc.

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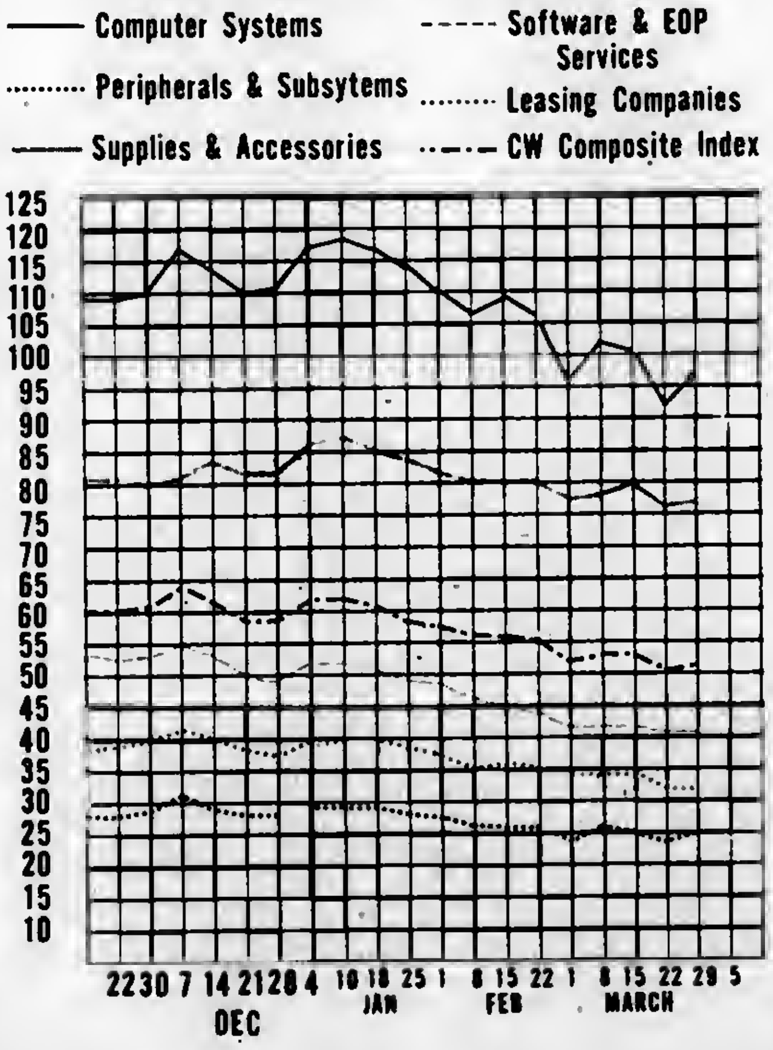
CLOSING PRICES THURSDAY, MARCH 29, 1973

EXCH		PRICE 1972-73 RANGE (1)	CLOSE MAR 29 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 3/8	- 3/8	-21.4
A	APPLIED DATA RES.	3- 7	3 1/4	- 1/8	-3.7
O	APPLIED LOGIC	1- 4	2 1/2	0	0.0
N	AUTOMATIC DATA PROC	65- 99	75 1/4	+10 1/4	+15.7
O	BRANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	3- 14	3	+ 1/4	+9.0
O	COMPUTER DYNAMICS	1- 4	7/8	0	0.0
O	COMPUTER NETWORK	2- 7	1 3/4	0	0.0
N	COMPUTER SCIENCES	3- 10	3 7/8	+ 5/8	+19.2
O	COMPUTER TASK GROUP	1- 2	1 3/8	- 1/4	-15.3
O	COMPUTER TECHNOLOGY	2- 8	3 1/8	+ 1/8	+4.1
O	COMPUTER USAGE	5- 14	5 3/4	+ 5/8	+12.1
O	COMRESS	1- 3	3/4	0	0.0
O	COMSHARE	5- 10	6 3/8	+ 1/2	+8.5
N	CORDURA CORP	7- 28	7 1/4	- 5/8	-7.9
O	DATATAB	3- 9	3 1/4	+ 1/2	+18.1
O	EDP RESOURCES	1- 8	1 5/8	0	0.0
A	ELECT COMP PROG	1- 5	1 1/8	- 1/4	-18.1
N	ELECTRONIC DATA SYS.	43- 65	45 3/4	-1	-2.1
O	INFORMATICS	3- 11	3 3/4	- 1/8	-3.2
O	I.D.A. DATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 1/2	0	0.0
O	KEYDATA CORP	7- 13	7 1/4	- 1/4	-3.3
O	LOGICON	4- 9	5 1/4	- 1/8	-2.3
A	MANAGEMENT DATA	2- 10	2 1/2	0	0.0
O	NATIONAL CSS INC	8- 41	31 1/2	-2 3/4	-8.0
O	NATIONAL INFO SRVCS	1- 5	1 1/2	- 1/8	-7.6
P	ON LINE SYSTEMS INC	5- 19	15 7/8	+ 1/2	+3.2
N	PLANNING RESEARCH	4- 17	3 3/4	+ 1/8	+3.4
O	PROGRAMMING METHODS	20- 25	22 1/2	+1	+4.6
O	PROGRAMMING & SYS	1- 2	3/4	- 1/8	-14.2
O	RAPIDATA INC	5- 27	16 1/4	0	0.0
O	SCIENTIFIC COMPUTERS	1- 4	1 1/4	0	0.0
O	SIMPLICITY COMPUTER	1- 5	1 3/4	- 1/4	-12.5
O	TBS COMPUTER CENTERS	3- 6	2 7/8	- 1/8	-4.1
O	TCC INC	1- 3	1/2	0	0.0
O	TYMSHARE INC	7- 12	7 3/4	+ 1/4	+3.3
O	UNITED DATA CENTER	5- 8	5 1/4	0	0.0
N	UNIVERSITY COMPUTING	7- 26	10 3/4	+ 5/8	+6.1
A	URS SYSTEMS	6- 10	5 3/4	+ 1/8	+2.2
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	20- 49	20 1/4	+ 3/4	+3.8
O	ADVANCED MEMORY SYS	12- 23	16 3/4	+2	+13.5
N	AMPEX CORP	5- 15	5 1/4	- 1/4	-4.5
O	ANDERSON JACOBSON	4- 8	5 3/4	+ 3/8	+6.9
O	BEEHIVE MEDICAL ELEC	1- 9	9 1/8	+1 3/8	+17.7
A	BOLT,BERANEK & NEW	5- 21	9 1/2	- 3/8	-3.7
N	BUNKER-RAMO	6- 14	6 1/2	0	0.0
A	CALCOMP	9- 25	10 7/8	- 1/4	-2.2
O	CAMBRIDGE MEMORIES	9- 15	11 1/8	+ 5/8	+5.9
O	CENTRONICS DATA COMP	6- 28	21 1/2	+2	+10.2
O	CODEX CORP	6- 25	12 1/2	- 1/4	-1.9
O	COGNITRONICS	1- 5	1 7/8	+ 1/4	+15.3
O	COMPUTER COMMUN.	1- 7	2 3/8	- 1/4	-9.5
A	COMPUTER EQUIPMENT	2- 4	2 1/2	+ 1/8	+5.7
O	COMPUTER MACHINERY	7- 13	9 7/8	+ 1/4	+2.5
O	COMPUTER TRANSCEIVER	2- 9	2 1/2	- 1/4	-9.0
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	23- 39	23 3/8	- 1/8	-0.5
A	DATA PRODUCTS CORP	3- 7	3 1/8	- 1/8	-3.8
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 1/4	- 1/8	-3.7
O	DI/AN CONTROLS	3- 8	2 3/4	0	0.0
N	ELECTRONIC M & M	3- 8	3 5/8	+ 1/8	+3.5
O	FABRI-TEK	2- 5	3 3/8	0	0.0
O	GENERAL COMPUTER SYS	6- 16	7	+ 1/2	+7.6
N	GENERAL ELECTRIC	59- 74	65 1/4	+1 5/8	+2.5
N	HAZELTINE CORP	7- 13	7 3/4	+ 3/8	+5.0
O	INFOREX INC	14- 36	14	0	0.0
O	INFORMATION DISPLAYS	1- 5	3/4	0	0.0
O	INFORMATION INTL INC	8- 25	12	+ 1/4	+2.1
A	LUNDY ELECTRONICS	6- 14	6 3/8	+ 1/8	+2.0
O	MANAGEMENT ASSIST	1- 1	3/8	- 1/8	-25.0
A	MILGO ELECTRONICS	15- 44	22 5/8	+1 7/8	+9.0
N	MOHAWK DATA SCI	6- 27	6	-1 3/8	-18.6
O	ODEC COMPUTER SYST.	3- 12	4	- 1/2	-11.1
O	OPTICAL SCANNING	2- 16	5 1/4	+ 3/4	+16.6
O	PERTEC CORP	5- 17	6 3/8	+ 1/8	+2.0
O	PHOTON	3- 15	3 3/4	(SUSPENDED)	
A	POTTER INSTRUMENT	6- 21	5 5/8	- 1/4	-4.2
O	PRECISION INST.	2- 13	3 1/2	0	0.0
O	RECOGNITION EQUIP	5- 15	5 1/2	+ 5/8	+12.8
N	SANDERS ASSOCIATES	10- 21	10	0	0.0
O	SCAN DATA	2- 13	2 3/8	+ 1/8	+5.5
O	STORAGE TECHNOLOGY	17- 39	23 1/4	+3	+14.8
O	SYCOR INC	7- 11	10 3/4	+1 1/2	+16.2
O	TALLY CORP.	7- 15	7 1/4	- 1/8	-1.6
N	TEKTRONIX INC	34- 64	41 5/8	+5	+13.6
N	TELEX	4- 15	5	+ 1/2	+11.1
O	WILTEK INC	10- 26	14 1/4	+3 1/4	+29.5
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	6 3/4	0	0.0
A	BARRY WRIGHT	9- 14	9 3/4	+1 1/4	+14.7
A	DATA DOCUMENTS	17- 26	19	- 1/8	-0.6
O	DUPLEX PRODUCTS INC	8- 16	8	- 1/4	-3.0
N	ENNIS BUS. FORMS	6- 10	6 1/8	+ 1/8	+2.0
O	GRAHAM MAGNETICS	15- 27	16 1/4	- 3/4	-4.4
O	GRAPHIC CONTROLS	10- 15	10 1/8	+ 1/8	+1.2
N	3M COMPANY	76- 88	85 1/2	+3 1/2	+4.2
O	MOORE CORP LTD	42- 59	57 7/8	- 1/8	-0.2
N	NASHUA CORP	48- 62	50	0	0.0
O	REYNOLDS & REYNOLD	37- 77	46	- 3/4	-1.6
O	STANDARD REGISTER	14- 20	17 1/2	+ 1/4	+1.4
O	TAB PRODUCTS CO	14- 23	15 1/2	+ 1/2	+3.3
N	UARCO	19- 28	20	+ 1/4	+1.2
A	WABASH MAGNETICS	6- 11	6 3/8	+ 3/8	+6.2
N	WALLACE BUS FORMS	21- 26	23 3/8	- 1/8	-0.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-244	239 3/4	+15 1/2	+6.9
N	COLLINS RADIO	14- 27	24 3/4	+ 3/4	+3.1
N	CONTROL DATA CORP	42- 78	45 7/8	+3 1/8	+7.3
O	DATA GENERAL CORP	36-131	40 1/2	+5	+14.0
O	DIGITAL COMP CONTROL	3- 25	3 1/4	- 1/2	-13.3
N	DIGITAL EQUIPMENT	72-105	81 1/4	+2 1/4	+2.8
N	ELECTRONIC ASSOC.	6- 13	6 1/4	+ 1/2	+8.6
A	ELECTRONIC ENGINEER.	6- 14	9 7/8	+ 5/8	+6.7
N	FOXBORO	23- 41	26 1/2	+1 3/8	+5.4
O	GENERAL AUTOMATION	13- 55	34	+1	+3.0
O	GRI COMPUTER CORP	2- 5	1 3/4	+ 1/8	+7.6
N	HEWLETT-PACKARD CO	46- 94	85 1/2	+4 7/8	+6.0
N	HONEYWELL INC	106-170	115 1/4	+2 3/4	+2.4
N	IBM	333-451	438 3/4	+13 1/4	+3.1
O	INTERDATA INC	7- 16	9 1/2	+1 3/4	+22.5
N	MEMOREX	8- 38	8 1/2	-2	-19.0
O	MICRODATA CORP	5- 10	7 1/4	+ 1/8	+1.7
N	NCR	27- 38	30 7/8	+1 5/8	+5.5
N	RAYTHEON CO	27- 47	30 1/8	+3	+11.0
N	SPERRY RAND	30- 50	44 3/8	+2 1/8	+5.0
A	SYSTEMS ENG. LABS	4- 16	5 1/8	+ 3/8	+7.8
N	VARIAN ASSOCIATES	14- 22	15	+1 1/8	+8.1
N	WANG LABS.	18- 61	20	+1	+5.2
N	XEROX CORP	121-172	154 1/4	+1 1/4	+0.8
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3	0	0.0
O	BRESNAHAN COMP.	1- 3	1 1/8	- 1/8	-10.0
O	COMDISCO INC	3- 18	13 1/4	+2 3/8	+21.8
O	COMMERCE GROUP CORP	4- 11	4 3/8	0	0.0
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4 3/8	- 1/8	-2.7
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	6 5/8	- 1/8	-1.8
M	DATRONIC RENTAL	2- 4	2 1/8	0	0.0
A	DCL INC	2- 10	1 5/8	- 1/4	-13.3
A	DEARBORN-STORM	16- 26	18	+ 7/8	+5.1
A	DPA, INC.	5- 8	6	- 1/4	-4.0
A	GRANITE MGT	4- 11	4 3/8	- 5/8	-12.5
A	GREYHOUND COMPUTER	5- 11	4 3/4	+ 1/8	+2.7
A	ITEL	7- 12	7 7/8	+ 1/2	+6.7
N	LEASCO CORP	12- 24	12 3/8	+ 3/4	+6.4
O	LEASPAC CORP	6- 15	7 1/2	+ 3/8	+5.2
O	LECTRO MGT INC	1- 4	1	0	0.0
A	ROCKWOOD COMPUTER	2- 7	1 5/8	- 5/8	-27.7
O	SYSTEMS CAPITAL	3- 20	9	+1 1/8	+14.2
N	U.S. LEASING	19- 35	24 3/8	0	0.0

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

DATA-DESIGN LABORATORIES
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.21	$.16
Revenue	4,876,648	3,787,135
aSpec Cred	20,700	33,500
Earnings	235,766	180,820

a-Tax loss carryforward.

KEYDATA
Three Months Ended Jan. 31

	1973	1972
Shr Ernd	$.07	$.02
Revenue	2,294,000	1,793,000
aTax Cred	95,000	20,000
Earnings	201,000	42,000
6 Mo Shr	.13	.06
Revenue	4,443,000	3,512,000
Spec Cred	a178,000	b110,000
Earnings	377,000	140,000

a-Tax loss carryforward. b-Tax credit and gain on sale of publication operations.

NATIONAL CASH REGISTER
Year Ended Dec. 31

	1972 (000)	1971 (000)
Shr Ernd	.....	$.08
Revenue	$1,557,699	1,465,701
Spec Chg	a70,067	.....
Earnings	($9,612)	2,131

a-Mainly from the transition from mechanical business machines to new electronic products.

GENERAL COMPUTER SYSTEMS
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.22	.....
Revenue	4,429,442	$1,465,650
Tax Cred	170,209	.....
Earnings	361,372	(409,905)

STANDARD REGISTER
Year Ended Dec. 31

	1972	a1971
Shr Ernd	$1.45	$.83
Revenue	109,199,879	108,001,959
Spec Cred	b165,133	.....
Earnings	3,120,058	1,793,544
3 Mo Shr	.54	.18
Revenue	29,021,125	26,946,878
Earnings	1,162,790	388,292

a-Restated. b-From sale of real estate.

BRADFORD COMPUTER & SYSTEMS
Year Ended Dec. 31

	a1972	b1971
Shr Ernd	$.55	$.36
Revenue	32,832,000	12,694,000
Spec Item	c57,000	d454,000
Earnings	1,970,000	1,160,000
3 Mo Shr	.14	.13
Revenue	9,579,000	3,168,000
Spec Item	d12,000	c31,000
Earnings	554,000	423,000

a-Includes accounts of Bradford Shareholder Services and BT Bradford Stock Services in which the company acquired controlling interests in January and April, respectively. b-Restated. c-Credit; tax credit less loss from conversion costs. d-Charge; loss from conversion costs less tax credit.

AMPEX
Three Months Ended Jan. 27

	1973	a1972
Shr Ernd	$.35	.....
Revenue	74,357,000	.....
bSpec Cred	2,781,000	.....
Earnings	3,824,000	.....
9 Mo Shr	.08	.....
Revenue	221,206,000	.....
bSpec Cred	2,781,000	.....
Earnings	940,000	.....

a-Comparable figures unavailable. b-From sale of Mandrel Industries Inc.

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NEWSPAPER

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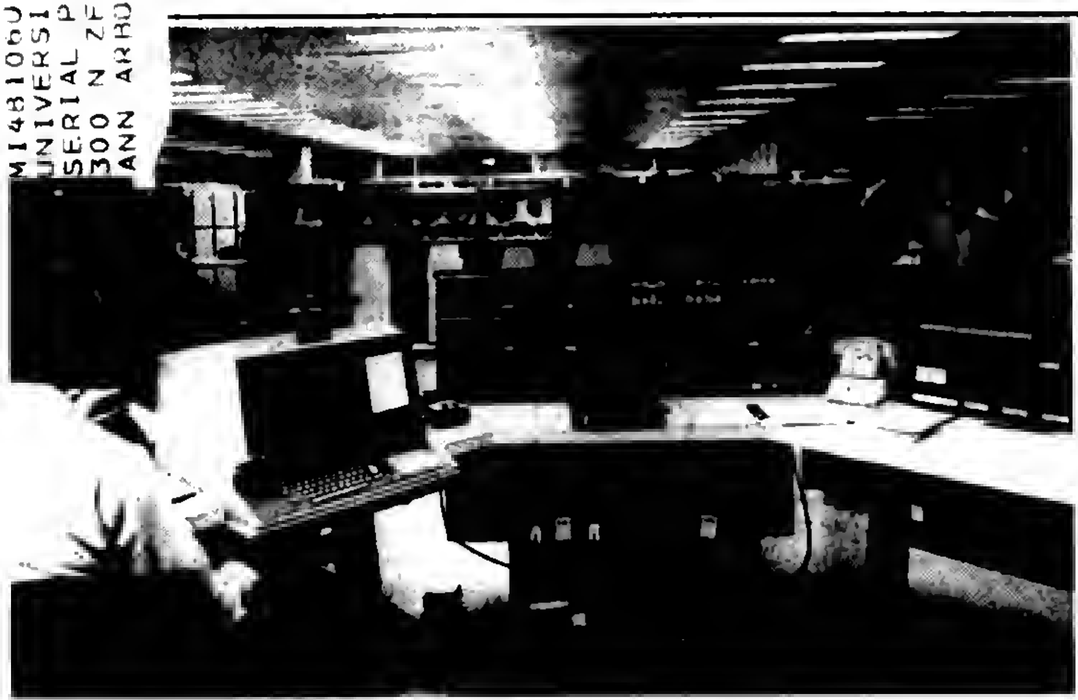

Flight Connector

Dual Univac 494 CPUs in Frankfurt, Germany, store flight information on Lufthansa and 28 other airlines. More than 1,000 Uniscope displays access the system from the U.S. and Europe for information relating to passenger check-in, air route planning, operations control, connecting flights and reservation confirmations.

Antitrust Hearings Told

Outmanned Justice Needs $

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The Antitrust Division of the Justice Department is "outmanned and outgunned" when it comes to prosecuting cases like the current action against IBM, Senate investigators were told here last week.

In addition, witnesses before the Senate Antitrust and Monopoly Subcommittee stated that often the division cannot do its job properly in such cases because of political pressure from the White House. They also called for increased funding for the Antitrust Division.

Noting that IBM alone spends more for legal services each year than the Antitrust Division does with many different cases, witness Robert Beshar, a former deputy assistant secretary for Commerce, said the "Antitrust Division is woefully understaffed" and warned that the power of the White House "has seriously undermined the Antitrust Division's authority."

It is small wonder, he said, that "when push comes to shove, the division often lacks the muscle" to vigorously pursue such cases as the one brought against IBM.

"The IBM case is routinely called the day's most important case in modern times," he added. "That is probably true.

"But what is also probably true is that the public has little belief that the case has been prosecuted vigorously so far or that it will ever be heard or that there will be substantial relief when it is all over."

Beshar was one of several witnesses called in the opening round of hearings on a bill of Sen. Philip Hart (D-Mich.) that would require the breakup of any company with over 15% of the profits of an industry.

The answer to the problems today, he said, would be met by the first section of the Hart bill as it defines concentrated industries. But he recommended increased funding for the Antitrust Division as the means to enforce the measure instead of a separate agency to deal with concentrated industries.

At the same time he said that "instead of coming out with fairly vague proposals for remedies," the Antitrust Division should announce "quite precisely that they are looking for vertical divestiture into something on the order of eight to 10 companies."

The bill would also call for the breakup

(Continued on Page 2)

Afips Finds No Shortage Of Trained DP Personnel

By E. Drake Lundell Jr.
Of the CW Staff

MONTVALE, N.J. – The myth that there is a lack of trained people to meet the needs of computer users – or that there will be a lack of people in the future – has been laid to rest in a study by the American Federation of Information Processing Societies (Afips) here.

Within a decade, the study indicated, formal college and high school education programs in the computer field "should be able to fill the needs of the computer industry for new entrants even if industry requirements grow at a rate of 10% per year."

The study also noted that "private EDP schools are becoming less important as the public educational system builds up its training programs in the computer area."

This study is one of the first attempts to define the number of people working in the computer industry itself and the number employed by users and to forecast some future training and educational trends.

Around one million people are employed by users, Afips estimated from its survey of users. There are no Census Bureau figures for this employment category.

These one million are employed in four areas, according to the survey, with 210,000 classed as programmers; 150,000 listed as systems analysts; 200,000 in the category of computer operators; and 440,000 employed as keypunch operators.

"In addition," the report said, "installations have administrative and clerical employees. In many organizations there are also employees who are involved with data processing as an integral part of their jobs in other parts of the organization," which indicates that employment related to DP might be substantially higher than one million.

The number of people working in the computer industry itself (hardware, services and supplies) is extremely difficult to pin down, the study noted, since many computer manufacturers have a major part of their business in other fields, and so are not listed in the Census Bureau's computer category.

However, there were 172,300 people listed by the government as being employed by computer firms in the middle of 1972. But the Afips study said the number is probably around 300,000 if all of the computer makers are included.

Even though almost half of all the peo-

(Continued on Page 2)

Banks Biggest Employer

MONTVALE, N.J. – If you're looking for a job in data processing, it is probably best to learn a little about banking – the industry that employs the most computer people.

According to a recent Afips report, 6.4% of all data processing people are in the banking industry, followed by the life insurance business, which has 3.5% of the DP personnel.

Next come the aerospace and defense industries with 2.3% and the utilities with 2.2%, followed by the airlines, electronics and electrical products business, chemicals industry, metals industry and finally the railroads business.

DP Foundation Fortunes Take On Bright Note

Special to Computerworld

CHICAGO – Major changes in the control procedures, a "buzzword generator" to determine a name for the Computer Foundation project and a strong professional desire to strengthen the data processing profession all contributed to a turn in the fortunes of the plan here last week.

The project now looks as though it will achieve not only the operation of the DPMA/CDP examination, when it is relinquished in July, but also a productive working relationship among the various data processing societies.

The project's future, previously bedeviled by arguments on membership qualifications and questions on control, brightened during the meeting of the organizing committee which reviewed the work of the four subcommittees. Examination quality and security, two controversial topics, were discussed fully with

(Continued on Page 2)

Expanding Software Sources

Innovation+Determination=Happiness

By Don Leavitt
Of the CW Staff

COLUMBUS, Ohio – Intelligent, imaginative planning by the user and good systems support from the mainframe vendor – even if it isn't the original vendor – can provide the non-IBM user with more software sources than seem possible at first, according to DP manager John Beech of Midland Mutual Insurance Co. (MMI).

MMI is an RCA Spectra 70 (now Univac Series 70) Model 45 installation that has taken advantage of support from both RCA and Univac, from its own in-house DP staff, from outside package vendors and from custom analysis and design shops.

Key to the installation's success – and there is no indication of any interest in moving up from the current 131K 70/45 – appears to rest in Beech's assumption that, one way or another, he and his supporters can cope with whatever has to be done.

Most of the currently operational basic accounting applications have been written in-house, he noted, but the company also utilizes a 360-mode emulator, originally distributed by RCA, which allows the Spectra gear to handle IBM's DOS/360 and "supports any IBM devices" except terminals. Univac has continued support for this emulator package under its Series 70 operations, Beech

(Continued on Page 2)

On the Inside This Week

Overruns, Errors Found In Medical Claim System – *Page 6*

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Innovation Plus Determination Equals Happy User

(Continued from Page 1)

stated.

The manager's faith in his staff's ability became evident when he noted that, even if he didn't have the emulator, he wouldn't feel particularly hemmed in by the lack of independent software houses interested in his particular equipment. "If a program is written in Cobol," he claimed, "it's easy to convert."

The use of Cincom System's Total data base management system is now under study, Beech said, as is the choice of either a file management system or report generator. Current candidates, he indicated, are Informatics' Mark IV, Cullinane's Culprit and Application Software's Asi-st.

Commenting on the selection process, Beech said he thought talking to users was useless since vendors "wouldn't release the name of an unhappy user anyway." Well-run demonstrations or trial periods of use can be very helpful in evaluating this type of utility package, he added, but formalized benchmarking of competing systems would be "a waste of time."

On a subject even more fundamental than applications or utilities, Beech said he has been impressed with Univac's updating of the operating system software since it took over from RCA. The support, he said, has been "excellent – far better than under RCA."

MMI has not yet moved up to TDOS 22, the latest release from Univac, but Beech is clearly delighted with the prospects of working with features that just haven't been available to him until now. These include, he said, spool-in/spool-out of low-speed I/O, disk-based compilers and job schedulers for his operations staff.

Outside Help Helpful

The company maintains a "relatively small, highly competent, well-paid" staff of about a dozen systems analysts and programmer analysts. If a proposed project has time constraints that can't be met without hiring more people, however, MMI will go to outside consultants for help.

Currently, for example, Systemation from Cleveland is handling the system design phase of one new project. Whether the programming will be done in-house or farmed out has not yet been decided, but will depend on the existing situation when the decision has to be made.

Backstopping his concern for good systems work even before programming, Beech has started using the Pride control system of documentation and logic guidelines from M. Bryce Associates, Cincinnati. The Pride "package" contains "nothing surprising," he said, but it imposes an objective standard which is the same from application to application.

Pride "may overdo the documentation required" as the user goes from step to step in the design process, but that overhead is justified, Beech felt, since it insures that nothing essential is left out by mistake. MMI has used Pride with several small projects of five or six programs apiece, and is currently developing systems for mortgage loan accounting and agency accounting under Pride control.

In addition to writing and maintaining the conventional accounting applications, the in-house staff has converted a tape-oriented alpha-indexed policyholder inquiry system, acquired from RCA, into an on-line system using disk files and CRT terminals.

Once the local system is fully utilized, it might be possible to extend its capabilities to support inquiries coming over communications lines from remote offices, but Beech is not impressed with this possibility.

"Frankly, I don't think any life insurance company can really justify that type of system economically," he explained, adding, "of course, some of them do it anyway," largely to show how modern they are.

More Funds Urged for 'Outmanned' Justice

(Continued from Page 1)

of companies in any industry where the top four firms controlled more than 50% of the market and would set up an industrial reorganization commission to oversee such "concentrated" industries and a special court to handle cases brought under the act.

On introducing the measure, Hart specifically pinpointed the computer industry as having a large degree of concentration.

Hart also discussed the cost of litigation under the old antitrust laws as a reason for the new measure.

Cost Discrepancy

Speaking before the Senate, he noted that "Control Data Corp. settled its suit – before trial – and was paid $15 million by IBM for costs and expenses of litigation. Yet the annual budget of the Antitrust Division is only $12.5 million."

In his remarks on the Senate floor, Hart also went further in discussion of the IBM/Control Data settlement by noting that the government spent more than $100,000 to develop a document retrieval system.

Then, he said, "the division realized that Control Data was far ahead in its efforts and had developed a more sophisticated system.

"Justice therefore asked for and received access to the company's retrieval system."

However, he noted, CDC had destroyed the index as part of its settlement with IBM and he said it might be too much of a burden for Justice to reconstruct the index.

Thus, he said, some observers feel "the IBM case will never be prosecuted effectively."

At the hearings, Beshar backed this contention by claiming that "the name of the game" in antitrust cases is "delay, delay, delay.

"Hide the delay if you can. Of course, make notices about wanting to go to trial, but if necessary, as we saw recently, get that delay by bringing about the destruction of an evidence index – even at the risk of being in contempt of court."

Hart also noted that concentration in certain industries can cut down on employment opportunities.

In singling out the computer industry, he claimed that when RCA and GE dropped out of the business, job losses swelled.

And, he felt that they might have stayed in the business if IBM had not been so dominant.

This is the first round of hearings on the Hart bill and the committee plans to hold hearings later this year specifically on the structure of the computer industry.

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Afips Study Finds No Shortage of Trained DPers

(Continued from Page 1)

ple employed in data processing are women, most of them are keypunch operators and "as one looks at the higher rungs of the occupational ladder, women are an increasingly smaller percentage of the work force," the report related.

"Only 21% of all business programmers and only 10% of all business systems analysts are women," it said. The study also noted only 1% of the keypunch operators is male.

The computer operator position also seems to be a "bastion of males"; the study showed 83% of the workers in this category are male and 17% are female.

In the early days of the computer industry, the report noted, most workers "received their training from the mainframe manufacturers or through on-the-job programs."

This changed during the 1960s as a large number of private EDP schools were established in response to what the study called an "acute" need that developed in the computer community for qualified people.

At their peak, these schools were responsible for training between 50,000 and 100,000 people yearly, Afips said, but this appears to be on the decline as public education assumes an increasingly important role in training future DP specialists.

Such formal public programs "range from high school to graduate school and in 1971 approximately 92,000 trained people were graduated," Afips noted.

Of this total, it said that 33,000 came from high schools; 45,400 from public vocational schools; 7,495 had associate degrees from two-year post high school programs; 3,350 received BA or BS degrees in the computer field; 2,070 graduated from master's work in computer sciences; and 335 received doctorates in the computer field that year.

In comparison, in 1966 about 1,000 degress in all (excluding high school and vocational schools) were granted in computer fields.

In the high school area, Afips noted that probably close to 200,000 students received some computer training, but it noted that of this amount, only 33,000 could be said to have "received sufficient training to enable them to seek work as programmer trainees if they so desired."

Foundation Fortunes Fare Better

(Continued from Page 1)

members of the committee and observers.

Foundation Cochairman John Swearingen of DPMA admitted he was unaware as to the exact constraints involved in the project. He explained that the approval of the DPMA International Board given last year would probably have to be obtained again this year.

Only then would it really be possible to determine what would be acceptable to it, or to ACM. Swearingen said he felt the DPMA board would be decisively influenced by the acceptability of the agreement to ACM.

The importance of keeping the public informed was brought out by ACM's delegate, foundation cochairman, Fred Harris, also the chairman of the bylaws committee. He requested that *Computerworld* publish the constitution and bylaws, preferably in time for the DPMA June convention in Chicago.

Other actions aimed at bringing out the relevant news included the setting up of a speakers' list of organizing committee members, who were prepared to go out to professional societies across the country to explain the plans.

The spirit of negotiation was nowhere more evident at the meeting than in the treatment of the financial matters.

The bylaws committee had suggested tying the voting rights of the various societies to an annual contribution fee. The problems involved were illustrated when Paul Pair of the Association of Educational Data Systems pointed out that the fee would amount to 52 per member for his society, and would be a strong burden, while it would only be about 20 cents per member for the larger societies.

After general agreement had been reached on the financing of the foundation, it was decided to separate any consideration of annual fees, or other methods of obtaining appropriate funds.

Another unresolved issue was that of the name of the foundation. Cochairman Harris reported that the bylaws committee had constructed a three-part "buzzword generator," one part of which had descriptions of the profession (data processing, computers, information sciences, etc.)

Another had names of the people involved (practitioners, members, users, etc.) and a final one had names of the type of organization involved (foundation, institute, association). He confessed, however, that the board was unable to come up with anything free of objections.

The increasing tendency of the societies to send in their top people (there were three presidents attending), so as to avoid votes having to be taken just in accordance with previous instructions, was considered a major advantage, and one of the reasons for the success of the meeting.

The next meeting is scheduled for May 11 and 12. Plans are to finally complete all arrangements leading up to the presentation of the final agreement to the DPMA International Board.

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- ☐ **Can't get service people fast enough.**
- ☐ **Never has a big enough budget.**

370 Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement for IBM 370 models 135, 145, 155, 165, 158 and 168.

The ARM-3360 is the Ampex memory enhancement for IBM models 155 and 165. It will expand a 155 to 2 megabytes and a 165 to 3 megabytes of total Ampex memory without any CPU or software modifications. This can save IBM 370/155 users as much as $140,000 (depending on the computer model). Operating speed and size of this proven dependable main memory are the same as the IBM 3360.

ARM-158 or 168 semiconductor memories will be available for users of either IBM 370 model 158 or 168 virtually upon delivery of the CPU.

The Ampex ARM-135 is a semiconductor memory enhancement that equals IBM-135 enhancement limits of 240K bytes in a compact 30" x 30" x 60" module. Equally important, Ampex also offers 48K and 96K byte modules for those who need some, but not maximum, memory capacity. Other significant features: The ARM-135 has the same transient power protection as IBM, its own test panel (unlike IBM) so you can test off-line, and is designed to take maximum advantage of IBM diagnostic routines. And you save up to 40% without sacrificing any performance.

The Ampex ARM-145 also is a semiconductor memory offering expansion to 512K bytes of memory. A real space saver, the ARM-145 stores up to 352K bytes in a single 24" x 60" x 60" cabinet. The ARM-145 has the same transient power protection, the same error-correction circuitry as the IBM 3345, its own test panel, and will take maximum advantage of IBM diagnostic routines . . . all at significant dollar savings.

Tape drives. The biggest news since Ampex pioneered tape recording is the new two-in-one configuration for the Ampex TC-38/TM-34 tape subsystem. Now you can reduce the amount of space required for tape drives and controllers in your DP center by nearly 50% . . . *or* double the number of drives without allocating more space. You get two high-performance 3420-compatible tape drives with data rates to 200 KB in a single cabinet, only a little larger than one individually mounted tape drive. But space reduction is only the beginning. The autothread on the TM-34 now is equipped with an exclusive "halo of air" that vastly improves threading without the reel-surround cartridge. The tape will literally thread itself from any position. Furthermore, the TM-34 has an automatic reel latch that forever eliminates manually operated locking levers or buttons. And, of course, this drive has a radial interface for operation with either the Ampex TC-38 or the IBM 3803 controller. Format configurations include any combination of 9-track, single or dual density, and 7-track with data rates from 60 to 200 KB.

And, of course, the TM-34 is also available as a stand-alone unit with data rates up to 320 KB.

Disks. Whether or not your 370 has ISC, Ampex disk drive systems will save you money and space. Compatable with either the 3830 or the 3333, one Ampex controller will handle 16 drives with a total storage capacity of 1.6 billion bytes. That's only part of the story. Add plug interchangeability, average access time of 28 milliseconds, convenient top loading, read-write compatability, storage of 100 million bytes per drive, dual channeling and faster starts and stops. And you save 15% with the Ampex DS-330 system.

360 Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement. For IBM models 22, 30, 40, 50, 65, and 67. ARM-22 expands the 360/22 to 64K; ARM-30 can expand the 360/30 to 128K; and ARM-40 can expand the 360/40 to 448K. The ARM-50 works to 1½ megabytes, and the ARM-2365 is designed for use with IBM models 360/65 and 67.

Mainframe-ECM. Equipped with a semiconductor cache memory, the standard ECM operates at the effective speed of the IBM 2365 mainframe memory. It is the most economical 1 to 8 megabyte replacement for the 2365. For the model 50, ECM still is available with a 2.5 microsecond cycle time.

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Univac Users . . . Ampex Offers These Problem Solvers

Mainframe memory enhancement. The ARM-1108 operates at the same speed and is completely compatible to 1108, 1106 and 494 systems operating with Exec 2, Exec 8 or OMEGA. Furthermore, this memory enhancement has a built in MMA to facilitate use in multi-processor environments. No minimum Univac memory is required.

Disks. The Ampex DS-8430 disk subsystem is a high-performance alternative to either Univac disk or drum systems. The DS-8430 has a radial interface to provide disk operation with proven FASTRAND software. This disk subsystem may also operate in a FASTRAND emulation mode, providing all the advantages of removable disks. It's the most efficient disk subsystem to be put on a Univac computer.

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Change Concepts

Key-Disk? Discard Safe Approach

By Michael Weinstein
Of the CW Staff

SAN FRANCISCO – A recurring suggestion at Caravan/73 panels on keypunch replacement is that users with key-to-disk equipment keep their input formats to the standard 80 columns.

This advice, to run key-to-disk stations as surrogate keypunches, appears to stem from two areas of user concern.

The first fear is that users will be unable to coordinate central computer operations and outlying data entry operations under key-to-disk.

The second fear is based on uncertainty of hardware reliability within the key-to-disk system.

Users who force all input data to fit 80 columns reduce the user advantages and do not take advantage of the key-to-disk system ability to generate recurring standard inputs, attendees agreed.

The crux of the issue is that while users can force their key-to-disk systems to operate as keypunches to fully reap the benefits of shared processor key-to-disk, they must develop more confidence in this approach and be willing to change their concepts of data preparation, thus giving more responsibility to outlying data entry departments.

Under standard keypunch operations the computer department is separated from keypunch operation with computer personnel performing all necessary software development.

This means that editing and validation are traditionally performed in the computer room

using programs written by the computer staff.

With key-to-disk these functions will be performed in what was the keypunch section.

Some Obstacles

Users who have invested considerable time and effort in developing data-handling programs feel that these programs, once developed, should not be discarded.

The other contention – that keypunch personnel do not have proper expertise – is not so clear.

This concern seems to stem from a feeling that to lose control of a vital computer function may lead to a degradation in this operations area.

All people, and computer people in particular, are hesitant about becoming dependent on operations they cannot control, the panel emphasized.

Trepidation Costs

The trade-off to placate these fears is that key-to-disk units are not employed most efficiently, users were told.

First, the ability to catch and correct errors as they occur must be realized.

If the key-to-disk unit is used solely as a keypunch-type unit, these errors will not be detected until they reach the central computer under a production run.

Secondly, users who do not take advantage of the formatting capabilities of the shared processor in the key-to-disk units deny themselves the ability to free the central processor from administrative tasks in data entry.

But probably the most restricting effect of the "safe approach" lies in the reduction of keystroke/hr.

The potential advantage of key-to-disk systems is that they can greatly increase the effective throughput of input data by increasing the number of keystroke/hr performed at each keystation.

This is accomplished not only by the automatic validation and check balancing but by the ability to key the data to suit the form of the source document.

...Beware Mixed Systems

SAN FRANCISCO – As data communications users become more sophisticated, the desire for greater speeds and capabilities naturally leads to a multivendor configuration, Stu Proffitt told the data communications panel.

But the situation is not clearcut, he added, as the cost savings of going to a multivendor environment must be weighed against the cost of developing internal expertise to handle the "invariable" fingerpointing.

Despite vendor claims, Proffitt asserted, no two units are totally plug-to-plug compatible. "Every device needs some added effort such as writing software."

To help in the evaluation of equipment, his firm, Standard Oil of California, has developed a practice that "unless a new device will save 20% or more over existing devices it is probable that in the long run there will be no cost savings."

Also, users with a heavy commitment to data communications applications will not consider commercial networks as a valid option for many years to come.

A question asked at the panel as to whether any users had plans to convert to a network such as Arpa, Tymshare or NCSS in the foreseeable future brought a standard response that these networks would not become factors for maybe 10 to 15 years.

How Important the Data? How Much Speed?

SAN FRANCISCO – "The major criteria to be considered in determining which applications should go on-line is the value of the information to be transmitted and the effect that time has on this value. "This was the consensus of users at the Computer Caravan/73 here.

"The commitment to on-line data entry presupposes that the user of the system is the most appropriate organization to provide the data entry function," G.P. Atkisson related at the data entry panel.

And many applications currently being considered for on-line approaches could best be performed in conventional methods (e.g. through mailing information, using couriers, etc.), "Gib" Hoxie told a tutorial on data communications planning.

But Stu Proffitt stated: "The speed with which the user needs the information and the geographic location where data is collected are the primary points to be considered in determining if an application is best suited for a data communications solution."

While these views might seem contradictory, users here felt they were all "variations on a theme."

Was the information important and did it have to get somewhere fast? This was a common criterion mentioned.

This value did not have to be measured in dollars and cents.

For example, Sherm Walker of the City and County of San Francisco pointed out that it was difficult to put a dollar value on information that dealt directly with people's lives such as hospital or police information.

But in all cases the theme remained constant – was the value of moving information quickly worth the cost to the organization served?

"We are in the paper business, not the computer business," Sid Smith of Crown Zellerbach stated.

In evaluation applications that should go on-line the primary question is whether it will help the production and selling of paper products to a greater extent than it will cost and degrade the computer operations.

In many cases the moving of data on-line must be looked at as an integral part of a work cycle, Steve Tiller added.

In evaluating cost it is necessary to add the cost of other non-computer personnel dependent on the data to perform their jobs, he added.

Smith told of an application with a lumber yard on one side of a river and the paper production facility on the other.

The old method had been to send the bill of lading across the river on a barge with the lumber.

But this procedure had slowed down the unloading of lumber as clerks had to first get the paperwork and organize for the unloading operation.

By sending the same information on-line as soon as the barge was loaded, clerks on the other side had the documents in hand and were on the dock waiting for the barge.

'K.C. Here I Come'

SAN FRANCISCO – The 3,300 attendees at the Caravan here bring the total for the seven cities to 21,000 or approximately 1,000/day.

The Caravan moves on to Kansas City, Mo., April 11-13.

Keypunch Replacement? 'But Let's Take It Easy'

SAN FRANCISCO – Non-punched card input media may be the message, but it is not the present condition with many users who attended the Computer Caravan/73 panel on data entry here last week.

Most attending users were considering replacing keypunch with on-line entry, OCR, intelligent terminals or key-to-disk. But they were looking for more reassurance before they started evaluating actual operating specifications.

One panel member said the impetus for this increasing concern comes from the more than $1 billion spent on data input in the U.S. per year.

Inevitable Trend

This dollar force means the trend away from keypunch is inevitable and will probably take the form of localized "follow the leader," he implied.

In location after location a large user with more internal expertise will adopt a more advanced method of data entry while other local users watch intently.

The success or failure of these initial users will determine the rapidity with which other users will follow, he observed.

In deciding the exact form of keypunch replacement the primary consideration is the application, users agreed.

For users with a need to translate source documents into computer input from remote locations, intelligent terminals appear to get the greatest support.

For users with all source documents in one location, key-to-disk ranks high.

Users with high-volume fast turnaround requirements should consider OCR.

And for users with applications that work best on an interactive basis, on-line provides the greatest potential, the panel agreed.

But in all cases the impetus to move to another form of media input is a combination of increasing throughput per station and the cost for this improved capability.

For example, in the case of key-to-disk equipment the primary consideration is effective keystroke/hr, one user contended.

This user further advised others not to get so overly involved in technical specifications as to forget the initial objective.

Don't Forget 'Trees'

ANAHEIM, Calif. – A common oversight experienced by users designing a data communications system is letting the terminals dictate the capabilities of the network, according to users at Caravan/73.

While this problem seems elementary and should be the first consideration, many users get so involved with the forest that they forget the trees, users stressed.

One user advised that before starting to move into data communications users should put up a sign saying, "make the terminals fit the communication, do not make the communications fit the terminals."

Avoiding Finger-Pointing

ANAHEIM, Calif. – While it is true users can cut costs considerably with a mixed-vendor communications system, they must consider possible difficulties through finger-pointing.

A controversial suggestion is to give one vendor overall responsibility. This vendor would assist the user in the design and implementation of the communications applications.

It is understood as this vendor helps with design he will use as much of his equipment as he can.

The trade-off is that for the advantage gained by the vendor in being able to specify his equipment, he will take full responsibility for the operations.

If the system or any portion is down, the user has a penalty clause in his contract with that vendor and can withhold payments.

Users at a Caravan/73 session here were somewhat split over this approach. Some argued that by going to one vendor for design and implementation the user was giving up possible monetary gains through a more economical mixing of equipment.

Another complaint was that users should endeavor to understand and control as much of their operation as possible and that the "one vendor is responsible" approach defeated that goal.

First Pay More For More Support

ANAHEIM, Calif. – Users starting a data communications network should start with IBM and AT&T until the system is running smoothly, and then investigate outside vendors.

This was the advice of several experienced users at Caravan/73's data communications panel.

The rationale behind this suggestion, according to these users, is that while users will pay more in the beginning they can expect to receive better support.

Another advantage of the "pay more for more support" approach is that it gives users a learning period. During this period of dependency they can grow accustomed to their system and its workings.

But once the system is running smoothly and users feel confident, the same panel members suggested shopping around for superior cost/performance.

Application to Management

U.S., Russia Agree on Five DP Projects

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The application of computers to management will be one of the first areas of cooperative research between the U.S. and the USSR, according to agreements reached here recently.

The U.S.-USSR Joint Commission on Scientific and Technical Cooperation announced approval of five projects in the application of computers to management as part of the 25 action programs accepted in six general areas.

Mutual Benefits

The areas were chosen because they were judged to offer "promise" of balanced and effective programs of further research that would yield benefits for both nations.

The Joint Commission, in its first meeting here, approved all of the projects recommended for action by its Joint Working Group in the application of computers area.

The five projects on which work will start immediately are:

- The theory of systems analysis applied to economics and management.
- Computer applications and software for creating system solutions for large general-purpose problems in the field of management.
- Econometric modeling (development of forecasting models for analysis of various branches of the economy).
- The use of computers for management of large cities.
- Theoretical foundation for the design, development and production of software.

In addition to the projects in the applications area, computer-based topics will also be started in other cooperative projects – most notably in the area of water resources control where a project will cover methods and means of automation and remote control and in the chemical field where a project will start on catalytic reactor modeling.

Signed Last May

The Joint Commission for Cooperative Research was established under the U.S.-USSR Agreement on Cooperation in the Fields of Science and Technology, which was signed by President Nixon on his visit to Moscow last May.

According to officials, under the agreement in the computer area, the forms of cooperation may include:

- Exchange of scientists and specialists between the two countries.
- Exchange of scientific and technical information.
- Joint research, development and testing, and the exchange of research results and experience between scientific research institutions and organizations.
- Organization of joint meetings, conferences and symposia.
- Rendering of help, as appropriate, on both sides in establishing contacts and arrangements between U.S. firms and Soviet enterprises where a mutual interest develops.
- Other forms of scientific and technical cooperation as "may be mutually agreed."

Sheriff Video System Probed

LOS ANGELES – An investigation has been ordered here into the performance of a video-file records system that is part of a $19.5 million sheriff's microwave communications project.

A report is expected in 30 days on the $8.1 million Ampex Corp. system.

The project involves use of a computer to retrieve information stored on videotape.

County officials said the system works but there allegedly is a question of whether the system meets performance specifications in the contract.

An Ampex official said Ampex is working with the county to review the technical aspects of the agreement with the county.

Ampex staff operates the video-file system which was installed in August 1971. No payments have been made to Ampex since December 1971, pending formal acceptance of the system's phase one, the official said.

Grasp Users Grow Up

Special to Computerworld

SYDNEY, Australia – The Australian software package Grasp now has more than 800 users worldwide.

According to the author, Boyd Munro, Grasp has approximately 500 users in the U.S. The balance includes mainly European and UK users. Munro claimed about half of all UK users of DOS were also Grasp users.

The only major computer-using country where the software has not been able to establish a foothold is Japan, where government-directed policies aimed at developing an indigenous software industry have been dominant.

Munro said the continuing development of Grasp included introduction of a teleprocessing segment, aimed at providing a remote job entry facility for users of IBM's DOS.

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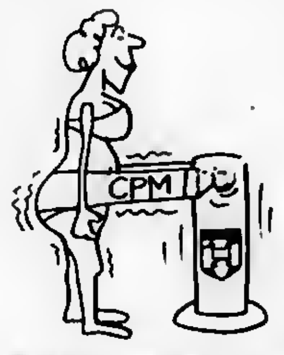

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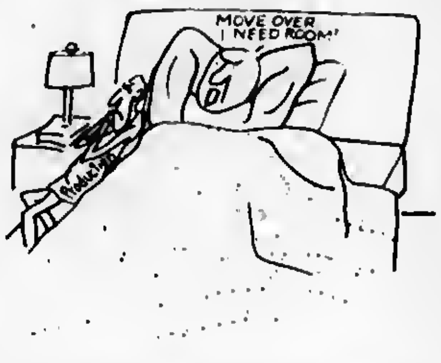
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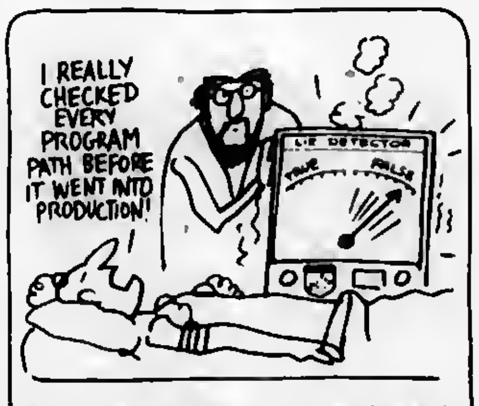
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Users Spared by Floods, Most Are on High Ground

By Bob Wright
Of the CW Staff

As of late last week, data processing installations near or within the flood-stricken areas of Missouri, Mississippi, Louisiana and Tennessee did not expect to be affected by rising waters.

Heavy rains late last year, coupled with recent storms, caused water in flood-control reservoirs to rise far above normal flood-control levels. Extensive damage in low-lying areas was reported but a random sampling by *Computerworld* of user sites showed no installations affected.

Most of those in the threatened area said they did not expect the waters to rise to the levels of their DP installations since they were on high ground.

Robert Bryan, DP manager at Delta Electric Power in Greenwood, Miss., said the flood waters would have to "engulf the entire town" before his building would be threatened. "I don't anticipate any problems. Our installation is built in one of the sturdiest huildings in the area and we are on a foundation about six feet off the ground."

Would Bryan be prepared to implement emergency procedures? "If the waters started coming up," he said, "it would take us less than an hour to get everything up to the second floor or even the roof. We have an engineer who could dismantle the equipment in about an hour. But I really don't expect that it will be necessary."

Users in other cities indicated much the same attitude. Tom Backstrom, DP manager at M.S. Chemical Corp. in Yazoo City, Miss., said: "We have not been affected and have not heard of any other DP installation being damaged."

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Medical Claim System in Trouble

Special to Computerworld

SACRAMENTO, Calif. – An investigation of a prototype, computerized system to process state medical claims for the poor has found a cost overrun of $4.5 million and errors ranging from duplicate payments to missent checks.

The state's auditor general found the overruns and errors after hospitals and other providers of Medi-Cal services complained that their claims were not being paid.

This system has been in operation since August of last year and was funded with $2.5 million. The cost is expected to hit $7 million by June 30.

The system is based on an IBM 370/155 with 80 IBM 2260 CRT terminals in Santa Clara and San Diego counties, the two counties where the system is used to pre-screen recipients of financial aid for medical expenses.

But an official of the auditor general's office said there were programming problems and "controls over input were too tight."

The system was set up and is operated by an administrative group, which is a joint venture of three companies – Pacific Mutual Life Insurance Co., Occidental Life Insurance Co. and California-Western States Life Insurance.

The state report said that more than $180,000 worth of checks have been returned by providers, such as hospitals and doctors, apparently because they were duplicates of earlier payments or were sent to the wrong person.

Blackouts Hit Fla. Users

By Ken Shonk
Of the CW Staff

MIAMI – Power blackouts that struck southeastern Florida on two consecutive mornings last week left local DP operations with lost time and a few lingering headaches.

At the American Bankers Life Assurance DP center in Miami, an IBM 360/30 went down.

"The problem was that one of the peripherals was down at the time of the power failure," DP manager H. Arner said. "We didn't realize that the down unit, a non-IBM unit, was the problem until an IBM field representative pointed it out to us. Then it took us five minutes to bypass the unit.

"The down peripheral appeared to have interfered with the way the CPU sequences up in power.

"The 360/30 eventually came back up."

At the Broward County tax collector's office in the county courthouse in Ft. Lauderdale, a battery backup power supply that had been installed the previous Saturday and had passed simulation tests failed to operate.

Bob Fehr, manager of DP operations, said both the 360/30 and 360/40 cycled down and powered back up properly in spite of the failure, with the exception of the control unit for the teleprocessing system.

"The control unit was acting strange all day," he said. "Everytime the control unit would go down, it would blow the communications system."

An IBM field engineer, he said, told him there is "some kind of heating element" in the unit that must be left on 24 hours a day for it to "maintain its proper operating temperature."

Backup Power

At Eastern Airlines in Miami the no-break power supply with a backup generator operated properly during the blackout. In addition to the blackouts, the facility also experienced a low voltage problem the evening of April 4 and went on reserve power at that time.

Several users lost not only time but also the job running on their machines during the blackouts. Systems Engineering, Inc. in Ft. Lauderdale lost a job on Tuesday on its NCR Century 100 and Carston Rist, DP director, said a job was possibly lost on Wednesday.

Citizens Federal Savings and Loan Association in Hialeah, with a 370/135, also had to restart a couple of jobs as did Western Union Computer Utilities in Ft. Lauderdale. Several other users such as Soundpost, Inc. of Miami Beach were more fortunate in that they were between jobs.

Florida Power and Light had publicly stated Tuesday that it had not isolated the problem. It later indicated an overload had caused the generators to shut down at a nuclear power facility tied into the southeastern Florida grid.

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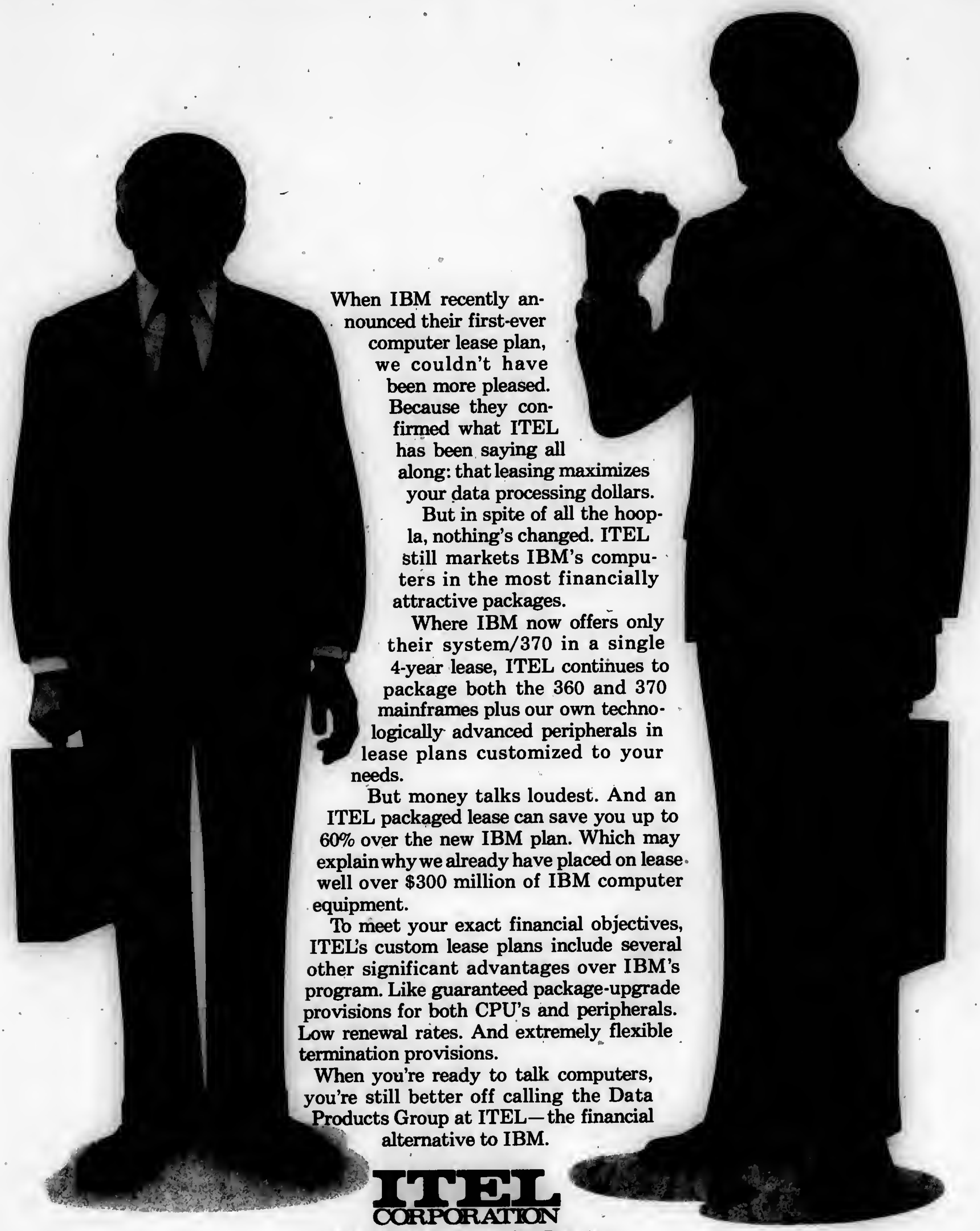

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Ford Reaps 'Enormous Savings' With Supplies Monitor

By Marvin Smalheiser
CW Correspondent

LOS ANGELES – Ford Motor Co., one of the world's largest computer users, is realizing "enormous cost savings" and greatly increasing its production capacity with a computerized information system monitoring its supplies.

The system was described by J. Paul Bergmoser, Ford vice-president for technical affairs, in the keynote address at the reçent 1973 Informatics/UCLA Symposium – a three-day meeting focusing on manufacturing management systems.

About 100 persons attended the symposium which featured 17 speakers discussing subjects ranging from management responsibilities to getting a payoff from the system.

Bergmoser said his system has shortened the new car model changeover time and dramatically reduced the time employees in assembly plants usually are laid off during changeovers.

"Although we can't prove it conclusively," he said, "we feel wc've gained incremental sales from having new cars more readily available to dealers during the new car introduction season.

"Already, we've saved millions of dollars of direct costs and produced other benefits which are real even though they cannot be quantified."

Optimal Production Schedule

Each night the system calculates Ford's entire parts inventory by part number. It also analyzes the orders on hand to determine which vehicles can be built, and calculates the optimal production schedule for the next day and subsequent day.

"At the beginning of each business day," Bergmoser said, "the computer gives the plant manager a snapshot of his order condition, his inventory condition and his best production schedule with alternatives."

The central computer in Dearborn, Mich., keeps track of all orders to suppliers and shipments made by suppliers to plants.

Bergmoser said the system has also enabled Ford to develop better sales forecasts.

The key to the success of the system, he said, has been planning.

"Without it the computer may end up running your business. With it, the computer may well be the key to new levels of efficiency and profitability – or even the key to survival . . . "

The symposium was cosponsored by Informatics, Inc., Canoga Park, Calif., and the American Production and Inventory Control Society in conjunction with the University of California at Los Angeles.

Hardware 'Available' for $60 Mini

By Ronald A. Frank
Of the CW Staff

NEW YORK – Minicomputer hardware to build a $60 machine is "already available" but the software to program such a machine remains an expensive problem for users. This was one of the main conclusions of a panel session on minis at IEEE Intercon/73 here.

The traditional approach of the mini vendors has been to develop a mini for $600, and then charge $20,000 for a complete hardware/software system thereby "giving the software away for free," one panelist mused.

"Having a higher order language for a minicomputer makes the difference between having a plaything or a valuable computer," according to William Highleyman of Minidata Services.

What Applications

While those attending the session agreed that software for minis is vitally important, an extensive discussion took place on the best applications for the smaller machines.

Ivan Flores, the panel chairman, submitted that minis were best suited for non-recurring programming problems. Attendees argued that minis will probably be most useful in applications where a given problem will recur such as process control.

The panelists disagreed on whether software should be debugged and assembled at the mini or at a larger central machine through simulation techniques.

"About 90% of mini programs are done right on the mini they are designed for," according to Milton Collins of Minico Systems, Inc. Another attendee stressed that the developed software should be brought to the mini after it has been assembled on a larger machine.

"We should not be seeking hardware or software solutions," Henry Oswald of ESP Corp. said, "instead we should find total management solutions to a business problem."

The use of minis in applications requiring large data bases was also debated with Highleyman stating the mini user needs only the data necessary for his particular application. One user said it might be feasible to disburse data base information by giving each mini user the portion of a larger data base that applies to his application.

"Instead of measuring the relative power of the mini, we should concentrate on making the machine fit the user's needs," one attendee said. Collins said one of the problems with allowing engineers to program minis is that they become more enthralled with the computing capability of the machine than with trying to solve the problem at hand.

The 1973 Computer Caravan is coming

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2:30 p.m. . Data Communcation Planning
Day 2:
9:00 a.m. . . . . Data Communications
2:30 p.m. . . . . Software Evaluation Panel
Day 3:
9:00 a.m. . . . . . Installation Management
2:30 p.m. . . . . .Small Systems Panel

*Entry to the morning sessions is $25 per day, which includes all workshop materials, luncheon, and admission to the Exposition Hall (see pre-registration form on page 20). Afternoon sessions are open to all – free of charge.

* * * * *

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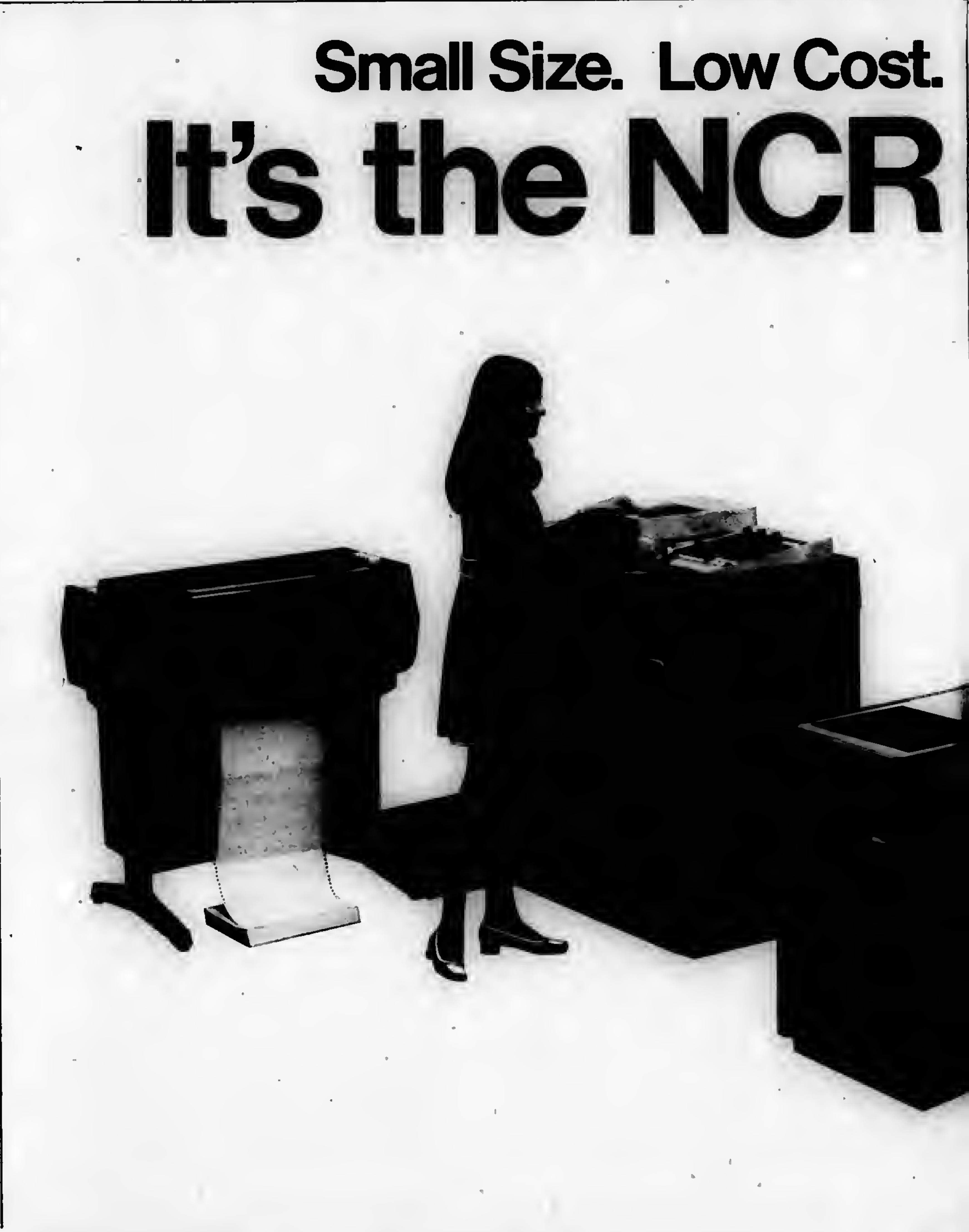
10 a.m. to 6 p.m. daily. Tickets are $5 per person and should be purchased at the door.



'I'd Rather Fight'

MADISON COUNTY, Ill. – Three county officers here have refused to allow their department paychecks to be prepared on the county's $300,000 computer system.

"We are elected officers and have the right to control our own departments," said George Musso, county treasurer. Musso cited an attorney general's opinion which supported the actions of Musso's office plus the offices of the county clerk and the recorder of deeds.

Musso said it only takes "a very short time" to prepare the payroll for his 34 employees and although actual processing time on the computer would be faster, "by the time we got the records to data processing and got the paychecks back, we could do it manually," he said.

The county currently handles payroll for about 540 employees. Seventy employees are involved in the three reluctent offices.

Checkless Society Due for 'Big' Steps

By a CW Staff Writer

HAWTHORNE, Calif. – "Significant steps" toward the checkless, cashless society will occur in the next year and the concept will spread rapidly during the next decade, according to TRW Data Systems, one of the suppliers that hopes to take advantage of this growing computer-related market.

There will be major changes in all aspects of credit buying and financing during the next decade, according to Leonard Mackenzie, vice-president of marketing, and many of them will be tied to computer-based systems for billing customers and for issuing payments on those bills.

Extend Communications

First, he said, major banks will extend their on-line channels of communications to retailers and other merchants on one end and also to national Federal Reserve Bank computer centers and credit card communications channels on the other side.

Expanding communication capabilities will also bring faster customer service with greater transaction control within banks and will alter the characteristics of branch banking through the use of on-line functional cash dispensers, he predicted.

Although the hardware and technology exist at the present time to implement some of these systems, he said, they would not be implemented until they could be made more cost-effective for the user.

And the way they will be made more cost-effective, he indicated, will be by linking all of these various services (point-of-sale, automatic banking, automatic deposits and clearances of checks) into a total system. Each part alone might not be cost-effective, he indicated, but connected in a total system, the entire package would be.

He noted that a major study has predicted that one day clearance of checks through the Federal Reserve's computers should be in operation by 1974 and that multibank point-of-sale systems should be operating by 1975.

In addition, the study predicted automatic account debiting will become common in 1977 and check flow will be reduced to less than half the 1972 level by 1979. A 70% reduction in the use of cash and checks should also come in the 1981 to 1982 time period when compared with the use today.

IRS Keeps Humans Out of Audit Step

LOS ANGELES – Taxpayers may soon hear directly from a computer at the Internal Revenue Service if their taxes need an audit.

And they'll probably reply directly to the computer too, according to Tax Corporation of America, a tax preparation company.

The IRS's no-humans-involved program was reported in a memorandum to Tax Corporation's 5,000 tax-preparing counselors around the U.S. The program is separate from audits conducted at local IRS district offices, TCA said.

'Audits by Mail'

Source of the new "audits by mail" are computers in IRS regional service centers. The computers are programmed to watch for various discrepancies which IRS consideres worthy of audit.

If the taxpayer supplies a satisfactory answer, the computer is instructed to accept his answer and the quick audit is over. Otherwise, he will get a bill from IRS, according to the tax preparation company.

The entire audit sequence is much faster with the computer than the traditional audits through local offices, TCA said. For one thing, they occur sooner – the computer is checking returns even before refund checks are issued.

And, if 10 days pass without a reply from the taxpayer, the computer automatically issues a report showing complete disallowance of the item that was challenged.

The tax-preparing company emphasized that the second report from the computer – the disallowance of the challenged item – is definitely open for discussion.

Got Tax Questions? IDRS Has Answers

BOSTON – With the ominous date of April 16 approaching fast, millions of Americans are generating the basic input information for a new IRS system as they fill out their income tax returns.

The Integrated Data Retrieval System (IDRS), the newest taxpayer service tool geared to answering the flood of taxpayer questions, is an on-line real-time system which can retrieve stored information in an average of four to 10 seconds.

Ten service centers around the country assure nationwide coverage. Terminals in regional and district offices are used to access information from the centers.

So far, the IDRS system is still in the first of three implementation stages, and not every taxpayer's return is on file. The current IRS computer system selects returns with "high query potential," such as those with mathematical errors or balances due, and these are put in the IDRS file for rapid accessibility.

The next two phases will increase the effectiveness of the system's collection activity. The complete system will be used to access account information and input adjustments.

The IDRS system functions much like those systems used by airline reservations clerks. Using a special code, changed daily to maintain security, the IDRS operator punches in the taxpayer's name, Social Security Number and question on the machine's keyboard. Within seconds a reply appears on the operator's CRT terminel.

Big Performance.
Century 101.

Now small and medium size businesses can have the big kind of computer power they need to grow.

The newly released peripherals for the NCR Century 101 processor are small in size and low in cost, yet they provide the power and versatility of units twice their size.
This basic 101 system, including processor, card or paper tape reader, line printer, and one dual platter disc unit covers no more space than 2½ feet by 10 feet! It can be placed in rooms where larger computers just won't fit. And, because it generates little heat, air conditioning requirements are minimal.
Big advantages in small pakages include freestanding add-on dual platter disc units, each having a storage capacity of 10 million bytes. A line printer that turns out 300 lines of crisp printing per minute. And an optional 30-character per second I/O Writer.
The 101 processor, heart of the system, includes features like a high-speed memory that can expand in practical increments from 16K to 64K. An optional multiplexor that provides control for 10 communications lines, with no increase in cabinetry. Seven-way to nine-way simultaneity. And many other features just as significant.
Later, as your business grows, you can expand this modular system to meet increased information requirements. Larger capacity disc units and higher speed printers can be added if and when you need them.
For the price, this new system from NCR offers big performance for businesses on the grow. Average systems range from just $1820 to $3800 per month!
Call your local NCR office for the specific advantages your business can expect from this newest member of the NCR Century family.

NCR
Computers & Terminals

lightweight, pedestal type LINE PRINTER turns out 300 lines of crisp printing per minute.

tha 101 PROCESSOR features high speed expandable memory, optimum hardware/software efficiency, dramatic throughput capabilities. CONTROL CONSOLE facilitates communication between operator and processor. Hard working CARD or TAPE READER (COT) assures fast, reliable coded input.

DISC FILE storage provides ten million bytes of ready information in each single spindle dual platter disc unit.

Editorial

The Need for Computer Auditing

(see letter)

There are many items and products which can have their quality controlled by careful adherence to a set of standard checks and procedures. Drinking cups, headed notepaper, etc. are among these. Accounting systems, however, are not, and have never been so.

As the then president of the American Institute of Certified Public Accountants, Marshall Armstrong, said in 1971, "No accountant in the history of our profession has been able to establish foolproof controls against fraud . . . "

If the accountants have been unable to do it in over 100 years, it is somewhat presumptuous of data processors to claim to have succeeded in a fraction of that time – whether the claim is made directly or implied.

Yet, this is the implied claim being made by Diamond International Corp.'s Peter Rijken when he denies that the total reliance upon his company's system, including testing procedures, may constitute a loophole in election auditing.

Auditing, understood properly, is the accounting profession's answer to the problem of establishing foolproof controls. It consists of requiring that the accounting procedures be subjected to after-the-fact, technically trained independent tests.

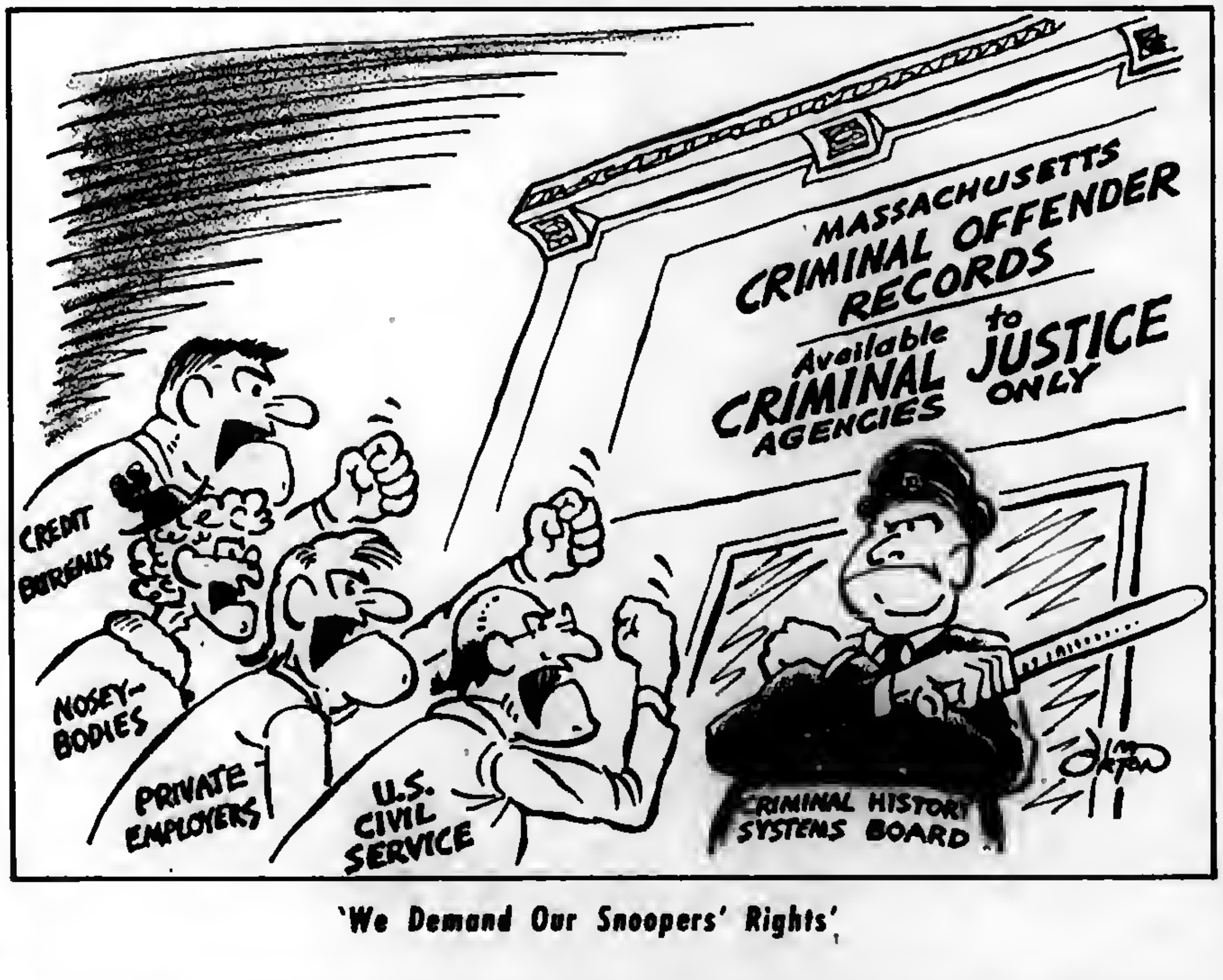
Unlike predesigned controls, audit tests cannot be totally known in advance, and so cannot be totally taken into account by a person who wants to change the election results.

Unlike non-technical tests, audits are not satisfied by a few sets of correct results being produced for lay journalists, or political figures. Nor are audits satisfied even by a history of previous correctness. The fact that no fraud or mistake occurred this year is no assurance that one cannot take place next year.

Data processing systems need auditing, for it is their best-known protection in view of the reality of the impossibility of foolproof controls. Data processing system vendors like Rijken should welcome those who are prepared to assist in auditing, and even in financing the audit.

They should not deny the need – at least not until they have a great deal more evidence on how to establish foolproof controls against fraud.

And that will not be for quite some time yet.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'We Demand Our Snoopers' Rights'

Attitude Vital in Communication

"I know you believe you understood what you think I said, but I am not sure you realize what you heard is not what I meant."

Management
By Frank Greenwood, PhD

Communicating with others is not easy. It is not true that if you can talk, you can communicate (i.e., have a meaningful exchange).

Obstacles to communication include:

- Language – After a meeting kicking off the system design phase for the new personnel system, it is flabbergasting to learn from a bright young interviewer that she understood little of it (e.g., input, output, random access).
- Preconceptions – The image of instant, effortless automation is incorrect, but it persists in enough minds to be a daily headache.
- Anxieties – Fears that new computerized systems cannot be understood or will replace people are common.
- Defensiveness – Anxieties induce defenses such as blaming the computer center people for inaccurate input.
- Objectives – Conflicting objectives, such as making the computer center the scapegoat for poor management in the input office (versus trying to improve the information system), sometimes exist.

Flow of Meaning

Communication occurs when there is a flow of meaning between people *despite* these obstacles. Such barriers are part of communication. They cannot be wiped away; they are a component of communication. That is, resistance to understanding has to be dealt with as a normal part of the act of communicating.

Your attitudes largely determine your success in communicating. Barriers probably cannot be overcome if you tolerate only agreement and consider your view as final, or if you simply instruct an individual in a superficial, technical sense and do not take him seriously as a person.

In contrast, communication is encouraged by openness to the other, by seeking to know him, and by taking him seriously as an individual. (See Reuel Howe's paperback, *The Miracle of Dialogue,* in its eighteenth printing).

Your attitudes are influenced by your purpose, so consider the purposes of communication. It is not a purpose of communication to make decisions for your associates. (A good guide for decision-making is that you do *not* make decisions others should make, or that are premature, or that are not now relevant, or that cannot be implemented.)

Further, it is not a purpose of communication to achieve agreement with your view.

The correct purposes of communication, therefore, include supplying essential information and helping people make their own decisions.

Communicating – entering into relation with other people – is difficult. You must be willing to reveal yourself (fighting the natural tendency to overprotect yourself) and to hear and to receive the meaning of what the other person says and does.

Communicating thus involves both the content of the dialog and the accompanying human relationships. A demanding business, it requires that you speak when necessary, despite the risk, and that you be appropriately silent, avoiding the attractive role of natural-born-leader (who does all the talking and makes all the decisions).

Communication cannot occur unless you first accept your human relationship with the other. But the other person may not accept you, or may ignore you, or may otherwise discourage you. Accordingly, determination – courage, even – is needed.

It is also true in communicating that we are influenced by the attitudes we bring to the meeting. Our predisposition may prevent our listening to the other person, because we hear only what we expect him to say.

Listen and Learn

"Garbage in, garbage out" applies in communicating. If you do not listen, sort out the important facts and ideas and remember them, you are wasting your time. Listening is, therefore, at least half of communicating.

Attention is basic. You have to concentrate on what is being said. Mind-wandering can be controlled by deliberately seeking interesting points in what is said and by fighting distractions.

People often solve their own problems if you will just listen.

Management is the art of getting things done through others, so there is little argument that communicating with other people is a basic management skill.

(Frank Greenwood is director of the computer center at the University of Montana.)

Letters to the Editor

Test Procedure Avoids Auditing Loopholes

In the March 7 issue, *Computerworld* published the results of an interview with Gerald L. Mann Jr., director of the City of Honolulu's Department of Information Systems.

In those results as printed several statements have been made with which I disagree. I was present at the computer site both during the primary and the general election as a representative of Diamond International Corp., the vendor of the programming system, called Datavote.

Therefore, I feel I am in a position to review some of the apparent misunderstandings. The following are the statements and my comments on each:

- Who checks the election results here? "The same program that produced them in the first place."

This is not true, as the program output is checked using a logic and accuracy test, before, during and after the election, and the results of that test are carefully checked each time. In addition, the group of independent observers, who represent the political parties involved, the League of Women Voters, the Bar Association and the press, each submit their individual test of which they know the results before submitting it.

- A loophole in auditing? Yes.

I contest this statement, as there is an elaborate testing procedure performed plus the political observers did submit their own sample ballots for a test, and verified the results.

- Currently, election results are processed by an outside computer service. If this statement refers to the ballot count for the City and County of Honolulu, it is not factual.

The program that counts the ballot cards is purchased from us; however, the State of Hawaii owns all the programs in source form and must perform some modification to customize the system for any given election. The processing is accomplished at a computer installation operated by the State of Hawaii, using some employees from the state and some from the City of Honolulu, some even from Mann's own department!

There are some people employed on election day who have been selected from Honolulu business operations, but all these different people are selected by the election officer because of their experience in prior elections or because of their skill, useful at the election.

For the other counties in the state the count is performed with a variety of methods.

- The only audit made on the outside program is to rerun data from selected precincts using the same program and computer.

This statement is erroneous; for example, the count for the County of Hawaii is performed at a different computer and audited in Honolulu.

Peter Rijken
Diamond International Corp.
Los Angeles, Calif.

(other letters and viewpoints on Pages 11-14)

Labels Tell All — IBM's a 'Lender'

Justice Department Should Take Cue From Supermarket

There have been many suggestions as to how the Justice Department should treat IBM. However, as far as I know, no one has ever suggested that Justice take its cue from what can be seen in a supermarket.

I walked around a supermarket recently and noticed that some foods are being labeled quite differently than they used to be labeled.

And seriously, I think it's quite possible that by labeling IBM and its products in an appropriate manner we might be able to achieve most of the ends that Justice and the profession are looking for. More to the point we could achieve them in a way that could be more effective than the 1956 Consent Decree has been for the past few years.

The Taylor Report
By
Alan Taylor, CDP

In food shopping today one can, for instance, buy mixtures of beef and gravy. In just the same way, in computer shopping you can buy mixtures of machines, service, software and maintenance.

The problem the housewife faced was not knowing just what was in each mixture. The solution was to force the companies to reveal these facts on the label. The most important ingredient had to be listed first. Now the rules say that the type-size and other items shall reflect the real contents. So now packages of "gravy (mixed with beef)" can be seen alongside packages of "beef and gravy." Now housewives can easily tell the difference between them.

Moreover, as far as the essential ingredients are concerned, the label must also say the item includes (in mixtures like gravy) such things as water, cooked beef, beef fat, flour, starch, salt, hydrolized plant protein, onion powder, caramel color, sugar and flavoring.

These labels seem to be quite useful to housewives wondering what the difference is between two or more offerings which, judging by the pictures, are apparently the same. They also make it a little bit more plain just what one is purchasing for his 42 cents.

Computer Users Also

It isn't only the housewife who wonders just what her money is purchasing and how much value she's getting for it. Computer people also have this problem.

Moreover, it isn't only the housewife who has a crisis. She has a crisis with the cost of living, whereas data processors have a crisis with the comparative lack of any serious interest in the quality of their product.

Almost without exception, DP experts have not concerned themselves with quality, only with such points as how to get a tape to read under some new operating system, or other secondary factors.

This lack of interest in the quality of products has come about because the cost figures — like the gravy contents — have not been seen. They, like the amount of gravy that can be in a stew, have been obscured under a picture which does not reflect the full reality.

So I've been spending some time designing a frozen food-type dinner for a typical IBM computer rental. Of course, the first thing was to find out what was the essential item IBM was selling; was it in fact beef or was it gravy? I found the answer in a Sept. 18, 1968 memo from Toni Watson Jr. and some explanations he gave later. He said IBM was really a rental operation, and was being forced by the leasing companies to sell some of its products. Apparently IBM found that when it did sell to leasing companies, it affected profits on the rental side. So IBM limited such sales to levels that did not endanger its rental income. It looks as though IBM can be regarded primarily as a rental operator, so let's put the "rental" in the main area in the dinner.

But IBM is certainly other things. It is, for instance, a computer manufacturer. It's really a tight sort of manufacturing. The ordinary person can't order a particular product unless IBM has it in what it calls "new production." Otherwise it will insist on selling — at new prices — a used system. Manufacturing is still an important point so we could put it in as a side dish.

There used to be, and perhaps there will be again, a third area — the service bureau area. This has just been closed off, at least until 1978. But it's still there, so perhaps we should keep a space for it.

Then comes the little area — the sales area. IBM policy, I find, is to have this controlled to 10% and to turn it on or off as it wants. So we should only give that the sort of space that a breadroll gets on a frozen dinner. It's only there at all because the U.S. Government prosecuted it for breaking the antitrust laws, so it does not deserve much more space.

Now we can see what IBM is really offering. There's only one problem — we still can't tell what's in that main offering, the rental system.

IBM Rental "Contents"

Rental rates are developed by IBM through the use of a complicated formula which takes in all sorts of costs and then adds a 30% profit. This is worked out over an arbitrarily allocated life length. Then the rentals are adjusted to take this amount into account.

After this calculated life is over the rental stays the same because IBM believes — it says — that the value of the machine in producing pay slips or whatever it is used for, remains just as great later as it did originally.

As a result, if the rental stays the same, although there are no costs being recovered, rental profits start accruing rather fast.

According to evidence given by IBM's director of finance these profits accrue at the rate of 2% of the total purchase cost per month once the costs are recovered. That's 24% per year, which is good money.

One of the points that obscures this matter is that IBM tends to use an unrealistically low number of years for the derivation of the rental figure. Computers, as IBM itself points out, keep on running. A computer shopper will probably be interested in knowing how his rental money is being spent compared with a purchased system.

System Life

This, of course, depends upon how long the system life is going to be. We don't really know how long the lives of computers are going to be, particularly not when they've been introduced. But we can get some estimates, for instance, with regard to the life of the 360 systems.

IBM Model 30s were first delivered in 1965, went out of new production in 1969, and so were produced over a four-year period. They are still strongly in use so that currently the average life is probably over seven years.

This means that IBM has been paid almost twice over for the machine — and still the user has no equity in it!

Now what this means with regard to real IBM profits I can't say. After all, tomorrow the machine may be scrapped. Alternatively it may be kept in use for years.

If it stops being used as a Model 30, it can reappear as a Model 22, or in one of a number of guises. Profit figures then, don't seem to be too informative, except if one looks at the IBM annual reports and sees that they are certainly being made. Profits must come from somewhere.

User Situation Clearer

From the point of view of the original computer user who is interested in getting his job done, what he is interested in is whether he should rent or whether he should purchase.

For this he needs to know what the costs of rental are, what the costs of purchase are and what the secondhand value is. Then a nice little graph could be made which gives some examples of the life of systems.

Now if you, as a computer user, had a chart like this next time you were thinking of obtaining more computer power, I think you might react very much the way that housewives react when they're shown in large print that it's gravy they're buying rather than meat.

They don't stop buying the gravy — they merely take the alternatives properly into account. They don't assume using the picture in front of them that it's really meat they're buying. In fact, they become informed buyers.

I believe that informed computer buyers would economize enough on hardware that they could stay involved in the quality of data processing, rather than in the intricacies of the latest glamor way of getting the paychecks out, which they can do perfectly well with older equipment.

And so here is my suggestion to the Justice Department. Go around a supermarket, and then instruct IBM to label itself accurately, to stop calling itself a computer manufacturer because it is not essentially a computer manufacturer, but instead to call itself openly and in large letters a "computer lender."

At the same time Justice could be sure that the way IBM lends computers and its costing methods are published — just as the contents of gravy are published. After all what's sauce for the goose is sauce for the gander, and I can't see too much difference between the gravy around the meat and the "gravy" that comes as a result of lending at such unusually high interest rates.

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Letters to the Editor

End User, OEM Salesman Not in the Same League

In the viewpoint entitled "Why Don't Salesmen Talk of the Application?" [CW, March 14], Jerrold Asher makes some good points regarding the lack of systems and applications knowledge on the part of many DP hardware salesmen.

But I feel he confuses two fields of sales endeavor in our industry: end-user systems sales, and OEM or "purchase for resales" selling.

In the former, application of the product and user benefits are of prime importance. But in OEM sales, the salesman is speaking to an engineer (or should be). The "contest" or "game" Asher refers to is indeed one of numbers, specifications and price. If the OEM buyer cannot, on his own, analyze product offerings in light of his planned applications, then he and his company (and their potential customers) are in trouble.

As to Asher's question, "Shouldn't these well-paid men be capable of applying the unique features of their equipment to specific problems? Isn't that what salesmanship is?" Yes, he should and must have this ability when dealing with the end-user. But an OEM purchaser must be able to select the proper component parts for his company's systems offerings.

For this, he expects and receives large discounts from the manufacturer based on quantity purchased. As to the statement "well-paid," good salesmen are (and deserve to be) well-paid; poor salesmen deservedly are not.

Paul B. Landry
Director of Marketing
Data Systems Division
Gould Inc.
Newton, Mass.

Analyst Job Opportunities 'Grossly Overestimated'

The old game of lying with statistics seems to be par for the course with government bureaucracy. This is true with the projections of "Occupational Manpower & Training Needs" issued by the U.S. Bureau of Labor regarding projections for systems analysts.

This report is grossly distorted and falsely misleading. So optimistic are these figures for the 1970s that a 193% growth rate is projected, requiring average annual openings of some 27,000 — 4,000 replacements and 23,000 new openings.

If one looks realistically at the job market for systems analysts from 1970 to date (and running some sample tests for evaluation), there are hardly 63,000 jobs opening up in this field. Were there that many, the demand for systems analysts would have absorbed the thousands still out on the street trying to find reemployment and would have created a shortage which would be acutely felt.

The advertising indexes for jobs and conditions of the current job market all over the country do not indicate any kind of demand which approaches these optimistic figures.

Such misleading propaganda misdirects efforts of students in school who are counseled by college counselors. It also creates an artificial and unnecessary glut of systems analysts in the market for which there is no equivalent demand.

John J. Callahan Jr.
Saratoga Springs, N.Y.

RPG Produces Profits

Marvin S. Ruth's statement, "I prefer state of the art companies" [Letters to the Editor, CW, March 28], sums up the major problem obsessing our entire profession; programmers and analysts who work for companies forget they are supposed to produce a profit. They are entranced with the equipment and languages and never care a whit whether their way is the profitable way.

Several years ago *Computerworld* published the results of a Navy study that showed a certain volume of programming work took an RPG programmer one hour, a Cobol programmer two hours and a BAL programmer nine hours. Why not perform yet another public service and republish that chart with a special heading reading; "Attention Company Treasurers."

John R. Thomas Jr.
H.H. Cutler Co.

Computerworld presents its new sister:

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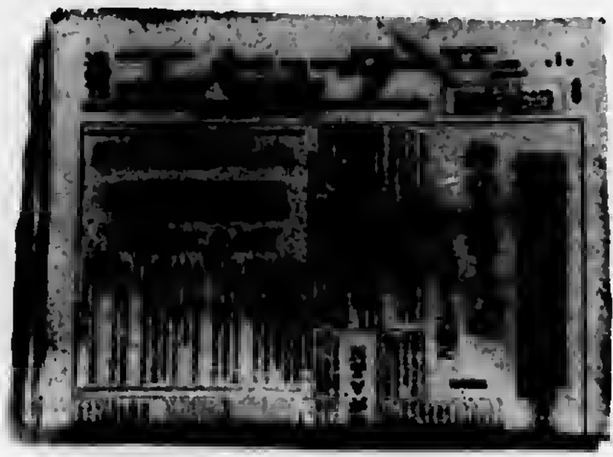
Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld's* editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.

The Staff of Dempa Computerworld Inc.



Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

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As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempa Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"

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Interested in Cobol Development? Make Suggestions Direct to PLC

By Fred L. Forman

Special to Computerworld

Viewpoint

I have recently been an observer at two Programming Languages Committee meetings, and I am very interested in the development of Cobol. I was startled by Alan Taylor's article in the March 14 issue.

His report presents a ridiculous approach to what he views as the problems of Cobol development. He complains of the delay in getting users' changes to Cobol, yet his solution is to put *another review* committee between the users and the PLC.

How this would facilitate development is not obvious to me. Also, $20 for a copy of a statement by the chairman of PLC about mimeographing costs (and other equally important notes) seems expensive and not very relevant to the development of Cobol.

How PLC Works

Taylor knows full well how PLC functions. PLC accepts proposals from anybody on the subject of Cobol development (e.g., Taylor currently has a proposal outstanding). Although PLC does have rather stringent proposal format rules, the Proposal Editing Task Group meets prior to most PLC meetings and will correct any minor problems.

If the proposal is in the format of suggestions, then the suggestion is considered by PLC as a working paper. If the idea is judged to have merit, then PLC will usually direct one of its members to convert it to a proposal.

Furthermore, the workings of the PLC are not secret, and a sleuth somewhat less qualified than Sherlock Holmes could easily discover what is going on.

For example, the PLC publishes *all* changes to the language in the *Cobol Journal of Development*, which is available to the public. The current Data Base Language Task Group proposal is also available to the public.

Who Are They?

Who is PLC? It is composed of designated members from IBM, Univac, CDC, DEC, Honeywell, National Bureau of Standards, Computer Sciences Corp., Southern Railway and others. These members are qualified to consider the full implications of changes to the language and desire to maintain useful and compatible features in Cobol.

My question is: "Who is the Cobol Coordinating Committee?"

To respond to a few of Taylor's specific points:

- Hardware independence is a myth, and Taylor knows it. Certainly Cobol has eased any problems of transferring from one machine to another.

- As for the problems of getting a proposal accepted by PLC, all proposals are accepted (as mentioned above). Getting it passed is a matter which depends on the merits of the proposal.

Furthermore, most proposals are considered within three meetings of the time of receipt.

90% Passed

In the last year, 45% of the proposals considered were of non-PLC origin. Of those on which a decision was made over 90% were passed. The others are currently active pending further work.

- The implication that PLC is secretive is senseless. Taylor has been regularly receiving the minutes of PLC meetings, for example. Also, PLC is now inviting people submitting proposals to the meeting at which their proposal will be considered.

- The subscriber to the *Question and Answer Journal* should be aware that he is not getting an official opinion on the merits of various suggestions about Cobol, but most likely the opinion of Alan Taylor.

Taylor concludes: "If you are interested in the development of Cobol . . . please consider subscribing to one or more of the journals . . . ."

I think that if you are interested in the development of Cobol, you should save your $80. Invest $3.50 for the new *Cobol Journal of Development* (1973), read it and make suggestions or proposals directly to PLC. I believe this is the most effective way to affect Cobol development.

Forman is a senior project manager at American Management Systems, Inc. in Arlington, Va.

Letters to the Editor

Meet the Editors

We were pleased to see a review of *Cobol Support Packages*, which appeared in the March 21 issue under "Book Marks."

The article implied that Richard G. Canning edited the original Cobol series which appeared in *Data Processing Digest*. In fact, Richard G. Canning and Daniel Couger are editors of the *Wiley Business DP Library*.

The Cobol series which appeared in *Data Processing Digest* was edited by Stanley M. Naftaly and Michael C. Cohen and written by Bruce G. Johnson.

Margaret Milligan
Publisher

Data Processing Digest, Inc.
Los Angeles, Calif.

Join a Society and Work

Re: Which Society Should DPer Join? [CW, The Professional Viewpoint, March 21]:

Cris Coddington has the right idea. I may disagree with some of his observations, however, his general thought has reached the heart of the problem. Not one of our societies speaks for its general membership. Not one really offers what it reports to offer. I hope the various societies take notice of his viewpoint.

I too would like to see DPMA work with SCDP and SPDP to come up with a truly representative society. I think the SPDP is trying to do just that. That is why I have paid my dues and joined.

I still work through DPMA to accomplish this same objective. I encourage all professionals to join one of the societies, then work toward a goal of realistic representation.

Cornelius M. Head

Indianapolis, Ind.

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Letters to the Editor

Evaluate Systems As Separate Entities

In reference to the article on "Programming Methods Waste Time, Talent," [CW, Special Report, Feb. 28], I fully agree with Sider's comment on the team concept, except that a programming secretary is not necessary. A programming secretary is really doing the job that a junior programmer should be exposed to in his initial training period.

I do not believe that programming secretaries should do special things for programmers. If proper documentation is written concerning a program, the only person who can do that documentation justice is the actual person who wrote the program.

If a programming secretary has to write the information down based on what her analysis of the program is, this is redundant.

In his comment on the designs of systems, Sider stated that "most systems designs are little more than carryovers from tab days." This has to be looked at from an economic basis.

For example, if a particular tab operation was converted at minimal cost and it operates much faster, with accurate output, who can say that a new, complete third- or fourth-generation on-line or real-time system is necessary?

The processing methods using computers depend on availability and cost of equipment, as related to speed and accuracy of needed, useful reports, both internal and external.

The determination of need is done in the feasibility (initial) study, then the system is designed using all available tools that the installations have. This also includes the user, as well as the hardware/software/technical experts, being involved in a systems design. Maybe the "tab" system wasn't too bad after the requestor had been billed for initial studies, system design, conversion, programming, testing and the new computer processing time.

I am not stating that all computer systems should be a carryover from tab procedures, but each system should be evaluated as a separate entity; then plan the best approach to an expedient, quality system.

In relation to the programmer having 10 "test shots" a day, this indicates that desk checking and proper programming analysis is lacking. A programmer should not be doing other things besides programming and working on improving and expediting his program methods.

A good organization should at least have a control "closed shop" or a complete "closed shop." Operators should do the testing with the proper instructions from the programmers.

William D. McCarter
Assistant Vice-President,
Systems/Programming Mgr.
Bank Virginia Service Co.
Richmond, Va.

Lack of Discernment?

In reference to E.J. Krayer's letter [CW, March 21] complaining of the shortcomings of Brand I software, and proposing still another professional society for RPG users (incredible!!), I suspect he is paying for a lack of discernment at hardware selection time. I wonder if the choice was his?

T.E. O'Connor
Mountain View, Calif.

Useless Experience?

Clearly, the opportunities to reduce inventory by $500,000 after learning to program in half an hour [CW, Letters to the Editor, Feb. 14] are limited to the worst-run companies in the country.

Just as clear should be the point that experience in reentrant BAL is probably useless in an RPG shop.

W. Fitzpatrick
Long Beach, Calif.

A Last (?) Word on IBM and Individuality

By James P. Fraser
Special to Computerworld

The letter from Johnnie Jackson [CW, Feb. 28] is not of interest in itself, because I periodically see this minority viewpoint of supernatural reverence for IBM in *Computerworld.*

What is of considerable interest is the immediate and vociferous response which always accompanies such a letter. One would almost think there is a significant percentage of persons in the DP community who actually think for themselves and possess the courage to be an individual.

The very same decision maker in hardware selection who bemoans IBM's arrogance consistently (or is it inconsistently) demands more of an independent than he does of Big Brother. He rationalizes by claiming his system is unique and possesses fantastic schedule requirements, which are so critical it would ruin the entire economy of this country if it were shut down for three minutes.

Massive ego is generally a corollary of massive insecurity. The small percentage of data processing professionals who have accurately appraised their company's requirements and profit goals have been the only persons with enough courage to select equipment on merit.

The historical record is absolutely clear that independent peripherals have performed with greater capability, at less cost, than similar IBM equipment.

Viewpoint

It is the purchasers of this equipment in whose debt all the parasitic (there's that word again, but at least in proper context) *buyers* of IBM equipment have enjoyed significant price reductions.

For the Johnnie Jacksons of the world who are insulated from the real world of cost consciousness, I have nothing to say.

For the rest of you, I have a warning! In the coming years, because of your inaction and indecisiveness, IBM could well have a monopoly. So what, you must wonder, I'll still have "mine" (career, position, job, etc.). You probably will and I am sorry for you.

When you are consistently told the hardware to use, the programs available, the kind of data processing person you should be – don't be surprised if you have lost something else along the way, yourself.

Further, when jobs are so categorized and computerized, don't be shocked at the salary levels developed under this kind of closed structure. After all, when creativity and individuality are not a required part of a job, who needs someone with more than a modicum of intelligence.

Computer Lists Office Space

SYDNEY, Australia – Companies seeking office space in Sydney can now use a computer to select their exact requirements.

Sydney real estate agents have introduced the service because of the wide variety of office space available

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Random Notes

'Mister' Controls Projects Through Infonet T/S Service

LOS ANGELES – Construction and other project-oriented managers can gain long-range planning facilities and control of current operations through the Management Information System for Time, Expenses and Resources (Mister) just installed in the Infonet time-sharing network by Computer Sciences Corp.

Mister allows management to project as much as a decade ahead, which might be particularly appropriate, CSC suggested, for chemical processing and pollution control projects, and for product research and development in hard goods.

NCR Adds Business Applications Using 'Mag-Stripe' Cards on 399s

DAYTON, Ohio – A four-part accounting system – including payroll, accounts payable and receivable and general ledger and financial reporting – has been released by NCR for users of the NCR 399 accounting computers, equipped with magnetic stripe ledger card reading capability.

There are two versions of the payroll system. Payables are handled on an open-account basis while receivables processing is done on open-item accounting. The packages are available for one-time license fees ranging from $750 to $900 each, an NCR spokesman said.

Varian 73 and 620 Users Offered Enhanced Pert Under MOS, Vortex

IRVINE, Calif. – Users of Varian's 620 or 73 computers running under either the Master Operating System (MOS) or Vortex can generate Pert reports in batch mode with new software from the hardware vendor.

The updated program, written in ANS Fortran, accepts directives and networks as inputs and generates full-scale analyses as output. Large networks can be input in condensed form for later revision and processing, the company said. Provided free to MOS and Vortex users, the Pert package is available in stand-alone object code for $300.

Data General Has RJE Support

SOUTHBORO, Mass. – A Nova-based computer system operating under either RTOS or RDOS can act as a programmable remote job entry terminal to a 360/370 or to another Nova, with new system software from Data General.

The program performs communications support functions including accepting jobs from an operator, sending and receiving blocked data and routing received data to the appropriate ouput device.

It uses IBM's Binary Synchronous communications procedures, and requires 8K words of memory, a real-time clock and Data General's 4074 synchronous line adapter.

U.S. TG-10 Reports:

CPE Guidelines Need Full-Time R&D

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – Nearly two years after being asked to recommend guidelines for the use of computer performance evaluation (CPE) tools and techniques, Federal Information Processing Standards Task Group 10 (TG-10) has told the National Bureau of Standards that a far greater effort is needed.

TG-10 recommended that a full-time CPE guidelines development and testing group should be established at NBS and given a rather closely defined series of tasks to bring order out of the present CPE confusion.

Hard to Define

TG-10 noted that suggestions, both general and specific, "would be welcomed by the growing CPE community," but that in its limited study the task group could not identify any all-encompassing guidelines – this despite the fact that many of the group's own members are active in the use of CPE products.

These products include hardware and software monitor systems, run-time analyzers, computer system simulation systems, coding optimizers, job-accounting modules and work schedulers.

The basic problem in trying to bring this together is that the differing architectures of computers coupled with the numerous applications to which they can be assigned "produce an extremely large range of potential performance improvement methodologies," the report explained.

To bring these methodologies into focus, the proposed group – made up of representatives of three federal agencies, a computer manufacturer, a CPE product vendor and a CPE consultant – should break its study into separate areas.

First, TG-10 suggested, the group must develop sets of terms and their definitions to describe CPE tools and techniques.

Then it should develop another set of terms and definitions to describe the physical, architectural and functional characteristics of computers, components and computer systems which may be measured and evaluated.

Matrix Necessary

With those two general sets of terms established, the guidelines group should construct a table or series of tables in the form of a matrix matching the tools and techniques against the characteristics that can be measured.

Later, the group should get into the evaluation of the CPE products themselves, and of the existing or new measurement parameters on the computers or components.

The impact of particular application areas on CPE operations should also be studied, TG-10 told NBS.

A new comprehensive government-wide survey should be undertaken to determine the true use, cost and benefits of CPE.

TG-10 chairman Michael Morris of the Federal Simulation Center explained that this survey should in fact determine whether any of the proposed research and development work is worthwhile. If the government's current CPE effort is still minimal, he said, it would be hard to justify the $1 million budget and 19 man-years of effort TG-10 proposes.

Since the federal agencies, computer manufacturers and CPE product vendors all stand to benefit from any meaningful guidelines the study group may develop, they should be willing to underwrite the cost of any products or people they provide, TG-10 said.

'MAS' Builds Precoded Pieces Into Large Customized Systems

BALTIMORE – Manufacturers and distributors using 360 or 370 CPUs can gain many of the processing niceties of custom programming and the controlled cost of "packaged" software through the Modular Applications System (MAS) approach from Martin Marietta Data Systems.

Developed originally by Hoskyns Group Ltd. of London, MAS is a set of six applications designed to operate, if desired, as one massive integrated system. But it is made up of small blocks so that any part can be effectively tailored, without "heavy" custom work.

The six basic applications are inventory; cost and production control; order processing; financial accounting; and business planning. These six, in turn, break down into 20 basic modules.

Production control, for example, may include scheduling, expediting and performance reporting elements, while cost control covers job/batch costing, standard costing and standard cost generation capabilities. Business planning supports resource planning, budgeting and forecasting.

Sales, invoicing and purchase order control are available as elements within the order-processing system. Inventory also includes three possible elements: recording, management, and material requirements planning.

Written in Cobol

The MAS modules are written in ANS Cobol and intended for use under either DOS or OS/360. The elements vary somewhat in size but even the largest module requires no more than a 48K-byte partition in main storage and two 2311 or equivalent disk packs.

Even with the modular approach, some custom work may be required and MAS installations include a "fair bit of system planning and support" from Martin.

One spokesman said, however, that the entire system – including all six applications and reasonable support – would cost about $150,000.

The programs are usually provided in object code, on magnetic tape, along with considerable customized user documentation, he added.

Martin Marietta Data Systems is at Hampton Plaza, 300 E. Joppa Road, 21204.

Interface Eases Isam Programming

CAMBRIDGE, Mass. – Coding programs using Indexed Sequential (Isam) disk files is simpler and potentially more flexible for users of IP/Isam, a package from ADL Systems Inc. that acts as an interface between the system software and application logic.

IP/Isam's major function, according to ADL, is to add a significant capability for system-controlled file management and simultaneous file accessing in multiprogramming environments.

Avoids Access Conflicts

It allows sequential and random processing to be intermixed at the application program level. The interface also manages accessing requests to prevent conflicts between simultaneous accesses to the same record by two or more programs.

Such conflicts would be important only if one or more of the requested accesses involved updating data on the record. The new package permits multiple programs to gain read-only access to the same data set simultaneously.

IP/Isam enables application programs, written in any language in which a standard parameter list can be specified, to utilize the full range of Isam facilities.

IP/Isam also provides a range of "housekeeping" facilities, including the reporting of file error conditions to the problem program. It also extracts and reports file statistics and reorganization information to the user programs, and certain processing attributes can be modified dynamically by the interface during program execution.

The IP/Isam package operates under OS/360-370 in either MFT or MVT. All Isam functions, including Qisam and Bisam modes, are supported.

It is available in object form – cards or magnetic tape – for $3,000, from the firm at 25 Acorn Park, 02140.

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'Ulysse' Accepts Multiple Languages, Tailors Prestructured Logic to Fit

CHICAGO – Businesses with international DP development operations based on even small-scale 360 equipment can allow programmers to work in their own native languages and still share the resulting programs, if they are written in Ulysse, a prestructured language system now available from Gauchot Information Systems, Inc.

Ulysse falls somewhere between Cobol and RPG in user convenience. Perhaps its most unusual feature is inclusion of translation tables that check the user's source language – French, English, Spanish, Dutch or German – for syntax. A second pass performs the actual assembly of the program, including generation of an object deck.

For applications that do not require retention of an object deck, Ulysse can be run in load-and-go mode. The assembler itself is self-relocatable so that it can be used in any partition available under multiprogramming.

Own Logic

Like RPG, it provides its own basic program logic, allowing the selection of appropriate input records, detail printing of data from the records, sensing of control-level break and printing of subtotals before "rolling" them forward into grand totals. But Ulysse doesn't require multiple coding forms, each geared to a particular part of the preprogrammed cycle, the firm said.

Ulysse coding is free-form, controlled only by key words, similar in function to reserved words in Cobol. Several of these are used to identify "chapters" or general sections of coding devoted to such tasks as beginning the job, handling control breaks, preparation of report titles or user-coded processing of individual records.

The system supports all sorts of I/O including Isam or direct-access disk files, magnetic tapes and cards. But it breaks away from "normal" high-level language usage by not supporting symbolic names for data fields.

Users must identify fields by start position and length. This avoids the hazards of nonsense data names, as Gauchot spokesmen are quick to point out, but it also eliminates the convenience of being able to follow procedure logic without referring to a layout form of the input or output records.

Several Operators

Whatever problems the data reference scheme might cause, once the user reaches the material he needs, he has a full range of operators available. These include basic arithmetic functions, but also an "endless" COMPUTE, and comparisons including ANDing and ORing.

The system can be used on DOS/360 configurations, where it requires no more than 11K bytes for the compilation process, or on OS/360. The DOS version is available for $1,000/mo; the OS version costs $1,200/mo.

Gauchot is at 2 N. Riverside Plaza, 60606.

CPL1, PL/I Subset, Gains 'EL' Option

PARIS – An extensible language (EL) option, now available for use with Version 3 of the CPL1 subset of PL/1, from Centre d'Analyse et de Programming (CAP), provides users with a fast and essentially open-ended compilation system – and one that can be installed on a broad range of CPUs.

CPL1 is seen by its developers as a replacement for assembler language and is said to produce "reasonably short code" on any machine.

After the first compiler step, CPL1 source code is translated into macro-instructions which can be tailored to the user's special needs.

This macro capability is provided without the cost in machine time usually associated with such facilities, CAP explained, by redesigning the code generator.

The extensible language option, called CPL1-X, goes further than the macro facility. It allows the user to define the detailed generation of code, triggered by some syntactic elements and appearing as in-line functions and pseudo-variables in the source code.

In effect, this means the user, after defining the extensions, can code a program in terms appropriate to the application and familiar to him, rather than being limited to "DP terms," CAP said.

A bootstrapping technique has provided operating versions of the CPL1 processor on IBM 360 CPUs, under both OS and DOS, and on GE (now Honeywell) 600 series equipment and the Xerox Sigma 7, as well as on Iris 50 and 80 and CII 10070 units. Cross-assembler versions that use a 360 as host for programs to be run on Honeywell 6000 CPUs are also available, the company noted.

The basic Version 3 system for 360 or 370 installations is available for about $1,300, or on a lease agreement for about $330/mo. The CPL1-X extensible option costs about $110/mo, CAP said. Maintenance is also separately priced.

The company is at 21, rue Leriche- 75, Paris 15.

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Data Briefs

Printing Enhancements Upgrade 33 TTY Features

Model 33 TTY users can print 132 character lines and use both upper- and lower-case printing with two recent enhancements.

For $77.50, users can change their 72-print position ASR-33s to print 132 char./line with the Teletype Modification Kit from Remote Data Terminals, 2928 Nebraska Ave., Santa Monica, Calif. 90404. The TMK-132B includes a carbon ribbon and print cylinder with narrow characters to print the increased positions on a standard TTY carriage with no degradation in speed, the firm said.

Upper- and lower-case printing for either the ASR or KSR 33 is available from Data Terminals & Communications, Box 5583, San Jose, Calif. 95150.

The DTC-2 conversion allows upper and lower case to be generated from either the TTY's own keyboard or by the sending device attached to the terminal. The DTC-2 is compatible with paper tape punches and costs $195.

Modem Made for Multidrop Nets

SILVER SPRING, Md. – Rixon, Inc. has a new data set for multidrop polled networks and point-to-point systems.

The DS4801 operates at strap-selectable speeds of 4,800- or 2,400 bit/sec over unconditioned C1 or C2 telephone lines.

The data set can be used in a continuous or controlled carrier mode. The unit costs $3,750 and is available from stock. Rixon is at 2120 Industrial Pkwy., 20904.

Terminals Get Upper, Lower Case

CORNWALL HEIGHTS, Pa. – Delta Data Systems Corp. has added an upper/lower case capability to its 5000 Series of video display terminals.

The new units use a larger than normal 7x9 matrix format and can display 27 lines of 80 characters each. Other features of the 5000 Series include programmable keyboard and paging. The terminals are available for Teletype and IBM 2260/2848 compatibility.

Prices range from $3,000 depending on the model. The upper/lower case option is $600 or can be added in the field for $800.

Delta Data is at Woodhaven Industrial Park, 19020.

Guide Lists Terminal Equipment

OAK BROOK, Ill. – A terminal user's supply guide for the remote computing, time-sharing and data communications industries is available from Remote Computing Supplies.

Products listed in the catalog include continuous forms, teletypewriter paper, ribbons, paper tape, tape-handling equipment, binders, binder storage equipment and acoustical shields.

The catalog is free from Remote Computing, 1211 West 22d St., 60521.

Value-Added Services

MCI Proposes Data Transmission Net

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – Microwave Communications, Inc. has filed an application with the Federal Communications Commission for authority to provide a turnkey computer/communications service with hardware and software specifically for data users.

Described as a hybrid data service, the offering would combine minicomputers, terminals and communications facilities into an end-to-end network. The service would be similar in many respects to that proposed by Packet Communications, Inc. [CW, Feb. 7] and the network now being operated by the Advanced Research Projects Agency (Arpa).

Switching, Formatting . . .

Unlike MCI's earlier proposals which provide the user with only a communications channel, the new service would include such functions as switching, formatting, error control and concentration. The service will be provided by MCI Data Transfer Corp. (MDT), a subsidiary formed to operate the computer-controlled network.

MDT will configure its Arpa-like network by leasing lines from existing carriers such as AT&T and Western Union, as well as obtaining facilities from MCI.

Three types of service will be offered to MDT users. The first would be a "throughput maximizer" offering, described as a customized dedicated service.

This service would provide several error-correction options to allow the data user to achieve maximum rate of data transfer at minimal error rates. It would include minicomputer-controlled packets of information transmitted from point-to-point.

This type of service might cost from $500 to $2,000 per channel depending on the amount of customized value-added capability, the application said.

A second type of service will provide priority concentration of data to fixed destinations. This would be a packet-switched shared service for many users who would be charged according to message size and priority of transmission desired.

Included would be Fast Batch (transmission within three minutes); Regular Batch (transmission within 60 minutes); and Bulk Service (overnight transmission). A typical cost of a channel might be about $3,000, the MDT application estimated.

A third service would be similar to the priority concentration but would be expanded to addressable, instead of fixed, destinations to allow the user to select the points on the net to which his messages would be transmitted.

Actual MDT costs would depend on where the network was configured, which in turn will be a function of where user service is required. MDT envisions a 30-city network with service to an initial 15 cities beginning about 18 to 24 months after FCC approval.

MDT is the second value-added proposal presented to the commission. The first such application was filed by Packet Communications, Inc. Two other firms, Telecommunications Network, Inc. and Telenet Communications Corp., plan to file similar applications.

Aloha Communications System Connects Hawaii to Arpanet

By Sasha Yasinin
CW Hawaii Correspondent

HONOLULU – The University of Hawaii's Aloha system is scoring innovative advances in satellite computer communications with an experimental satellite system which went on-line here recently.

Experimenting With Aloha

The university also is involved in a joint study with the Advanced Research Projects Agency (Arpa), Bolt Beranek and Newman, Xerox and UCLA to design suitable protocol for packet communications via satellite.

As part of this project, Aloha becomes the first subscriber to a digital communications subsystem installed between the Comsat ground stations at Paumalu, Hawaii, and Jamesburg, Calif., last year.

With this installation Aloha becomes the first operational satellite node on Arpanet, via the Intelsat IV satellite over the Pacific.

The Comsat system enables data to be transmitted at the rate of 50 kbit/sec over a single voice-grade channel.

The single satellite channel can provide two up-link and two down-link data channels and each of these four channels could be simultaneously available to any Comsat ground station in sight of the satellite.

Aloha's director, Norman Abramson, sees this use of voice-grade channels as a big money-saver for computer communications.

As an example of the system's cost-saving potential, Abramson pointed to the possibilities in the next generation domestic satellite system.

"Each of these satellites," he told *Computerworld*, "will have 12 transponders with a bandwidth of 45MHz or so. If one of the potential carriers were to devote one transponder on the satellite to packet communications, it would be possible to transmit data at about 10 million baud. This single transponder could handle some five million on-line terminals.

"Converting to this kind of communications could save a lot of money. For example, Arpa spends in excess of $1 million per year for line charges. With this much money it could buy a transponder on a domestic satellite.

"If computer users are ever going to be free of incredibly high costs of transmitting data, some system similar to this has got to be set up," Abramson said.

But Abramson foresees difficulties with potential carriers in the next generation system devoting a transponder to packet data communications. He sees problems with regulatory agencies in determining how to charge for the service.

Touch-A-Matic Phone Can Store Numerics

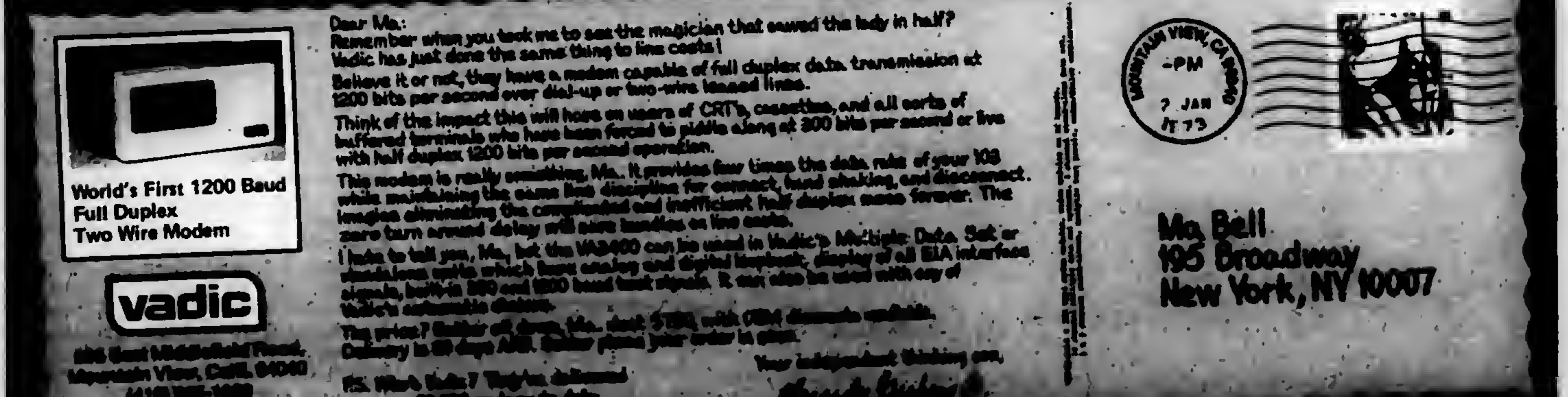
MURRAY HILL, N.J. – The Bell System will soon offer a telephone with a built-in memory that could be used to transmit up to 15 numbers with the push of a single key.

To be called Touch-A-Matic and developed by Bell Labs, the phone will be able to store up to 32 "prerecorded" numbers. Although primarily designed to record and store frequently called telephone numbers, each of the 32 positions could also be used to store up to 15 digits of data to be transmitted to a CPU, a Bell spokesman said.

The phone with a memory could be used in voice-response systems where connect times would be reduced by automatically "dialing" the computer through use of a prestored number. A 7-digit called number could be dialed in "less than one second," by depressing a single key, the spokesman said. The full 15 digits would take "less than two seconds."

Thirty-one of the keys on the phone usually contain the frequently called numbers. The remaining position accesses a "scratch pad" memory which records the last number dialed. To redial the last call, the user would push that button.

The first Touch-A-Matic units are scheduled to be installed at Sears Roebuck in the second quarter of 1974. Illinois Bell is expected to file the first tariff for the device. A projected monthly cost has not yet been set, but a Bell spokesman said it would be higher than a conventional telephone.



Dear Ma.:
Remember when you took me to see the magician that sawed the lady in half?
Vadic has just done the same thing to line costs!
Believe it or not, they have a modem capable of full duplex data transmission at 1200 bits per second over dial-up or two-wire leased lines.
Think of the impact this will have on users of CRT's, cassettes, and all sorts of buffered terminals who have been forced to piddle along at 300 bits per second or live with half duplex 1200 bits per second operation.

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GAO Finds 'Significant' Cost Savings With Multiplexing on Low-Speed Lines

CW Washington Bureau

WASHINGTON, D.C. – "Significant" cost savings are available within the government through the use of multiplexing for low-speed data circuits in both the civilian and military sectors, according to a recent report from the General Accounting Office.

The report, while it analyzed only government data communications needs and practices, could be important for large commercial data communications users since it clearly spells out the scope of the savings available through multiplexing.

For example, the study, which covered 200 circuits operated by both civilian and military departments of the government, found that communications costs could be reduced by over $400,000 per year through the use of multiplexing on those circuits.

Getting Together

In one case, the GAO team found that 54 separate circuits leased for eight agencies could be replaced with just one multiplexed circuit between Florida and the Washington, D.C., area if the agencies would work together.

"The multiplexed system [in this example] costing about $72,000 would result in savings of over $50,000 per year compared with current circuit costs," the congressional watchdog agency said.

For example, the GAO reported that the Department of Defense leases, at a cost of around $15 million annually in taxpayers' money, 3,200 circuits of the type that are included in the study – "many of which appear susceptible to multiplexing."

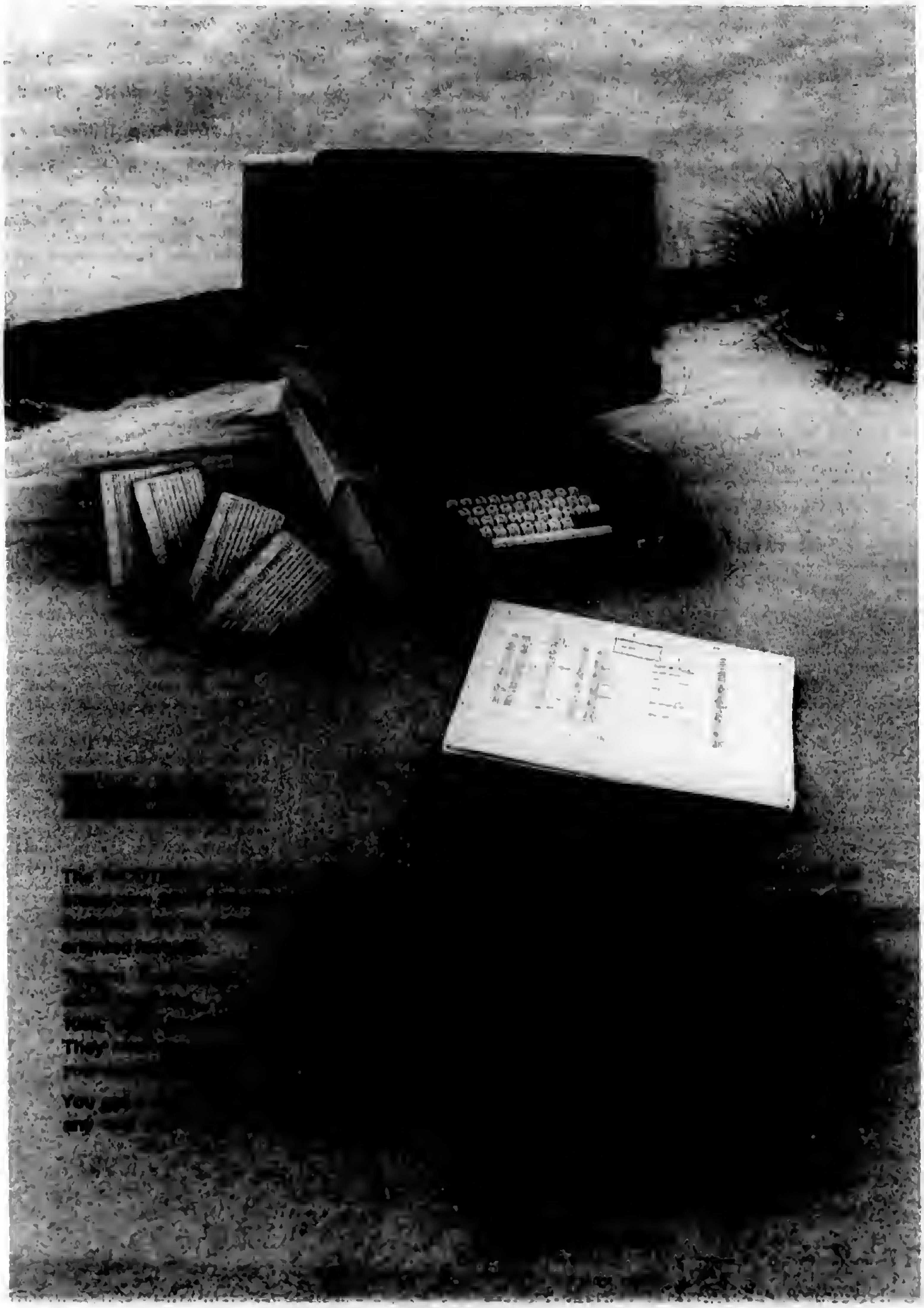
In addition, GAO noted that civilian agencies also spend a significant sum on leasing the low-speed type data channels that were covered in the report.

It also noted that the cost of the type of circuit reviewed by the study had risen dramatically for the government over the past few years, indicating the government was now paying about 21 cents per mile for such circuits while it had paid only two cents per mile for similiar circuits as recently as 1967.

Multi-Speed Savings

GAO also said that systems coverd by the study only included the low-speed type of circuit, and it noted that multiplex equipment "capable of handling higher-speed DOD and civil agency requirements is available" which could further reduce costs for these circuits.

The GAO report noted that "although multiplexing has been available since June 1968 when the Federal Communications Commission removed restrictions on the use of interconnecting devices not furnished by the common carrier, federal agencies have made little use of the technique."



Terminal Features Seven-Color CRT

NORCROSS, Ga. – The Spektracolor 700 terminal from Integrated Systems, Inc. features a 7-color CRT programmable keyboard for complete graphics capability and a programmable controller for on-line communications functions.

The user can program 32 keys to generate any graphics symbols in seven colors or generate black symbols on any of seven colored backgrounds.

The keyboard also includes a 64-character Ascii set, blink mode, tab and built-in cursor. Light pen is optional.

The programmable controller can drive up to four interactive keyboard CRTs and can support any number of one-way monitors. Standard interface is EIA RS-232C at speeds up to 4,800 bit/sec; parallel TTY interface is optional.

A single terminal including controller and one keyboard CRT costs $14,300. Extra keyboard CRTs are $9,000 and a CRT alone is $1,900. Integrated Systems is a unit of Esterline Corp., 2315 Interstate 85, 30071.

Digital Cassette Units Have Standard, Loop Interfaces

ENGLEWOOD, Colo. – Electronic Processors, Inc. has introduced the STR-Link Series Digital Cassette Systems for data transmission and reception.

Using the firm's STR-200 or STR-2001 digital cassette recorders for incremental or block recording respectively, the system incorporates a standard RS-232 interface as well as a 20mA current loop interface. An 8-bit parallel interface is also available on some models.

Available with either single- or dual-cassette drives and having a self-contained power supply, the STR-Link units support data transmission rates from 110 bit/sec to 1,200 bit/sec, depending on the number of drives, the interface and the application involved.

Single drive units are priced at $890 while a dual-drive unit costs $1,700 from 5050 S. Federal Blvd., 80110.

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Here's just some of what's happening at the 1973 Computer Users' Forums.

BOSTON – Despite the proli[illegible] non-Bell data equipment still reluctant to [illegible]

BOSTON – "Conditioning" – to sure effective data transmission – is often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning. [illegible] Overlan, assistant telecom[illegible] manager for First Na[illegible]ton, told a Cara[illegible] on leased-line usage.

"A small company [illegible] Model 10 couldn't handle [illegible] without a major [illegible] intelligent terminal systems," Jaffer said. Intelligent [illegible] of the system allowed the firm to have the advantages of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the [illegible]

BOSTON – A major [illegible] process line data entry is that [illegible] out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank. [illegible] system at the bank [illegible] stock transfers [illegible] mutual funds. [illegible] 720 [illegible] 370/155 Cronin [illegible]

Thibault [illegible] o Mix or Not [illegible] advised users who choo[illegible] multivendor systems to bring each vendo[illegible] in one at a time and explain what is expected from him in the mix. "Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain the [illegible] rules of responsibility.

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never [illegible] for custom programming of an application that he knew was [illegible] heavy [illegible] as payroll, with its [illegible] house, he [illegible]

[illegible] workshops [illegible] particular [illegible] warning other [illegible] areas.

In all, more than 30[illegible] sessions on data en[illegible] tions and installati[illegible] given on a separate [illegible], each

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the [illegible] avail[illegible] the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

[illegible] as an omnipotent [illegible] Zayre Corp. has found the [illegible] lation of an IBM 1287 more than justified on one application alone.

"Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

BOSTON – [illegible] all the in-hou[illegible] staff knows – even after a package system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

And it'll be happening soon in a city near you:

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: Chicago. And here are some of the panelists who will be there: George Davisson, International Harvester; Vern L. Schatz, Jewel Companies; David Rappaport, University of Illinois Medical Center; Jack Hanna, C&O/B&O Railroad; Kenneth Bolgman, R.R. Donnelly & Son.

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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Computer Users' Forum Registration

Name____
Title____
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1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY
01 Mining/Construction/Oil & Refin.
02 Manufacturing – Computer or data system hardware, peripherals/other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:________________

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering – Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other:________________

2. Please check the appropriate city:

____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00
☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

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April 11, 1973

The Computer Caravan/73

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Exhibits: 10:00 a.m. – 6:00 p.m.

All Attendees Welcome At Afternoon Sessions

Day 1: Hoxie Hits New 'Commo' Lingo

Data Communications jargon is expanding rapidly as technological developments bring new facilities and devices to the markeplace, says consultant Gilbert H. "Gib" Hoxie.

However, he has found that certain often neglected management aspects of data communications planning usually tend to outweigh esoteric technical factors.

Hoxie, a manager in the Informaton Systems Division of Booz, Allen & Hamilton, Inc., addresses the topic of Data Communications Planning on the opening day of the Computer Caravan.

He believes systems planners intending to install or expand data communications applications would be wise to include a "wide range of management considerations" in their analysis.

Answers to the nine questions below may be "key to designing the right system," Hoxie adds.

1. What information systems do we have (need) and why?
2. Which applications require data communications?
3. How well do alternative data communications systems satisfy requirements?
4. What will be the true one-time and operational cost?
5. What will be the true one-time and operations benefits?
6. What will be the impact on users and work-flows?
7. Who are the vendors, and what are they selling?
9. What techniques are most effective in selecting and presenting the best design?

Hoxie attempts to answer these questions during a tutorial on Data Communications Planning, given at 2:30 P.M. on opening day of the Computer Caravan. The open, general session may be attended by people wearning any Computer Caravan badge, i.e. exhibitor, exhibitor-guest, exhibits-only, or Forum program for any day.

Although the presentation will last about an hour, it is anticipated that attendees will have questions for Hoxie.

Beware: Intangible Benefit

Hoxie does not believe in "intangible benefits" of systems, or at least not during the process of cost justification.

"If an analyst can't hang a number, or range of numbers on a 'benefit,' he has no business citing it even as particial justification for a system," he remarks.

"Intangible benefits," which he regards as one of the "major pitfalls for systems planners," only represent "snares and delusions for the individual who must select an alternative, and he is bound to come out on the wrong end of any ensuing conflict," according to Hoxie.

He thus advises that "80% to 90% of intangible benefits can be quantified and user commitments obtained. Those that can't be defined and sized, usually are excluded from the benefits analysis and if they appear in a report at all, are downplayed."

Hoxie's speech is an addition to the Caravan program, in that any Caravan attendee is eligible for admission; it actually sets the stage for the middle-day Forum program, which is devoted to management and operational considerations of data communications.

Last year, three "keynote" speakers toured the country with the Computer Caravan, but the time for these speeches has been given over for extended panel discussions and workshops, a direct result of feedback from the users who attended the 1972 Forum.

The workshops resume after lunch, concluding at 2:30 P.M. At this time, Forum and Exposition attendees may sit in on the open, general sessions on each day. Hoxie's tutorial is given on the first day, a Software Evaluation panel takes place on the middle day and a Small Systems panel is held on closing day.

President's Message

The basic concept of the Computer Caravan is: a national computer conference that travels to you, the computer user.

The fact that the people staffing the exhibit booths are, for the most part, local sales representatives will be appreciated by all those who visit the exhibit. These representatives of DP suppliers will still be here, long after the Caravan has departed.

The idea of tailoring a national conference to the needs of local users is carried to a higher degree by some of the individual exhibitors, who have planned special seminars oriented towards their particular product or service.

Attendees at last year's Caravan said they liked this type of individualized presentation, and more exhibitors have responded by scheduling these seminars.

Whether your main interest is in hardware, software, or services, the leading companies in each sector of the EDP industry are found in our exhibit hall. Both their sales and their technical personnel are prepared for your probing questions on their products, many of which are being introduced on the Caravan, while others are already proven in the field.

Your comments on our program are welcome. Feel free to note your suggestions with *Computerworld* representatives on the exhibit floor, or in the *Computerworld* booth. We are here to serve you; please tell us how we may best accomplish that goal.

Patrick J McGovern

Patrick J. McGovern
President, Computerworld, Inc.

Day 2: Panel Probes Software Sources

The Software Evaluation panel is one of three "open" sessions that take place during the afternoons of the Computer Caravan.

These sessions may be attended by people wearing any caravan badge, such as exhibitor, guest, exhibits only, etc.

The Sofwtare Evaluation panel is aimed at examining various sources for applications and utility software; paraphrased, it is a "make-or-buy" round-table discussion, and the audience will be invited to take part.

In general, panelists will follow the outline below. If time permits, questions of a broader nature will be entertained.

I. Evaluating the alternatives
- Where do you start
- The main criteria, how to weigh them
- When you have done enough looking?

II. Pricing, measuring techniques (this relates to first topic, but might be more specific as to cost/CPU time/volume of reports, etc.)

(Continued on S/Page 5)

Day 3: Small Systems Described by Users

Small businesses with computers and businesses with small computers are not necessarily identical, but they will be sharing the stage during our Small Systems panel, on the afternoon (2:30) of the final day.

This panel is designed to give a broad overview of the types of systems available, and the problems and opportunities presented by these computers.

In many instances, such systems are chosen by company presidents with little or no DP experience; in other cases, on-line systems may be operated by clerical personnel.

In all cases, it appears small computers are proliferating the business community at an unprecedented rate, and this panel session attempts to take a snapshot of local small-computer usage today.

Again, panelists will be following the outline below, and any questions of a broader nature will be taken, if time permits.

I. Planning
- Discovering the need (growth; new business;

(Continued on S/Page 5)

Many Titles Suit DP Conferences

Few generalities can be applied to the Computer Caravan, with one possible exception: computer conferences are many things to many people.

The 1973 edition of *Computerworld's* traveling show is the distillation of user and exhibitor recommendations after our 1972 debut; most people approved of the local concept, since it afforded them an opportunity to speak with users and DP suppliers from their own region.

This has remained unchanged.

Again, local and regional users comprise the panel discussions and will be leading workshops.

Again, local sales and technical representatives will be staffing the booths in the exhibit hall.

The Computer Caravan, then, is a management conference with a program geared to increasing the operational efficiency of computer centers.

It is a business exposition, with the latest in computer hardware, software and services on display.

It is a showroom for exhibitors,

(Continued on S/Page 6)

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EAST: NEW YORK (212) 586-1970 ☐ BOSTON (617) 588-8700 ☐ EDISON, N.J. (201) 828-5678 ☐ PHILADELPHIA (215) 676-4348
MIDWEST: MINNEAPOLIS (612)854-6555 ☐ CHICAGO (312) 986-1414 ☐ CLEVELAND (216) 752-1030
DETROIT (313) 355-3510 ☐ PITTSBURGH (412) 343-4449
SOUTH: DALLAS (214) 233-7776 ☐ ATLANTA (404) 458-9360 ☐ HOUSTON (713) 622-0551 ☐ WASHINGTON, D.C. (703) 979-5500
WEST: SAN FRANCISCO (415) 398-0686 ☐ DENVER (303) 388-8844 ☐ LOS ANGELES (213) 479-6800
IN CANADA: CAE ELECTRONICS, LTD. (514) 341-6780

See it at the caravan!

New CULPRIT, Version III

Visit our caravan booth – or better yet – attend a Cullinane seminar at any of the ten caravan cities.* You'll get all the details on the newest version of the EDP-AUDITOR/CULPRIT system as well as the latest enhancements to the Data Base Management versions (IMS/CULPRIT, TOTAL/CULPRIT, and RDMS/CULPRIT).

The CULPRIT family of systems has been among the most successful in the industry because we've always stayed well ahead of the industry.

If you'd like some idea of how far ahead we've jumped this time, read through the following long (but vitally important!) list of new features:

CULPRIT III

☐ Special forms facility allows individual handling for each report calling for special forms.
☐ Input record size can now be up to 8,192 bytes long.
☐ Procedure buffer size has been doubled in size allowing more procedure parameters to handle very complex reports.
☐ Well organized and easy to read input parameter listing
☐ Table look up.
☐ Redefinition of output lines to allow greater output format flexibility.
☐ 8-character field names for improved data dictionary mnemonics.
☐ New "0" Parameter greatly simplifies certain calculations at total time related to values accumulated at input time.
☐ All Assembly Language coding eliminates COBOL modules and reduces core requirements by 3K.

SPECIAL CULPRIT MODULES

☐ Parameterized file matching (user specifies size and location of keys at run time).
☐ Index sequential random read routine.
☐ IBM-DDA file match and expansion modules which are valuable to banks using IBM's Demand Deposit Accounting System.
☐ Occurs repeating segment module which handles Occurs or "Occurs Depending On" segment types.
☐ GE 400 Series tape read module for reading GE 400 tapes directly on IBM computer.
☐ RCA 301 Series tape read module for reading RCA 301 tapes directly on IBM computer.
☐ VISAM file read module.
☐ Label output module which produces 2, 3, 4, 5-up labels simply.
☐ Splitter output module permits the specification and printing of any number of lines from a single record.
☐ Bit-testing module.

DATA BASE MANAGEMENT VERSIONS

IMS/CULPRIT

☐ User may provide SSA's to allow selected segment retrieval or to access segments randomly.
☐ 8,192 byte segments or segment strings allowed.
☐ Access two or more IMS files at the same time.
☐ Access non-IMS files during an IMS run.
☐ Access HDAM, HIDAM, HISAM files, physical or logical.
☐ Enhanced data dictionary capability.
☐ Also includes all features listed above under CULPRIT.

RDMS/CULPRIT

☐ Information available from the Control, DATA, and XREF portions of RDAM records.
☐ Automatic expansion of compressed format data fields to any size desired by the user.
☐ Employs cataloguing feature eliminating need to define logical fields in report parameter cards.
☐ Processes a virtually unlimited number of strings through the data base.
☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
☐ Direct reads can be based on keys submitted by user and/or keys read from a non-RDMS file.
☐ Chaining across files through XREF entries handled automatically by the system.
☐ Handles single file record cross referencing techniques (e.g., Bill of Materials organization).
☐ Includes all features listed under CULPRIT sections.

TOTAL/CULPRIT

☐ Information available from the entire TOTAL record including root and linkage segments.
☐ Employs a cataloguing feature eliminating the need to define logical fields in report parameter cards.
☐ Processes a virtually unlimited number of strings through the data base. Each string may be several files long.
☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
☐ Direct reads can be based on keys submitted by users and/or keys read from a non-TOTAL file.
☐ Linking between files and reading of variable chains handled automatically by the system.
☐ Handles multiple linkages between a master and/or variable file (e.g., Bill of Materials organization).
☐ Access all types of files.
☐ Includes all features listed under CULPRIT section.

*Free Tickets:

pay $5 at the door . . . or . . . if you plan to attend the Cullinane seminar, drop us a note for free ones (while they last) plus an advance brochure on any system listed above. Cullinane seminars will be held from 4 to 5 p.m., second day of each session, immediately after software forum.

Cullinane Corporation
One Boston Place, Boston, Massachusetts 02108. Telephone (617) 742-8656.

Exhibitors Set Special Seminars

The following exhibitors will be sponsoring seminars in the various cities visited by the Caravan. Consult the table below for times and cities. Check with individual exhibitors for exact topics in each city and availability of space.

	Boston	Washington, D.C.	New York	Atlanta	Houston	Anaheim	San Francisco	Kansas City	Chicago	Cleveland
DAY 1										
2:30 p.m.										
Iomec	★	★	★	★	★	★	★	★	★	★
4:00 p.m.										
Sycor	★	★	★	★	★	★	★	★	★	★
DAY 2										
2:30 p.m.										
Iomec	★	★	★	★	★	★	★	★	★	★
Interdata	★	★	★	★	★	★	★			
ICC	★	★	★	★	★	★	★	★	★	★
Varian*		★	★	★		★				★
3:30 p.m.										
Tektronix			★	★				★	★	
Varian*		★	★	★		★		★		★
4:00 p.m.										
Cullinane	★	★	★	★	★	★	★	★	★	★
Infotron	★	★	★	★	★	★	★	★	★	★
4:30 p.m.										
Varian*	★									
DAY 3										
4:00 p.m.										
Western Union Data Services	★ (may run in all cities based on Boston interest)									
BCS				★						

*By invitation only.

Need Minicomputer application data ?

GET IT IN WRITING AT CINCINNATI MILACRON

When you visit the Cincinnati Milacron exhibit at the Computer Caravan, we won't just talk minicomputer capability . . . you'll get it in writing. Application specialists will be there to help you with your specific needs . . . they'll be able to tell you what's needed, how it will work and what it will provide. They'll be backed up by a minicomputer system that will provide component and unit pricing . . . in writing. If you want specific application information, you'll get it at Cincinnati Milacron . . . in writing. Process Controls Division, Cincinnati Milacron, Lebanon, Ohio 45036.

minicomputers
CINCINNATI MILACRON

Caravan Staff

From the several offices of the vast *Computerworld* organization comes the staff that has supported and is now conducting the Computer Caravan.

This staff is composed of former show people, current industry figures and sales experts, editorial people, and the all-important registration and office personnel.

The variety in their backgrounds is too detailed for presentation here, especially since all are full-time computer-conference specialists for late Winter and early Spring 1973.

The hundreds of hours of extra work, weeks and months of travel, and the valuable experience during all this hectic activity both this year and in 1972, are all reflected in a bigger Exposition and a more comprehensive Forum program for Computer Caravan/73.

Here are the people that are making it all possible. A special message from the Publisher and Caravan President is found on page 2. Special acknowledgement goes to Leslie Flanagan, who did all this photography work; not pictured is Bob Rankin, caravan manager, who was on the road during the entire time that this section of the Caravan Supplement was being "put to bed."

Neal Wilder
exhibit sales manager

Dottie Travis
exhibit sales administrator

Ed Bride
forum manager

John Meade
caravan activity coordinator

Leo Bowser
caravan manager

Edward "Ted" Bloom
registration director

Tamar Shapiro
asst. registration director

Frani Blackler
caravan secretary

Linda Collins
caravan secretary

Beverly Butters
caravan secretary

Day 2: Panel Probes Software Sources

(Continued from S/Page 2)

III. What-if (recovery techniques)

- How to recover, in various situations. What if the system does not respond to your normal procedures?
- Examining your sources of applications and utilities, in light of expected problems (cost/performance again)

(1) Cost of failures

(2) Expertise (how to retain or keep good software people or suppliers)

(3) What have your colleagues done?

IV. Next stept?

- Your growth, and how it could affect software selection
- Impact of hardware changes on software sources
- Stability of the source (manufacturer, software house, etc.)

1974 COMPUTER CARAVAN SCHEDULE

Atlanta	February 26-28, 1974
Houston	March 5-7, 1974
Anaheim	March 20-22, 1974
San Francisco	March 26-28, 1974
St. Louis	April 3-5, 1974
Chicago	April 9-11, 1974
Cincinnati	April 16-18, 1974
New York	April 23-25, 1974
Boston	April 30–May 2, 1974
Washington, D.C.	May 7-9, 1974

Day 3: Small Systems Described by Users

(Continued from S/Page 2)

costs, etc)

- Vendor proposals (how you evaluated them)
- Procurement

(1) Problems unique to small businesses

(2) Financial peculiarities (contract flexibility, etc)

II. Operation

- Most common problems vs. chief advantages

(1) Who solves what kinds of problems, why?

(2) As a class, how does the equipment work

- New Applications

(1) Who develops, maintains

(2) Upgrades to larger configuration *vs* additional small systems

- Optional items

(1) Independent peripherals and supplies

(2) Independent software

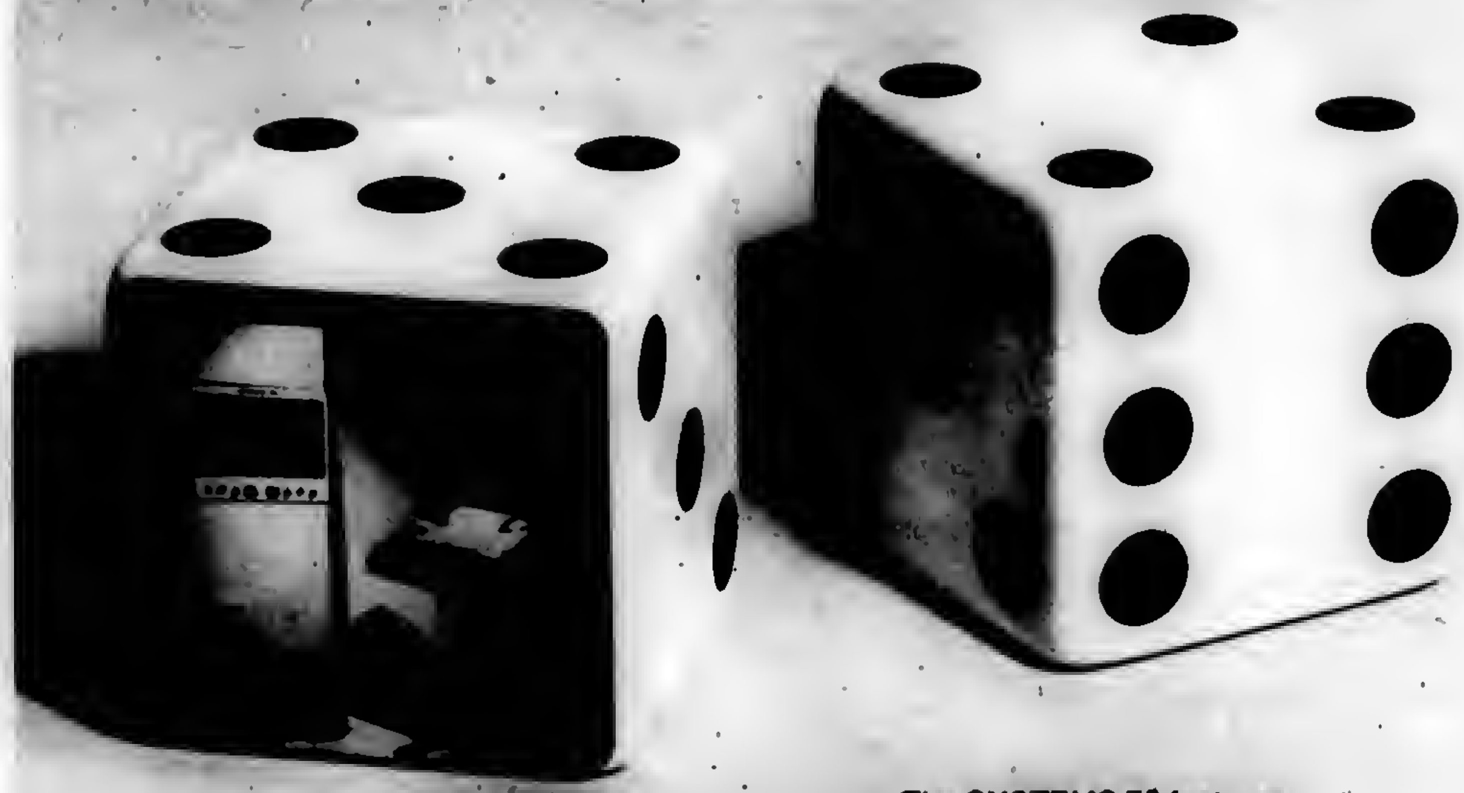
(3) Vendor *vs* in-house training.

III. Review

- "What could we have changed, to make it better?"
- How does a small business look back on a computer procurement?

10% OFF THE PURCHASE PRICE* IF YOU CAN...

BEAT THE SYSTEMS



The SYSTEMS 72 computer, that is. It's programmed to shoot craps with you in our booth at the Computer Caravan, and the stakes are pretty impressive.

Like, 10% OFF THE PURCHASE PRICE OF A SYSTEMS 72 if you can run your winnings up to $1,500. We start you off with $500 "credit."

Just to keep our 72 from getting bored, we'll be running FORTRAN, BASIC, and batch on it at the same time it's shooting craps. That's only typical of the power and versatility of the 72, the first small virtual-memory computer. It combines the advanced problem-solving capabilities of much larger computers with the ease of operation and economy of minicomputers.

The SYSTEMS 72 features:
☐ time-sharing ☐ virtual memory
☐ reentrant FORTRAN/BASIC
☐ multiprogramming ☐ all processors available to users console simultaneously.

So don't crap out. You've got plenty to gain for your company. And nothing to lose. Come on in and BEAT THE SYSTEMS.

If you can't make it to the show, write for our SYSTEMS 72 brochure, SYSTEMS Engineering Laboratories, 6901 W. Sunrise Boulevard, Fort Lauderdale, Florida 33313.

*Discount limited to one per company. Void where prohibited by law.

SYSTEMS
ENGINEERING LABORATORIES

Many Titles Suit DP Conferences

(Continued from S/Page 2)

who have invited people who they know might be interested in a certain facet of computer technology, or in certain products.

It is also a learning experience, not only in the regular Forum program, but also because of the special exhibitor seminars, where potential customers can learn about equipment capabilities and selection criteria.

So the Computer Caravan/73 is indeed many things to many people, but we don't have to stop there. Through your valuable feedback, either through Forum evaluation forms or face-to-face contact with us, we can plan the 1974 program to fill a broader spectrum of needs.

Exhibitor Listings

The following is an alphabetical listing of exhibitors in the 1973 Computer Caravan, and a brief description of the products and services to be displayed.

AMERICAN TELEPHONE & TELEGRAPH COMPANY
680 Fifth Avenue
New York, N.Y. 10019
Tel: (212) 393-2101

The visitor to the Computer Caravan/73 can see the highlights of the Bell System's approach to moving data. AT&T will feature the high-speed "dataphone 4800," first in a new family of data sets from the Bell System. The 4800 data set was designed for economical transmission at 4800 b.p.s over basic unconditioned private line facilities.

Also on display will be the Bell System's 85 A-1 Selective Calling System for polling applications. The system is a quiet, efficient way of information movement, generating management advice and systems reports in real time.

***

AMPEX COMPUTER PRODUCTS DIVISION
13031 W. Jefferson Blvd.
Marina del Rey, Calif. 90291
Tel: (213) 831-8933

Complete semiconductor, core, tape and disk system as plug-to-plug replacements for IBM 370 and 360 Computers, Univac 400 and 1100 computers and memories for DEC PDP-10 computers. Features will be the unique Ampex two-in-one TM-34 for 360 and 370 computers – two 3420 replacement tape drives in one cabinet that reduces space requirements by nearly 50%. The Ampex DS-330 disk subsystem, a plug-interchangeable replacement for either the 3330 or 3333.

Information will also be available on the complete line of Ampex mainframe memories for IBM 370/360, Univac, and DEC computers.

***

ANDERSON JACOBSON, INC.
1065 Morse Avenue
Sunnyvale, Calif. 94086
Tel: (408) 734-4030

Since its beginning in early 1967 as a manufacturer of one of the first acoustic data couplers, Anderson Jacobson, Inc. has continued to develop products for the data communications and computer terminals markets. At the present time the data communications products include a variety of 150 BAUD, 300 BAUD, 450 BAUD modems and acoustic couplers as well as a 1200 BAUD which is believed to be the only one of its kind in production today. These modems and couplers are available as stand alone units, as building blocks for a multiple modem system or as basic units for OEM applications.

The computer terminal line grew out of an early product wherein an acoustic coupler was designed to become an integral part of a teletype machine. This type of terminal with certain improvements and modifications is still in production today. In addition, an auto-answer version is the AJ841 which is based on a proprietary design that utilizes the heavy duty IBM Selectric mechanism as a printer. The third basic product of this line is a new model, the AJ630 which is a 30 character per second, non-impact printer terminal.

Anderson Jacobson maintains sales and service offices in principle cities throughout the country.

***

AUERBACH PUBLISHERS INC.
121 North Broad Street
Philadelphia, Pa. 19107
Tel: (215) 491-8212

AUERBACH Publishers is introducing its new DATA PROCESSING MANUAL during the Caravan with a special pre-publication subscription offer. This new service provides practical advice, techniques, checklists and other aids for helping DP managers solve their daily operating and managing problems. It comes in portfolio format for easy filing and reference. Also on display is the complete line of AUERBACH Computer Technology Reports, the encyclopedic standard reference for the EDP industry. These services provide all the facts, prices, performance data, configurations and technology background analysts need to make meaningful evaluations and selections of euqipment or services. Professional reference books in the fields of computer

Ampex gives you more than you asked for...again

Ampex' newest space saver...the 3420-compatible two-in-one tape subsystem for 360 and 370 computers

The biggest news since Ampex pioneered tape recording is the new two-in-one configuration for the Ampex TC-38/TM-34 tape subsystem. Now you can reduce the amount of space for tape drives and controllers in your DP center by nearly 50%...or double the number of drives without allocating more space. You can get two high performance 3420-compatible tape drives with data rates to 200 KB, in a single cabinet only a little larger than one individually mounted tape drive. It's such a logical idea, it's amazing no one thought of it before.

But space reduction is only the beginning. The autothread on the TM-34 now is equipped with an exclusive "halo of air" that vastly improves threading without the reel-surround cartridge. The tape will literally thread itself from any position. Furthermore, the TM-34 has an automatic reel latch that forever eliminates manually operated locking levers or buttons. And, of course, this drive has a radial interface for operation with either the Ampex TC-38 or the IBM 3803 controller.

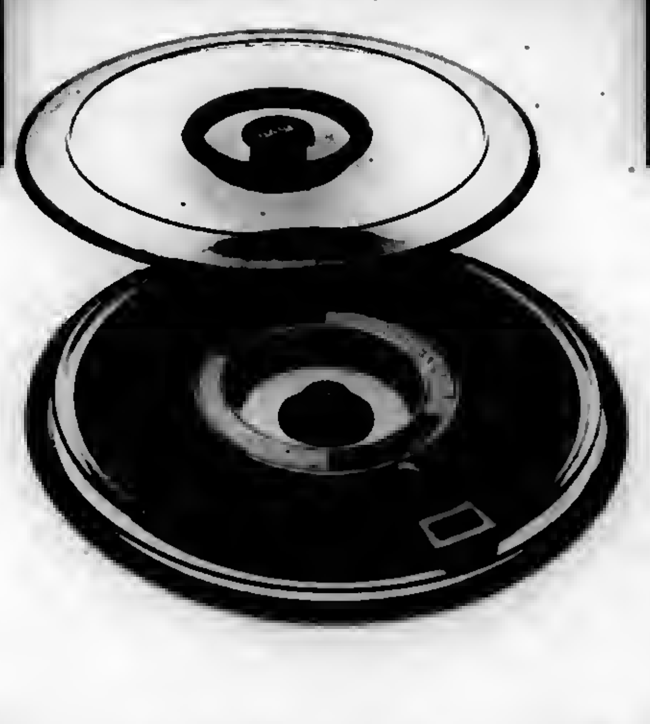
Format configurations include any combination of 9-track, single or dual density, and 7-track with data rates from 60 to 200 KB.

If you want extra value with every peripheral product, call your Ampex Computer Specialist today. He can solve your space and budget problems with disk drives and memory enhancements, too.

AMPEX

AMPEX COMPUTER PRODUCTS DIVISION
13031 West Jefferson Boulevard
Marina del Rey, Ca 90291, (213) 821-8933

People who think this far ahead are thinking BASF/2000A.D.



BASF/2000 A.D. The computer tape as advanced as your next idea. It's being used more and more. In aerospace technology. In advanced time-sharing operations. In university research, and business data storage. Any place where the margin for error is critical.

BASF/2000 A.D. The 100% certified 3200 fci tape that combines greater sensitivity and error-free uniformity with a thinner, less abrasive coating. The tape that actually reduces head-wear while ensuring reliability you can live with for years.

BASF/2000 A.D. If you're in the business of planning for tomorrow, or just keeping up with today, it should be part of your future.

Start thinking 2000 A.D. Talk to your BASF representative now. Or send for all the facts on our full line of magnetic media products.

BASF SYSTEMS
Division of BASF Wyandotte Corporation
Crosby Drive, Bedford,
MA 01730.

BASF

BASF for people who really know.

science, data processing and management science are also on display and can be examined at your leisure.

***

BASF SYSTEMS
Crosby Drive
Bedford, Mass. 01730
Tel: (617) 271-4000

BASF Systems, the world's leading media supplier, will display its complete line of computer tapes, including the new BASF/endura, and the premium BASF/2000 A.D., as well as its full line of disk packs.

BASF's 2000 A.D. uses a new 'Hotter' oxide and a new thinner, harder coating for those applications requiring premium quality which exceeds industry standards.

BASF/endura offers computer users optimum prize/performance at low initial cost. Both tapes meet not only today's transport requirements, but future 3200 bpi – 6400 FCI expectations as well.

BASF disk packs are fully compatible with most major computer equipment.

On display will be the new 1236 (3336 compatible), the 1112 (200 tracks per inch 2316), the 'FLOPPY DISK,' and a full line of compatible disk packs.

***

BOEING COMPUTER SERVICES, INC.
P. O. Box 708
Dover, N.J. 07801
Tel: (201) 361-2121

BCS offers comprehensive support with product lines that include computer time, programming, consulting, training, data base services; applications that include general business and financial systems, scientific and engineering techniques, management and computer operating systems.

BCS operates from 24 sales offices located throughout the United States. Data Centers are maintained at Seattle, Philadelphia, Wichita, Huntsville and Washington, D.C. with over $100,000,000 worth of equipment on order to provide maximum computer flexibility.

***

CAMBRIDGE MEMORIES, INC.
969 Virginia Road
Concord, Mass. 01742
Tel: (617) 259-9880

Cambridge Memories, with headquarters in Concord, Mass. and plants in Newton, Mass. and Tijuana, Mexico is a full-line supplier of memory systems used as add-on or replacement main memories for IBM systems 360 Models 22, 30, 40, 50 and 65 as well as System 370 Models 155 and 165 computers and numerous minicomputers such as Digital Equipment's PDP-11 line and the Varian 620/i. It also manufacturers ferrite core, semi-conductor and moving magnetic domain (DOT) memory systems for use in computer processors, peripheral equipment and terminal devices.

CENTRONICS DATA COMPUTER CORPORATION
One Wall Street
Hudson, N.H. 03051
Tel: (603) 883-0111

The popular Centronics dot matrix serial impact printers feature speeds of 100 to 330 characters per second and 60 to 200 lines per minute. The recently introduced 80 column Model 306 printer, priced at $1,995, is one of the highlighted products. The low cost Centronics Model 401 CRT terminal, priced at $1,495, allows keyboard controlled data entry, editing and communications capabilities for system on-line and off-line operations. A wide variety of popular communications and computer interfaces are available to meet most system requirements.

***

CIG COMPUTER PRODUCTS, INC.
1351 Washington Blvd.
Stamford, Conn. 06902
Tel: (203) 359-2100

CIG Computer Products, Inc. markets and services computer products and systems throughout the world.

CIG 370 Package Leasing
– Flexibility
– Savings up to 60%
– Graduated growth with early terminal options CIG-Data Recall Mark II Memory
– Four component design
– Failsafe reliability
– IBM 370 Memory (Virtual Storage)
– IBM 360 (all models)
– UNIVAC CIG I/O Channels
– 360/370 Block Multiplexer Channel
– 360/370 Selector Channels
– 360/370 Multiplexer Channel CIG Disk Subsystems CIG Tape Subsystems CIG/EDOS (Extended Disk Operating System)

***

CINCINNATI MILACRON, PROCESS CONTROLS DIVISION
Lebanon, Ohio 45036
Tel: (513) 494-5486

Cincinnati Milacron, manufacturer of reliable general-purpose minicomputers, wants you to "get it in writing." Tell us your applications and we will produce a proposal within minutes.

A CIP/2200 minicomputer based system displays all the relevant information on a CRT. You select the components needed, and the CIP minicomputer system automatically produces your proposal. See this unique system in operation and get full details on the economy and reliability of minicomputers from Cincinnati Milacron.

***

COMPUTER DEVICES, INC.
9 Ray Avenue
Burlington, Mass. 01803
Tel: (617) 273-1550

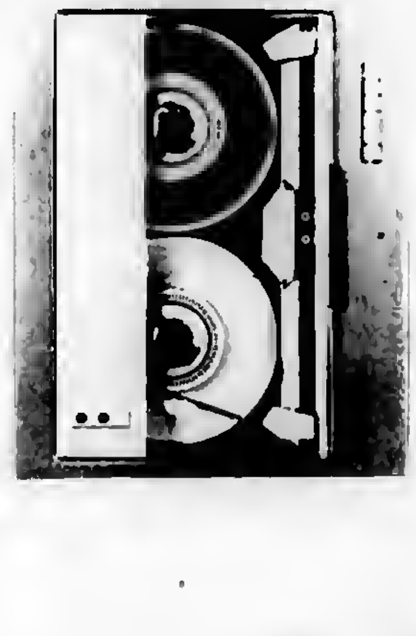
Computer Devices, Inc., a TechVan Corporate Partner, manufactures the TELETERM family of low-cost time-sharing terminals and printers.

TECHTRAN

#1 in reliable High Speed Cassette Communications Terminals!

TECHTRAN INDUSTRIES
580 Jefferson Road, Rochester, N.Y. 14623 • (716) 271-7953
NEW YORK (203) 776-3816 CHICAGO (312) 671-3220
LOS ANGELES (714) 541-8518

PerData



PER DATA'S
New
Easy Load
1600 cpi
TAPE
TRANSPORT

See Me "SPIN MY REELS" At The COMPUTER CARAVAN

PerData

102 New South Road • Hicksville, H.Y. 11801 • (516) 938-2851 • TWX 510/221-1881

All TELETERMS are rugged and dependable, utilizing a thermal (non-impact) printing technique for printing. Weighing only 22 pounds and fitting under an airline seat, the CDI 1030 TELETERM is being shown at the Computer Caravan in three exciting useful, NEW models:

CDI 1030 APL – the first portable terminal for the APL user. Available in ASCII code or EBCD as a direct replacement for the popular IBM 2741 APL device.

CDI 1030/MULTICS – the first portable with a MULTICS keyboard.

CDI 1030/ACT – for a time-sharing network. Communicates with other 1030's, TTY or time-sharing computers directly.

***

COMPUTER TRANSCEIVER SYSTEM INC.
66 Midland Avenue
Paramus, N.J. 07652
Tel: (201) 261-2800

Manufacturers of EXECUPORT® high speed data terminals for remote data collection & Transmission. CTSI will demonstrate their portable, quiet 310 series; the new model 1200 with speeds to 120 CPS; the new model 625 Paper Tape Punch & Reader; and the new 420 magnetic tape memory unit for off-line collection/storage/transmission of data through cassette recording. The equipment is characterized by extreme reliability: MTBF = less than one service call per year.

***

CULLINANE CORPORATION
One Boston Place
Boston, Mass. 02108
Tel: (617) 742-8656

Cullinane Corporation will feature at The Computer Caravan its proprietary software products including those for use with data base management systems. These products are CULPRIT, IMS/CULPRIT, TOTAL/CULPRIT, RDMS/CULPRIT and user department versions including EDP-AUDITOR, PERSONNEL-EDP-REPORTER, MARKET-EDP-ANALYZER, PORTFOLIO-EDP-REPORTER and PAYOUT. In addition, a seminar on the EDP-AUDITOR/CULPRIT Systems will be held from 4 to 5 PM on the second day of each show. Participants in the seminars will be able to attend the Computer Caravan free of charge as guests of the Cullinane Corporation.

Those wishing additional information may contact the Cullinane Corporation at its booth at The Computer Caravan or calling (617) 742-8656.

***

DATA DISC, INC.
686 W. Maude Avenue
Sunnyvale, Calif. 94086
(408) 732-7330

Data Disc, Inc. will exhibit its ANAGRAPH Display System. IBM 360/370 users will see an operational system which not only offers IBM 2260 emulation but also provides truly versatile graphic display capability. OEM's will be able to see Data Disc products at work in an operating system.

ANAGRAPH provides up to 32 users with low cost TV terminals. Image storage and refresh is independent of the CPU. ANAGRAPH employs a minicomputer, TV terminals, keyboards, a Data Disc head per track disc memory, a Data Disc graphic display system and a Bright Industries IBM compatible magnetic tape drive to provide a cost effective system with grow power!

***

DATA GENERAL CORPORATION
Route 9
Southboro, Mass. 01772
Tel: (617) 485-9100

Minicomputers, peripherals, and software. (Full listing on Page S/16.)

DATAPRO RESEARCH CORP.
One Corporate Center
Route 38
Moorestown, N.J. 08057
Tel: (609) 234-4300

Datapro Research Corporation is displaying DATAPRO 70, the most widely used data processing reference service in the world. DATAPRO 70 is unique among reference services in that it provides monthly updated product reports on all important EDP hardware and software products – in one convenient three-volume set. DATAPRO 70 provides fast reports on new products to keep you up to date, plus in-depth product analyses to help you in planning EDP systems and selecting equipment. The DATAPRO 70 service also includes personalized consulting by telephone, and NEWSCOM, a monthly newsletter on significant product trends and developments.

DATA PRODUCTS CORPORATION
6219 DeSoto Avenue
Woodland Hills, Calif 91304
Tel: (213) 887-8000

LINE PRINTERS

– Medium to high speed impact printers: for OEM systems ranging from low cost minicomputers and terminals to high speed EDP systems.

– Satellite Printers: for economical off line printing. CORE MEMORY PRODUCTS.

– Memory Systems: a complete line for applications ranging from mainframe to bulk storage in commercial and military systems. Also, plug compatible replacement memories.

– Stacks: customized to your needs.

– Cores: sizes from 14- to 30-mil.

COMPUTERIZED DISTRIBUTION

International Communications Corporation.
7620 N.W. 36th Avenue, Miami, Florida 33147
Telephone 305 + 691-1220 305 + 836-4550
In Europe: RACAL-MILGO LIMITED Reading, Berks, England

a milgo company

4-11 ©1973

MANAGEMENT SYSTEMS

– CODONS's: dedicated system that slashes distribution cost COMMUNICATIONS

– DataPak-Multiplexing Systems: for reducing data transmission costs.

– DETECT test set, for quickly locating network failures.

***

DECISION
5601 College Avenue
Oakland, Calif. 94618
Tel: (415) 654-8626

Decision will be showing three newly announced products and systems: the Data General NOVA compatible line of peripheral controllers, systems, a new real-time operating system, and innovative Optical Page Reader and DECISION's Optical Data Entry System.

The Model 3170 controller plugs into the NOVA line providing a minimum of 11.6 megabytes of storage from a Diablo, Caelus or Wangco 5440 top loading cartridge disk drive. Another featured peripheral is the Model 3180 phase encoded 1600 bpi tape drive controller.

A key product introduction is the DINOS family of NOVA operating systems. DINOS I, II and III are high performance, low-cost and more useful answers to Data General's RDOS.

Decision's Model OMR 6500 Optical Reader involves a new concept which scans a fixed page in contrast to the conventional approach of moving the page across the scanning device. The result is greater throughput with minimum opportunity for error. The OMR 6500 has many options, broad flexibility of input data forms and inherent design simplicity that maximizes ease of maintenance.

Decision's Optical Data Entry System evolves around the Model OMR 6500 and provides users with the first proven computer base Optical Data Entry System.

***

DELTA DATA SYSTEMS CORPORATION
Woodhaven Industrial Park
Cornwell Heights, Pa. 19020
Tel: (215) 639-9400

DELTA will exhibit a typical video display terminal system which includes a terminal with special function keyboard, a cassete recorder, and a line printer. The company will also show its DELTA 5000 video display terminal and Multi-Term programmable terminal multiplexer. These and other DELTA products offer unique features such as special character generators, upper/lower case, PAGING, built-in interfaces for computer/terminal compatibility, 3000-character memory, and others, all designed to solve difficult terminal system problems.

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EASTMAN KODAK COMPANY
Business Systems Markets Division
343 State Street
Rochester, N.Y. 14650
Tel: (716) 724-4745

Eastman Kodak will show how KODAK KOM Microfilmers contribute to Computer Output Management. Various pieces of microfilm retrieval hardware, including the KODAK EKTALITE Reader, will be featured. Microfilm systems specialists will be available to discuss your computer output requirements and to show how computer output microfilm can provide added output flexibility to your DP shop.

***

ELECTRONIC MEMORIES & MAGNETICS
12621 Chardon
Hawthorne, Calif. 90250
Tel: (213) 644-9881

EMM MICROMEMORY Processor Storage Systems

Interfaces with System/360 and System/370 computers. Storage capacity: 16,384 to 3,145,728 bytes. Cycle time: 750 nanoseconds to 2.5 microseconds. Large card design for easy maintenance. Permits model and capacity changes in the field. Internal power module protects stored data in case of power failure.

CAELUS DISK MEDIA

CMCX DISK PACK for System/370

CMIII DISK CARTRIDGE for System/3

CMI DISK CARTRIDGE for new low cost systems

PGI 844 UNIVERSAL CONTROLLER AND DISK SYSTEM

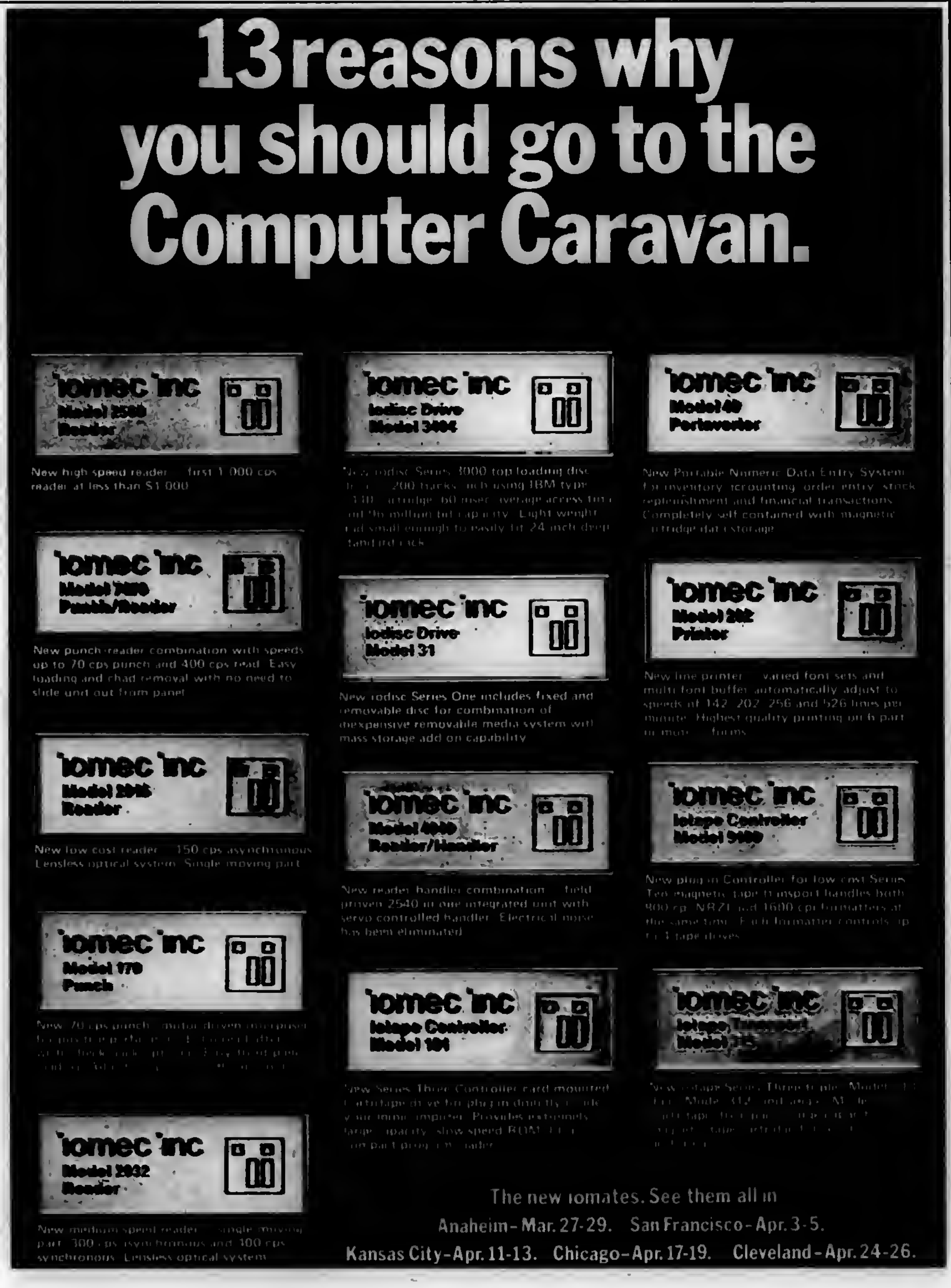
Interfaces with System/360 and System/370 computers. Handles intermixed track densities and variety of I/O devices. Controller MTBF of 10,000 hours. 10% as large as 2314 controller. Interchangeable plug-in cards simplify maintenance. Test mode option permits off-line media verification.

***

ENTREX, INC.
168 Middlesex Tpke.
Burlington, Mass. 01803
Tel: (617) 273-0480

ENTREX, INC. the leading manufacturer of Key-to-Disk data entry equipment including a preview of new, improved software. ENTREX will demonstrate the system's extensive editing capabilities and validity checks, including crossfooting and subtotaling.

A highlight of the ENTREX Exhibit is the introduction of the new System 280, a low cost key-to-disk



13 reasons why you should go to the Computer Caravan.

New high speed reader — first 1,000 cps reader at less than $1,000

New punch/reader combination with speeds up to 70 cps punch and 400 cps read. Easy loading and chad removal with no need to slide unit out from panel

New low cost reader — 150 cps asynchronous. Lensless optical system. Single moving part

New 70 cps punch — motor driven interposer [illegible]

New medium speed reader — single moving part. 300 cps asynchronous and 100 cps synchronous. Lensless optical system

New iodisc Series 3000 top loading disc [illegible] 200 tracks/inch using IBM type [illegible] cartridge. 60 msec average access time and 96 million bit capacity. Light weight and small enough to easily fit 24 inch deep standard rack

New iodisc Series One includes fixed and removable disc for combination of inexpensive removable media system with mass storage add on capability

New reader/handler combination — field proven 2540 in one integrated unit with servo controlled handler. Electrical noise has been eliminated

New Series Three Controller card mounted [illegible] your mini computer. Provides extremely large capacity, slow speed ROM [illegible] compact program loader

New Portable Numeric Data Entry System for inventory, accounting, order entry, stock replenishment and financial transactions. Completely self contained with magnetic cartridge data storage

New line printer — varied font sets and multi font buffer automatically adjust to speeds of 142, 202, 256 and 526 lines per minute. Highest quality printing on 6 part or more forms

New plug in Controller for low cost Series Ten magnetic tape transport handles both 800 cpi NRZI and 1600 cpi formatters at the same time. Each formatter controls up to 4 tape drives

New iotape Series Three [illegible]

The new iomates. See them all in
Anaheim-Mar. 27-29. San Francisco-Apr. 3-5.
Kansas City-Apr. 11-13. Chicago-Apr. 17-19. Cleveland-Apr. 24-26.

Our systems are going to town.

It's time for another dynamic Caravan showing. This year, we're featuring a multi-terminal, on-line data entry system in a multi-task environment. The extremely flexible, 630 nsec, multi-bus V 73 is on your track. Commanding an order entry program running under our VORTEX operating executive with print-out in hard copy on our superversatile STATOS 31® printer/plotter. And just about every bell and whistle of modern technology. A total systems capability that solves a broad range of complex systems applications problems. Faster. And with more efficiency and flexibility than anything else you'll see around.

V73 with VORTEX

You'll view a real-time operating system at its best. CRT's operating independently of each other simultaneously, show the multi-tasking capability with foreground tasks in a real-time environment. Note that VORTEX has automatic checkpoint/restart and dynamic memory allocation for most efficient usage. After you've seen the flexibility of VORTEX in action and our new V73 doing its fast and powerful stuff, you'll wonder why it doesn't cost more. Especially when you consider its multiple path interfacing between processors and memories and I/O's.

STATOS

Here's where you'll get your hands on the results of your order entry program. You'll see the immediate output from two or more tasks—each of which outputs data direct to the STATOS 31. Fast. A capability of printing upper and lower case characters at up to 1,000 lines per minute. With definition that really pops right out at you. Without degrading the performance of the overall system. Let your imagination run wild. Enter any order you can think of in any quantity for up to ten different items. When you finish placing your order, you'll see an instant print-out on the STATOS 31 printer/plotter—complete even to the shipping label.

ADAPTS

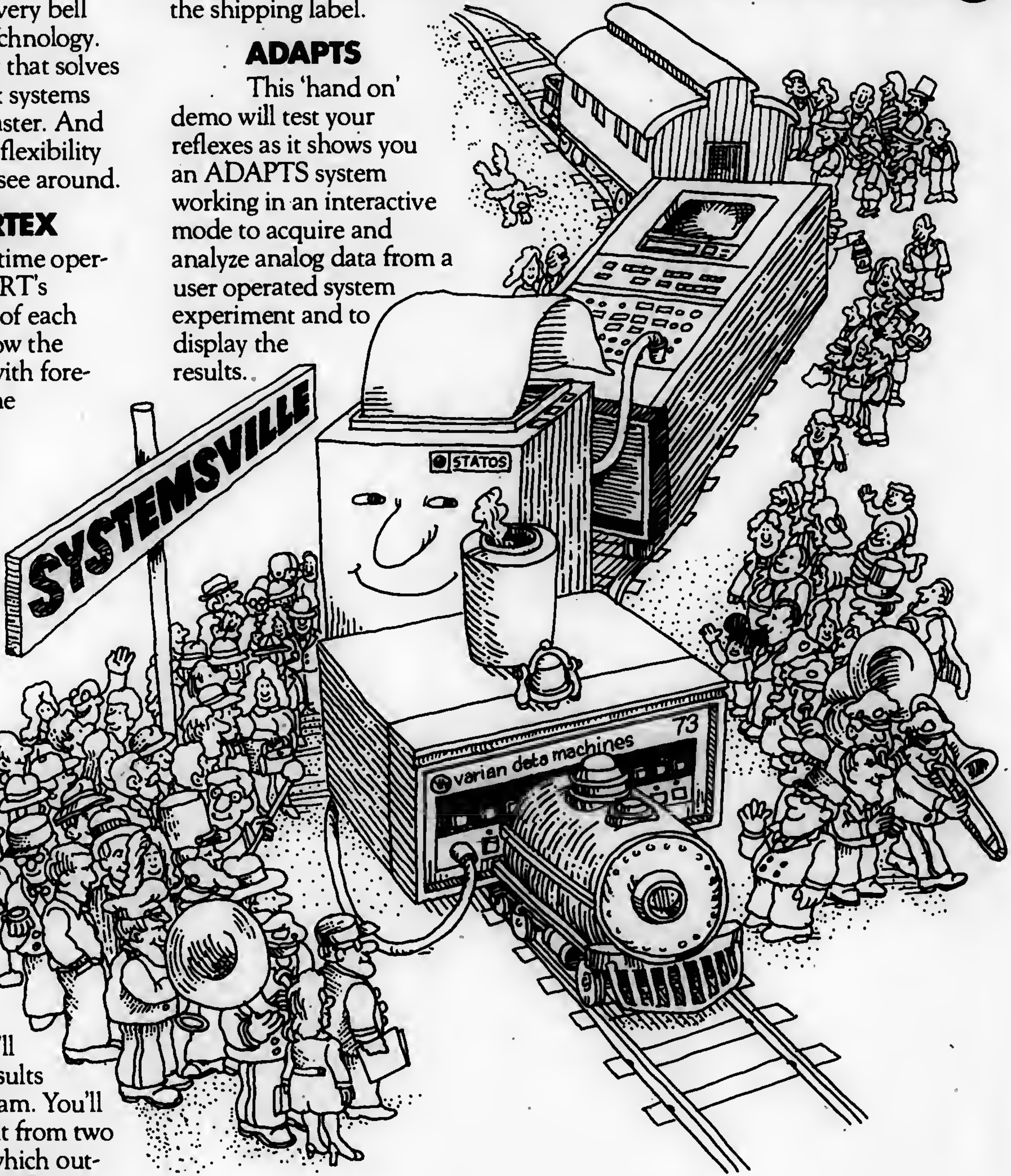
This 'hand on' demo will test your reflexes as it shows you an ADAPTS system working in an interactive mode to acquire and analyze analog data from a user operated system experiment and to display the results.

Bells, lights and buzzers will test your reflexes and stimulate your thinking about our systems capabilities.

Get into our system. Go to town with us.

Varian Data Machines,
2722 Michelson Drive, Irvine,
California 92664 (714) 833-2400

varian data machines



system for the user of less than ten keypunches. System 280 offers most of the features of the larger System 480, plus a unique communications option.

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GENERAL COMPUTER SYSTEMS, INC.
P.O. Box 6251
Dallas, Texas 75222
Tel: (214) 242-8411

The GCS 2100 multimedia data entry system provides Interactive Data Editing At Source *(IDEAS®)*.

Featured with GCS 2100 will be turnaround document processing and work processing.

THREE YPES OF INPUT will be demonstrated: punched cards, the standard 029 keyboard for data entry, and the typewriter keyboard for word processing.

FOUR TYPES OF OUTPUT will also be operational: magnetic tape, teletype, sixty line per minute supervisor station, & high speed printer for letter writing.

The GCS 2100 with 29 million characters of data storage, provides CRT formatting with GCS's unique *PROMPTING®* for both data entry and word processing.

. . . the data editing company with *IDEAS®*.

***

HAZELTINE CORPORATION
Pulaski Road
Greenlawn, N.Y. 11740
Tel: (516) 549-8800

Hazeltine Corporation, Greelawn, New York, will exhibit the Hazeltine 2000 teletype compatible video display terminal, dual magnetic tape cassette unit and hard copy printer. The Hazeltine 2000 is used either as a stand alone remote terminal which can operate at variable speeds up to 9600 BPS, or as an off-line data entry device in conjunction with the magnetic tape cassette unit. Several editing features as well as dual intensity video for protected format display provide a powerful system for data preparation, entry and retrieval.

***

HEWLETT-PACKARD COMPANY
11000 Wolfe Road
Cupertino, Calif. 95014
Tel: (408) 257-7000

Hewlett-Packard's display includes the remarkable new HP-80 shirt-pocket calculator. Brother to the very successful, engineering-oriented HP-35 calculator, the HP-80 is designed to serve the needs of the business and financial community.

A demonstration of low-cost batch processing with HP's thoroughly modern mini is one of the features of the 2120 DOS-M system, while multiprogramming capability is documented in a variety of commercial, scientific and engineering appliations.

OEM product displays include the micro-programmable HP 2100 minicomputer, HP-7900 moving-head discs and 7970 digital magnetic tape units.

***

INCOTERM CORPORATION
6 Strathmore Road
Natick, Mass. 01760
Tel: (617) 655-6100

INCOTERM Corporation is displaying its new low-cost SPD 900 series Remote Batch Terminals. The series 900 offers compatibility with IBM 2780 and 3780, Univac 1004, CDC User 200, 360/20 HASP and ICL 7020.

The key element of the series 900 is the famous INCOTERM 10/20 Stored Program Display and electronic keyboard. Three models offer a choice of line printers from 200 to 400 lines per minute and card readers from 150 to 300 cards per minute.

***

INFOREX, INC.
21 North Avenue
Burlington, Mass. 01803
Tel: (617) 272-6470

INFOREX will exhibit its 1302 Intelligent Key Entry System and highlight its new KeyScan and In-Line Data Entry Systems. The 1302 Intelligent Key Entry System features all keypunch, key-verify, and key-to-tape functions as standard, plus many new key-to-disc capabilities in a system with proven performance and reliability. KeyScan, for the processing of turnaround documents and check remittances, offers a unique combination of OCR, Automatic Check Processing and operator keyboard intervention within an integrated system designed to reduce the number of steps and personnel, thereby lowering the cost per document processed. The new In-Line Data Entry System is designed to meet the users' specific data preparation needs by offering a wide array of editing checks assuring immediate error detection and correction. These range from simple table look-ups to field, record, document and group integrity tests.

***

INFOTRON SYSTEMS CORPORATION
7300 N. Crescent Blvd.
Pennsauken, N.J. 08110
Tel: (609) 665-3864

Infotron Systems Corporation will exhibit their latest time division multiplexer (TDM) and front end equipments, the Timeline 240 and Timeline 450.

The Timeline 240, an ultra reliable TDM, accomodates all available terminal types, codes and speeds – both asynchronous and synchronous – from 37.5 to 4800

If you write application software, we can match it with systems.

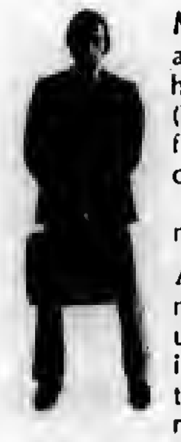
Why stop at selling or leasing software systems to end users? Now you can offer them complete minicomputer package systems.

This way they'll be able to get everything they need from you. And you'll be able to get everything you need from us.

Wider choice of peripherals We offer a full line of peripherals to go with our SUE and MAC minicomputers: IBM compatible 5440 disks, CRT/keyboards, printers from 100 cps to 600 lpm, magnetic tapes, cassettes, punched card devices and paper tapes. Anything your customer needs. And when his needs change, so can the system. Easily. Even by factors of 2 or 3.

Complete software tools To make your programming burden lighter we offer a full set of software tools: Fortran, assemblers, utilities, RTOS, sort/merge, DOS and RPG/SUE. That last item is 98%-compatible with RPG II by the way.

And we're the only company we know of that unconditionally warrants all our software for a full year.



Maintenance too We'll handle any and all problems your customers might have, promptly and expertly, anywhere. (We recently solved a problem in Bangkok, for instance.) And we'll do it by contract or on call, either way you want it.

We also offer training classes in maintenance as well as in programming.

Add it up So what you'll have is a more salable package to offer an end user. Everything he'll ever want or need in a minicomputer system, right down to the enclosures. (Which we'll put your name on, if you wish.)

Everything ready and working from the minute it's wheeled in his door.

YOUR NAME

And you'll be dealing with an established, reputable company. One that will be there when you need us.

Let's talk. Call the number below, collect, or write us at 6201 E. Randolph Street, Los Angeles, California 90040.

213/722-6810

Lockheed Electronics
Data Products Division

Call us.

Boston 861-1880 • New York metro (201) 947-8107 • Philadelphia 825-2880
Washington (703) 525-3600 • Atlanta 266-0730 • Detroit 577-5037 • Chicago 833-4600
Dallas 231-6163 • Houston 682-2617 • San Francisco (408) 257-3357

baud. Features include critical component redundancy, full system diagnostics, automatic baud rate detection, dynamic overspeed protection.

The Timeline 450 Port Selector extends a computer's traffic handling capability. Front end ports are assigned to communications channels on a hynamic rather than dedicated basis, allowing fewer ports to service more lines. Maximum capacity is 254 lines by 124 ports.

***

INTERDATA, INC.
2 Crescent Place
Oceanport, N.J. 07757
Tel: (201) 229-4040

Interdata will display several members of its New Series of minicomputers. This upward compatible family of processors covers the complete range of the price/performance spectrum. Members of the family include: the Models 70, 74 and 80 for general purpose use and the Models 50 and 55 for Data Communications. Interdata will also display its full range of software Operating Systems: a Real Time Telecommunications Operating System, a Real Time Operating System, a Basic Operating System and a Disc Operating System. Each afternoon during the show, Interdata will present a meaningful seminar on either "Microprogramming," "Data Communications," or "Operating Systems Software."

***

INTERNATIONAL COMMUNICATIONS CORPORATION
A Milgo Company
7620 N.W. 36th Avenue
Miami, Fla. 33147
Tel: (305) 691-1220

ICC/MILGO will display a complete line of data communication products, featuring high-speed modems for data transmission over dial-up phone lines or leased data lines. Modems from ICC operate at data rates from 2400 bits-per-second to 9600 bits-per-second. The ICC display will also include data communication test equipment and accessories. Experienced personnel will be in attendance for consultation.

***

IOMEC INC.
Route 9
Southboro, Mass. 01772
Tel: (617) 481-2500

IOMEC, one of the largest independent OEM suppliers of minicomputer peripherals and data entry terminal equipment announces 13 new product additions at the 1973 Computer Caravan.

The new products include:

– Five brand new paper tape products – featuring the first 1000 cps reader for less than $1000 and the 70 cps punch/400 cps reader combination.

– An entirely new series of disc drives including new mass storage (36 megabits) add-on dsic memory for the Series One "floppy" disc system.

– Plus Model 200 multi-font buffer line printer; varied packages of the IOTAPE Series Three minicartridge deck and the Series Ten large tape transports.

– One of the most advanced portable data entry equipment systems in the market today. The system uses micro-logic circuits to provide an extensive range of features at the lowest price.

***

ITT DATA EQUIPMENT & SYSTEMS DIVISION
East Union Avenue
East Rutherford, N.J. 07073
Tel: (201) 935-3900

The ITT 3501 Asciscope is a low-cost, TTY compatible CRT display terminal complete with keyboard, acoustic coupler, integral modem, buffer, and printer interface – no extra costs. The Asciscope can communicate terminal-to-computer or terminal-to-terminal. It features interfaces for a Data Access Arrangement when using its integral 300 bps modem, for external modems of 1200 or 2400 bits per second, and for printers operating up to 120 characters per second. The Asciscope leases for $65.00 a month, including maintenance. Nationwide installation and service by ITT includes on-the-spot exchange if a leased unit should ever require service.

***

LOCKHEED ELECTRONICS COMPANY, INC.
Data Products Division
6201 E. Randolph St.
Los Angeles, Calif. 90040
Tel: (213) 722-6810

The SUE minicomputer data processing system for small business applications will be demonstrated by the Data Products. Division. System flexibility provides for memory expansion to 64K bytes, up to four 5440 type disk drives, high performance printers, magnetic tape, and card equipment. Comparable to IBM System 3/model 6, the CRT oriented SUE system is of particular interest to application software organizations who wish to market a turnkey total package for small business applications. Manufacturer supplied software includes RPG II, a disk operating system, and sort/merge, as well as assemblers and utilities.

Also displayed are memory modules of the MM-365, a replacement memory for the IBM 360 model 65 and up.

***

Penril is not the largest manufacturer of high speed modems in the world.

But we will be.

Penril
Data Communications, Inc.
5520 Randolph Road
Rockville, Maryland 20852
301/881-8151

Regional offices:
Atlanta, Boston, Chicago, Houston, Los Angeles and New York

Penril's 4800B-1 modem pictured above has been selected by the U.S. Internal Revenue Service for use in its nationwide data communications network.

MODULAR COMPUTER SYSTEMS, INC.
1650 West McNab Road
Ft. Lauderdale, Fla. 33309
Tel: (305) 974-1380

The MODCOMP MAX III real-time multiprogramming operating system will be demonstrated. Foreground tasks will be initiated and executed. Assemblies and FORTRAN compilations will be performed as background operations. A MODCOMP II/25 computer with 32K words of 16-bit, 800 nanosecond memory will be used for the demonstrations. System peripherals will consist of disc, card reader, two CRT's, paper tape reader, and keyboard/printer. Analog, digital and communications interfaces will also be displayed.

While at the MODCOMP booth, guests may register to win a MODCOMP II computer with 16K words of memory. This computer will be awarded at the end of the Caravan's ten-city tour.

***

PARADYNE CORPORATION
8550 Ulmerton Road
Largo, Fla.
Tel: (301) 654-0033

Paradyne Corporation will display: The BISYNC-48 super modem featuring the highest throughput available on dial-up lines – plus, guaranteed error-free transmission; our 4800 bps, automatically-equalized M-48 modem with really usable self-test features; the BISYNC Analyzer – the unique test instrument that provides immediate fault isolation in BSC communications links; and the revolutionary remote I/O and computing systems that eliminates conventional communications hardware, terminals, modems and software – Paradyne's astonishing PIX.

Sales and Services offices in Largo, Florida (headquarters); and San Francisco; Los Angeles; Atlanta; Chicago; Boston; Detroit; St. Louis; New York City; and San Antonio.

***

PENRIL DATA COMMUNICATIONS, INC.
5520 Randolph Road
Rockville, Md. 20852
Tel: (301) 881-8151

A complete line of data modems operating from 300 bps to 4800 bps for leased line and DDD data transmission. End user, OEM and custom designed configurations will be displayed. Also, specially designed telephone line test and analyzing equipment will be demonstrated.

PER DATA CORPORATION
102 New South Road
Hicksville, N.Y. 11801
Tel: (516) 938-2851

Digital Tape Transport –

7 or 9 track; read after right or read only, 25 to 75 IPS. 200, 556, 800 & 1600 CPI densities. IBM compatible. Fixed head disk drive fast head per track random access storage. Storage capacities up to 1 million 16 bit words. Average access time - 8.5 ms. Non-contact head loading.

Moving Head Disk Drive – Front load or top load. Storage capacity up to 100 million bits at density of 200 track. Access time – 38 ms.

Controllers & Formatters – for tape transport, moving head disk, fixed head disk and printer. Fully self contained including power supply and cabling.

***

PRIME COMPUTER, INC.
17 Strathmore Road
Natick, Mass. 01760
Tel: (617) 655-6999

The Computer Caravan is PRIME Computer's first major public demonstration of its recently announced PRIME 200 small computer. Featuring a unique (software first) design – all systems software was completely specified before the computer's hardware was designed – the system will be used to demonstrate an extremely powerful disc operating system. PRIME's DOS-200 features extensive file management resources, batch processing system, numerous disc file access discipline, and file system common to all PRIME software.

***

SANDERS DATA SYSTEMS
Daniel Webster Highway
Nashua, N.H. 03068
Tel: (603) 885-4211

Sanders to feature intelligent terminal system with disk during Caravan.

Sanders Data Systems, Inc. will exhibit and demonstrate both their 804 stand alone and 810 cluster display terminal systems using standard software packages for order processing, billing, inventory control, data entry, remote job entry, and other business applications during the Computer Caravan.

The 810 system features a disk memory which can provide up to 5 million bytes of storage, while the 804 system interfaces a tape cassette transport for applications needing smaller storage capabilities. Both systems will be seen in operation with 32 character per second and 200 line per minute printers, and a card reader.

***

SIERRA RESEARCH CORPORATION
47 Middlesex Tpke.
Burlington, Mass. 01803
Tel: (617) 273-0900

Vermont Research

Bits or Bytes for minimum Bucks

Whether it is disc or drum – whether it is head per track or moving head – whether it is digital interface or complete memory system, you should call us at Vermont Research to review your requirements for rotating memories.

Head Per Track
Drums
Series 3000

VRC Model	Million Bits	OEM Quan Price
3002-32	2	$ 3150
3002-64	4	$ 3500
3002-128	8	$ 4620
3016-128	8	$ 4865
3016-256	16	$ 8365
3016-384	24	$11165
3016-512	32	$13265

Moving Head
Disks
Series 5000

VRC Model	Mega Bytes	OEM Quan Price
5016	40	$ 5400
5018	62	$ 6300

Vermont Research Corporation
Precision Park
North Springfield
Vermont 05150
Telephone: 802-886-2256
Telex: 710-363-6533

VRC Inc.
5261 West Imperial Hwy
Los Angeles
California 90045
Telephone: 213-641-7100

Vermont Research Limited
Cleeve Road
Leatherhead
Surrey
Tel: Leatherhead 74758
Telex: 23280

It's time your computer got its hands dirty. Sierra Research Data Systems Division will demonstrate the capabilities of the SDA-770 Data Collection System to collect, inquire, retrieve and display manufacturing data. Typical inventory, material flow and labor distribution control programs will be demonstrated with the Sierra Operating System and FDC (Factory Data Collection) programs. Remote data collection will be demonstrated twice daily via on-line communications between a real-time SDA-701 Remote Terminal and SDA-710 Attendance Station at the Computer Caravan and a Sierra SDA-770 Central Controller at our plant in Boston, Massachusetts.

***

SYCOR, INC.
100 Phoenix Drive
Ann Arbor, Mich. 48104
Tel: (313) 971-0900

Sycor will exhibit its popular Model 340 Intelligent Communications Terminal in two configurations – branch office order entry and remote job entry. The branch office terminal will demonstrate Sycor's unique dual communications feature – low speed (110-300 baud) asynchronous communications compatible with major time sharing systems and high speed (1200-4800 baud) binary synchronous communications. The remote job entry configuration features a 200 lpm printer, a 250 cpm card reader, and is compatible with computers operating under HASP or ASP control. Both configurations are user programmable with Sycor's T.A.L. (Terminal Applications Language).

***

SYSTEMS ENGINEERING LABORATORIES, INC.
6901 West Sunrise Blvd.
Ft. Lauderdale, Fla. 33313
Tel: (305) 587-2900, ext. 544

Systems Engineering Laboratories will display the power and versatility of their SYSTEMS 72 computer. It will be running FORTRAN, BASIC and Batch at the same time it is shooting craps with booth visitors.

- SYSTEMS 72, the first small, virtual-memory computer, combines the advanced problem-solving capabilities of much larger computers with the easy operation and economy of minicomputers.

It features: time-sharing - virtual memory - reentrant FORTRAN/BASIC - multiprogramming - all processors available to users console simultaneously.

- SYSTEMS will also show a film on EDITS (Engineering Documentation Interactive Terminal System), a new system for faster, more economical preparation of engineering drawings.

***

TALLY CORPORATION
8301 South 180th Street
Kent, Washington 98031
Tel: (206) 251-5500

Tally Corporation will feature the Datascribe – the total data entry, communication print out system plus the new Tally line printer – the most cost effective choice for intermediate speed printing applications.

The Datascribe Communicator with its unique data compression feature eliminates transmittal of redundant information which reduces telephone line time up to two-thirds. Transmission speeds range from 80 to 420 records-minute depending on the modem used and the amount of data compression available.

Data on magnetic tape can be printed at up to 200 lines per minute on the new Tally printer. The patterned CROSS-POINT® printing technique results in unpresidented reliability and consistent high quality multiple copy at low cost per page.

TECHTRAN INDUSTRIES, INC.
580 Jefferson Road
Rochester, N.Y. 14623
Tel: (716) 271-7953

Cassette Communications Terminals, EIA RS232 and TTY Compatible featuring single and dual decks, switch selectable speeds to 2400 baud, High Speed Search, FULL Remote Control, Data Edit, Switch Selectable On-line/Off-line operation; models for both ASCII and IBM 2741 operations.

***

TEKTRONIX, INC.
P. O. Box 500
Beaverton, Ore. 97005
Tel: (503) 644-0161

Tektronix shows new APL graphic terminal.

The 4013, Tektronix's new APL terminal will be shown at the Computer Caravan. The company will also show the 4912 Digital Cassette Tape Unit and 4610 Hard Copy Unit. APL provides an extremely flexible language for computer graphics. Tektronix has implemented a group of functions to exploit the advantages of APL as a programming language for graphics.

The 4013 is a member of the 4010 family of computer display terminals. Pricing and delivery information is available at the booth.

***

TELETYPE CORPORATION
5555 Touhy Avenue
Skokie, Ill. 60076
Tel: (312) 982-3134

Teletype Corporation is exhibiting their model 38 wide platen terminal

When you visit
the MODCOMP exhibit, you can register to win a MODCOMP II computer with 16K words of 800 nanosecond memory. Contest rules and entry blanks are available at the MODCOMP booth.

While visiting us, you will see a MODCOMP II system with disc, CRT's and other peripherals operating under our MAX III Real-Time Executive. Real-time tasks will be scheduled, initiated and executed while FORTRAN compilations and assemblies are performed at a checkpointable, lower priority level in the background.

Come see a *real* real-time executive in action at the MODCOMP booth!

Meet the MODCOMP Computer Family

at the Caravan

See one...
Run one...
Buy one...

WIN ONE!

modular computer systems
1650 W. McNab Road
Fort Lauderdale, Florida 33309
Phone (305) 974-1380

and the Teletype® 4210 magnetic tape data terminal featuring the automatic rewind and local printout option. When combined as a remote-computing terminal arrangement, you transmit and receive online at speeds up to 240 characters per second, and then print out data at lower local speeds, all on an unattended basis. The model 38 terminal prints a full 132 character line at 10 characters per inch in upper and lower case, and accepts standard 14-7/8" fan-fold paper. Total price for both terminals is less than $4,000.

***

TEXAS INSTRUMENTS INC.
P. O. Box 1444
Houston, Texas 77001
Tel: (713) 494-5115, Ext. 2165

"Silent 700*" Electronic Data Terminals and minicomputers will be demonstrated and displayed by TI personnel. The new, low-cost "Silent 700" ASR teletypewriter with twin magnetic tape cassettes will be demonstrated, as will the popular Model 725 Portable Data Terminal. Two 16-bit minicomputers will be on display; the Model 960A "Bit-Pusher*" computer, and the Model 980A high-performance general purpose computer. Both computers have fast semiconductor memory and many standard and built-in features for more cost-effective computer applications.

*Trademarks of Texas Instruments Inc.

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VARIAN DATA MACHINES
2722 Michelson Drive
Irvine, Calif. 92664
Tel: (714) 833-2400

Varian Data Machines demonstrates broad systems capability along with some new products. ADAPTS, Varian's laboratory automation system built around Extended BASIC, will be demonstrated on a 620/L-100 computer. Also on display are VDM's new V73 medium-scale computer and the STATOS 31 electrostatic printer/plotter. These items along with other peripherals, are tied together in one system under control of the VORTEX real-time operating system software. Both laboratory and business-oriented applications will be demonstrated.

***

VERMONT RESEARCH CORPORATION
Precision Park
S. Springfield, Vt. 05150
Tel: (802) 886-2256

The Model 5016 Disk Memory provides 40 megabytes of data storage on one fixed disk, and one removable disk in a top loading 5440 type cartridge (with a 3336 type disk). Technology breakthroughs in proprietary track following and magnetic head design allow conservative track densities of 666 tracks per inch with equally conservative track bit densities of 4100 bits per inch nominal. Access time for this advanced moving head disk is 28 msec average, 60 msec maximum. 3600 RPM operation provides a low 8.33 msec average rotational latency and a fast 6.9 megabit serial data rate. The slide and mounted unit includes an integral DC power supply in its 10 3/8 inches of 19-inch RETMA rack. Also available with the micro-programmed, error-correcting Model 8100 "Intelligent" controller which can serve up to eight disk units.

The Model 3002 Drum Memory is the newest of VRC's dependable head-per-track drums. Data capacity is 9 megabits on 128 tracks. Reliable TBM data recording at 2200 bits per inch allows 4096 16-bit words per track formatted in 128 sectors. 3600 RPM operation gives you true 8.7 average access. A dust-tight enclosure and an automatic head actuation mechanism continue the proven VRC reliability. Mounting slides, DC power systems and distinctive front panel are standard. So is the single connector TTL interface. Available with either the Model 3100 sector-buffered controller or the Model 3400 two-word buffer controller. The Model 3008 is a big brother with up to four times the data capacity.

***

WESTERN UNION DATA SERVICES COMPANY
16 McKee Drive
Mahwah, N.J. 07430
Tel: (201) 529-1170

Western Union Data Services Company will show side by side the 30 character-per-second EDT 300 AST Teleprinter with its paper tape buffer and its EDT 300 Magnetic Send-Receive, a terminal with integrated magnetic tape buffering capability for remote batch and time-share applications.

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DATA GENERAL CORP.
Route 9
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Bits & Pieces

MDS 360/370 Disk System Comparable to IBM 3330

UTICA, N.Y. – Mohawk Data Sciences Corp. now has a 3330-type disk storage subsystem.

The MDS 8830-I accommodates up to eight disk drives, and the 8830-2, up to 16.

Both models can be used with the System 370 and the System 360/65 and above. The 8330 disk drive offers a storage capacity of 100 million bytes with a 404 cylinder pack.

The 8830 disk drive utilizes the IBM 3336 disk pack or equivalent and has an average random access time of 27 msec.

The monthly rental of the MDS 8830 is $500 under a one-year lease with unlimited maintenance, and the purchase price is $19,400. The 8830-I disk controller is $1,795/mo or $69,900, while the 8830-2 is $1,890/mo and $74,000.

The firm is at Box 362, 13503.

Enlarger/Printer Unit Offered

NORTH BERGEN, N.J. – Trans World Technology, Inc. offers an enlarger/printer unit designed for automatic, programmed, multiple-copy printback from microfiche.

Known as the "Three/Four," the unit will be marketed exclusively in the U.S. by Trans World Technology.

With capacity rated at 500 print/hr, the printer produces a complete set of prints from a 60-frame fiche in six minutes.

Cost per copy is .02 cents for 8.5 in. by 11-in. and .04 cents for 11 in. by 17-in. size. Cost of the unit is $14,500 and delivery is 10 weeks from 4100 West Side Ave., 07047.

Data Acquisition Systems Shown

CORNWELLS HEIGHTS, Pa. – B & F Instruments, Inc. offers a new generation of Digital Data Acquisition Systems based on the SY256 System.

New options include a coupler for read/write magnetic tape with off-line tape dump to printer.

The new basic controller costs $7,500. Depending on system complexity, delivery is 60 days to six months.

Codabar Receives Line Printer

STAMFORD, Conn. – Pitney Bowes has a computer line-printer system for the high-speed printing of Omnidirectional Codabar, the machine-readable black and white bar code used to automate sales ring-up and checkout operations.

Designed for supermarket and grocery operation, the system enables grocers, wholesalers or food manufacturers to print machine and human-readable labels.

Termed the "Monarch 2000 Codabar Encoding System," it comprises a magnetic tape reader, a controller with programmable logic and a high-speed printer.

The firm is at 69 Walnut St., 06904.

Configuration vs. Performance

Minicomputer Trade-Offs Are Changing

By Michael Weinstein
Of the CW Staff

Many minicomputer buyers make the mistake of pricing systems by comparing hardware configurations. With the advent of solid-state technology they would be better advised to forget the configuration and concern themselves with which system provides the best computing service.

Pricing by configuration was valid in the late sixties when most minicomputers used similar concepts in design, processed only one program at a time and required little initial programming.

A late sixties' user had only to analyze his needs and compare various systems on the basis of price versus computer power – e.g., memory size, cycle time, etc.

Hard to Evaluate

The move to solid state and other new technologies in the last few years has changed design and capabilities among computers so much that it is no longer possible to evaluate systems as easily.

In the race to provide users with minicomputers costing less and computing more, manufacturers have tried completely different techniques so there now is little similarity in architecture from machine to machine.

Further, not only is hardware different but so is software. Each new design offered to the user must incorporate unique software and operating systems.

With no industry standards the modern mini buyer can buy poor hardware with poor software, poor hardware with good software, good hardware with good software and good hardware with poor software, and in each case have the same system configuration.

Analysis: Yesterday and Today

Potential users must now consider what the system can do and not how it is configured. They must analyze hardware capabilities – not to be confused with size, cost of peripherals and their capabilities and programming costs.

Look at the Instruction Set

More important than the memory size offered is how efficiently it handles the mini's instruction set. Even in simple applications one minicomputer can take twice the number of words to execute a program as another.

One indication of the efficiency of the instruction set is to compare the memory required for similar operating or software modules.

For example, if the user intends to program in Fortran or Basic, he should compare the memory required for the Fortran compiler or the Basic interpreter. This memory size ration gives a good indication of the memory required for other applications.

In a multiprogramming environment one should compare the memory needed for real-time operating systems. Users must be careful in such a comparison as some operating systems are much more powerful than others and some minicomputer users employ disk subsystems.

In Doubt? Benchmark

No matter how complicated the hardware design there is no need to get bogged down in technical discussions. If you are in doubt, benchmark; if not in doubt, still benchmark. Write a program and run it on different machines to see the amount of memory required. No salesman, technical representative or technical discussion can argue against a poor result.

Only after one has determined CPU efficiency should he consider internal speed. Most minicomputer buyers do not have the need for superfast cycle times.

The time needed to execute a program is the product of the number of execution cycles used and the time required for each cycle.

Minicomputers are coming with increasingly faster execution times by incorporating fast memory – e.g., semiconductor – and/or a complex CPU that achieves more data manipulations during each cycle.

Given the choice of equal processing times for a benchmarked program, it is best to choose the machine with complex CPU since it tends to indicate a more efficient use of instructions, and fast memory can be added at a later time more cheaply than a fast CPU.

Honeywell Offers Cassette System For Use With Minicomputer Line

By Ken Shonk
Of the CW Staff

WELLESLEY, Mass. – Honeywell has introduced its first cassette tape system. The 5400 Cassette Subsystem is designed for use with the System 700 minicomputers and will provide an alternative to the paper tape data and program storage mode previously used.

Each cassette can store up to 600,000 characters of information, with 300,000 characters on each of the two parallel tracks. Phase-encoded at a recording density of 800 bit/in., characters of data can be transferred at an average rate of 700 char./sec.

The unit consists of a control unit and a rack-mountable assembly that includes one or two cassette tape handlers and the power supply.

Two techniques of error checking are used during both read and write operations. One detects missing transitions and sets an error status bit. The other checks whether the total number of bits read in a record is a multiple of eight and sets an access error status bit.

Monthly rental for the 5400 with a controller and one handler is $124 on a five-year lease and the purchase price is $4,075. With two handlers the subsystem rents for $172 and sells for $5,000. The subsystem will be available in the third quarter of 1973.

Singer Programmable Calculator Comes With Software Library

SAN LEANDRO, Calif. – Singer Business Machines has a programmable calculator supported by a program library for specific user applications.

The 1155 operates on internally stored programs – up to 511 machine instructions. The calculator contains 20 memory registers and two working registers. Each register holds 13 digits with two digit exponent, decimal point and sign.

Program editing is through an "expansion edit feature" which allows users to open and close a program to accommodate changes at any specified point and proceed to the next step without having to reenter the program after interruption. Conditional, unconditional and indirect branching are also features.

The 1155 includes the Model 511 magnetic card reader/recorder which can store programs for entry to the programmable calculator.

A check digit is automatically calculated for each program and may be printed to identify and verify card loading accuracy. Each card holds two 511-step programs.

Available applications programs include: circuit analysis for electrical engineers, compass headings or fuel consumption rates for airline navigators, and amortization rates for banks.

The keys are grouped into three color-coded sectors: arithmetic function, data entry and register control, and programming and machine control.

The 1155 programmable calculator with the 511 magnetic card reader/recorder costs $2,595. The firm is at 2350 Washington Ave., 94577.

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Vendor Support, Not Hardware Ability, Brings Bank Into Honeywell Account

By James P. Roarty

Special to Computerworld

BROOKLYN, N.Y. – If one accepts the premise that a data processing system is supposed to help run the business better, then hardware is only a small part of the effort that can be advanced by the vendor.

Thus, when the Metropolitan Savings Bank decided to modernize computer operations, the main criterion was to find a source that offered total support, even after the equipment was installed.

Consultant Helps

In 1971, this modernization process began – the bank had previously been running an IBM 1401 for a number of years. The bank solicited bids from vendors and worked with an outside consultant to select the vendor and system that would best suit needs geared to expansion of the bank (now allowed by changes in New York's banking laws).

The competition was between a Honeywell 1015, an IBM 370/135, a Burroughs 3500 and a Univac 9400. Honeywell was chosen not for hardware capability, but for the support the bank was promised from Honeywell. In January 1972, the bank ordered dual 2060s. The first (batch) system was installed in June 1972 and the second (on-line) system went in in September 1972.

From the outset of the purchase cycle, it was decided to develop an on-line banking package free from restrictions inherent in vendor-supplied, off-the-shelf packages.

Honeywell offered to help construct the package – in return for allowing Honeywell to offer the package to other banking customers. (Honeywell also helped convert about 175 IBM 1401 programs to the 2060s).

The operations officers of the bank sat down with the DP staff and the Honeywell people for six months and this group hammered out exactly what it wanted the package to do.

Its goal was simply to eliminate all back-office paperwork – to go on-line with all transactions that occur in a branch office and to provide, again on-line, the bank's management with the needed information.

Of a total of eight professionals now developing the package, six are from Honeywell. So far they have implemented the club accounts portion of the package and are about to go on-line with the savings portion.

Honeywell's hardware has performed flawlessly, except for a short in one of the cables under our flooring; and there were very few bugs in the OS/2000 operating system. One area of concern was the company's ability to provide satisfactory field maintenance, but so far fears have been allayed.

The present configuration consists of two Honeywell 2060 central processors with 131K of main memory, an 1100 line printer for the batch system, one tape drive for each system, a card reader and a punch for the batch system and 420M characters of disk storage. The system is tied to Honeywell 278 disk drives and Honeywell 286 communications controllers.

The bank plans to move to 277 disks and the Datanet 2000 front-end processors, but would like to see someone else's experience on this equipment before moving to it. All equipment, except the disks and communications controllers, are purchased.

In branch offices, Financial Data Systems, Inc. minicomputers and terminals and CRTs have been installed. The minis are advantageous because their own memory and buffer characteristics allow the system to add terminals or tape cassettes, etc. without any alterations in the main Honeywell systems.

Roarty is senior vice-president for Metropolitan Savings Bank in Brooklyn.

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PDP-8, DCC112 Get 80M-Bit Tape Storage

SYOSSET, N.Y. – Lamb Laboratories is offering an 80M-bit expandable magnetic-tape storage for both the DEC PDP-8 and the Digital Computer Controls, Inc. DCC112.

Designed to replace punch card or punch tape for either program or file storage, the magnetic storage is on 10.5-in. reels using quarter-inch tape costing one cent for 50K bits.

The complete system costs $2,490 and includes a rack-mountable tape-transport; an interface with read/write circuitry, transport-control logic and integral power supplies; and a basic tape-handling software and interconnecting cables.

The 36-lb transport can be mounted on a 19-in. rack. The 8-lb interface is 19 in. by 8-3/4 in. The $850 expander or mainframe weighs 5 lbs and is 19 in. by 8-3/4 in. Additional transports are available for $1,075, including expander-card and cables. The firm is at 155 Michael Drive, 11791.

New OEM Products

(While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users.

Further, while much of this equipment is not presently available as such to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.)

Reader Interfaces TTL Logic; Star-Wheel Reader Shown

HACKENSACK, N.J. – The Model 4300R 300 char./sec photoelectric tape reader is available from Data Peripheral, Inc.

The unit – complete with spooling features and LED "opto-hybrid" system – will interface TTL logic.

The spooling utilizes dancer arms which are sensed optically. The spooler can operate bidirectionally at speeds up to 60 in./sec.

Unit price is $750, OEM price is $580-100-unit lot.

The firm also unveiled a medium-speed star-wheel paper tape reader.

The Model 4150 sensing 8-channel reader features gold contacts, and is intended for use in environments not suitable for photoelectric readers.

The unit operates bidirectionally using a step motor at speeds up to 150 char./sec.

Unit price is $425, with the OEM tag set at $340 in 100-unit lots from 14 Porter St., 07601.

Tape Reader Lacks Electronics

SANTA ANA, Calif. – "Everything necessary for punched-tape reading is supplied by the EECO TRH9300 except reader electronics," according to a spokesman for Electronic Engineering Co.

The unit is designed for an OEM who can include reader electronics in his main electronic package.

Depending on circuitry, reading speed can be up to 800 char./sec.

Price is $249 in single-unit trial quantity from 1441 E. Chestnut Ave., 92701.

Novas Get CRT Display

WALTHAM, Mass. – Lexicon, Inc. is offering a CRT display and keyboard control for Nova minicomputers.

The Lexiscope 2000 alphanumeric display is packaged on a single Nova-style printed circuit card. It features a 2000-character MOS-RAM memory organized to give an 80-column by 25 row format. The Lexiscope 2000 also includes a complete keyboard control at no extra cost.

Operation of the display and keyboard control does not require the use of teletypewriter interface.

The display board costs $1,585, with quantity discounts available from 60 Turner St.

Panel Meters Offer MOS-LSI

WESTLAKE VILLAGE, Calif. – A line of digital panel meters combining custom MOS-LSI and "Field Effect" liquid crystal displays is available from Tekelec, Inc.

The TA Series includes 2-1/2, 3-1/2 and 4-1/2 digit displays with resolution up to .005%, 10 reading/sec., 10 µsec response time and normal mode rejection of 40 db without an input filter.

The 39 models in the TA 300 Series, starting at $47 each in quantities of 100, incorporate plug-in range modules, common-mode noise rejection, optional fully isolated parallel BCD output, bipolar operation and a shielded transformer power supply requiring less than 1.5W.

Options include four ac power options and five Vdc power, low-power reflective display, input filter, screw terminal I/O connections and rear panel mounting. The firm is at 31829 W. La Tienda Drive, 91361.

Univac Sets Series 60 Operations To Support New EMR User Base

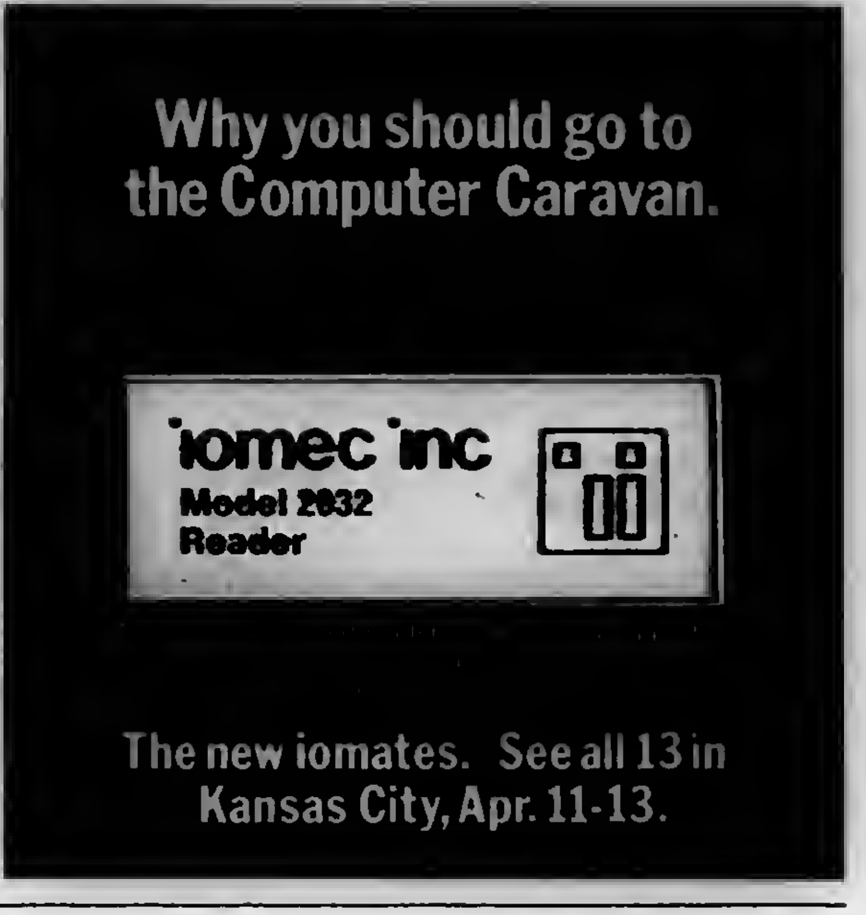
BLUE BELL, Pa. – Univac has set up a Series 60 Operations to support its newly acquired base of over 150 computers manufactured by EMR Computer.

Included in the base are customers with real-time special applications in fields such as geophysical DP, lab automation, communications systems, telemetry and industrial control, according to Julian V. Bilski, director of Series 60 Operations.

In acquiring EMR Computer, Univac also gained the maintenance and lease contracts to over 150 computers, EMR's complete factory and field inventory, all documentation for reproduction of hardware and software, and all patents, trademarks and licenses for EMR Computer products, including those under development," he observed.

New users moving to Univac include several major oil companies which use Series 60 computers for processing seismic data, five states with Series 60 law enforcement systems, and several large industrial corporations using the computers for specialized production control.

Full customer engineering and marketing support activities are available at the former EMR facility in Minneapolis; Series 60 management headquarters is here.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Firm Solves Its Overcapacity Problem As Lessor, Lessee; Saves $6,000/Mo

By Sasha Yasinin

CW Hawaii Correspondent

HONOLULU – Computing Management, Inc., a local-based computer services firm, recently reported a turnaround to profitable operations and credits "80% of the turnaround" to downgrading its IBM mainframe, Terry Brooks, CMI marketing consultant, told *Computerworld.*

CMI, a subsidiary of Crown Corp., had purchased one of IBM's first 370/145s for $670,000. "The machine had far more capacity than we needed. We would probably have been better off with a 135 but none was available when we placed our order," Brooks explained.

William T. Treadwell, CMI president brought on board last June to get CMI running in the black, leased out CMI's 370 to Hawaii Medical Service Association (HMSA) which was looking for expanded mainframe capabilities on a three-year lease.

CMI then leased an IBM 360/40 from Boothe Computer Corp. for its own use.

The computer switch saved CMI about $6,000/mo, officials said.

The three-year HMSA lease leaves the door open to the possibility of CMI's using the 370 itself if it needs that much capacity when the lease is up, Brooks said.

Its overcapacity problem solved, CMI's future financial prospects are brightened by a new hotel-management-reservations system which became operational in mid-February.

The hotel system, scheduled to go into operation in some 15 hotels here during the next three months, takes reservations over a hotel-based on-line CRT terminal, prints confirmation slips, registration cards, agency commission checks, deposit accounting and other reports.

CMI hopes to expand its marketing activities for this system to the Continental U.S., possibly through franchises to other computing firms, Brooks said.

About 70% of CMI's income comes from its hotel system and other repetitive computing tasks, with the rest coming from contract programming and systems development work.

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Modeling Technique May Curb Pollution

LA JOLLA, Calif. – A computer modeling technique called Explor may help control the effects of undesirable emissions from automobiles.

The model, developed by Systems, Science and Software, Inc. under a contract from the Environmental Protection Agency, uses a Univac 1108 to predict where pollutants will go, where they will concentrate and in what amounts, and how long they are likely to remain. Actual amounts of emitted pollutants, topography of the surrounding area, temperature and wind forces are all taken into account.

Explor can be used to predict what type of land development is most acceptable near freeways; the difference in pollution levels between stop-and-go driving and high-speed driving; and how pollutant levels would differ with different freeway designs.

New Zealand Sets Up DP Center

Special to Computerworld

WELLINGTON, New Zealand – The government has approved the establishment by the New Zealand State Services Commission of a $7 million engineering and scientific computer center.

The center will process a wide range of engineering and scientific work for government departments and will be operated by the Ministry of Works as agent for the State Services Commission.

The equipment for the center includes an IBM 370/168 which will replace the existing 360/40 and will be located in Wellington.

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Step by Step

Mini Makes Experiments Move Ahead

AUSTIN, Texas – When chemical engineering students do complex experiments at the University of Texas here a minicomputer helps them determine the validity of the data they get from one part of the experiment before they go on to the next part.

In a computer-based experiment, a student logs in on a Data General Nova, and is shown a series of slides that explains the experiment and the equipment used in it. Another group of slides reviews the theory of the experiment, and asks him questions related to it.

If he answers incorrectly, the correct answer is given in an attempt to help the student understand the system. The dialogue continues until the student understands the theory behind the first step.

When the experiment is ready, the student types in a command, and the mini begins monitoring data and transmitting it to two larger computers. Another 35mm slide tells him what to expect at this stage of the experiment, and by typing in a command, the student can compare the data from his experiment against a norm. If they agree, he can go on to the next part of the experiment; if they do not agree, he can repeat the procedure.

"In addition to its instructional value, the system contributes to laboratory safety," Dr. Eugene H. Wissler, professor of chemical engineering, said. "Critical variables can be monitored for experiments that involve some hazard, and the experiment can be terminated automatically whenever a potentially dangerous situation develops."

The University of Texas uses a Nova computer with 8K words of core memory, a 12-channel multiplexer, a dual magnetic tape cassette unit and a graphic terminal and teletypewriter for manual input and output.

Scottish Firefighters Get Complete Building Data

GLASGOW, Scotland – This city plans to link its fire engines with a computer to fight blazes more efficiently.

Small facsimile printers installed in the cabs of 40 fire engines will receive by radio and print out detailed information on floor plans of the burning building and its known fire hazards while the firefighters are on their way to battle the blaze.

George Cooper, Glasgow's firemaster, said the mini-based system is believed to be the most advanced firefighting system of its kind in the world. He said his crews "will both be better equipped to tackle the job and their safety better protected."

The system, based on two Honeywell 316 computers due to be installed in June or July, will ultimately contain data on 10,000 properties. The information, to be updated daily, would include building plans and layouts, known hazardous materials in the building, and a special file of 1,000 hazardous substances and how to handle them in the case of fire.

Glasgow intends later to link 400 fire alarm boxes directly to the computer. When an alarm is signaled, the computer would dispatch the nearest fire crew directly, without any human intervention.

Firm's Electric Meters Calibrated With Minis

LAFAYETTE, Ind. – Duncan Electric Co., manufacturer of watthour meters that measure electricity consumption, uses three minicomputers to calibrate its meters.

In the calibrating operation, two Data General Novas are programmed to select electrical test load parameters; transfer test data into core memory; calculate required adjustments based on the test data and stored constants; and, through use of calculated adjustments, control automatic adjustment hardware.

The minis also apply calibration accuracy limits to each meter, and determine the status of each meter – calibrate, rerun or reject – for each system cycle.

The third computer is used for program development and for backup for the two on-line computers.

Swedish Meatballs May Taste Much Better

STOCKHOLM, Sweden – A computer is responsible for having impregnated large numbers of Swedish cows since 1968.

Lantbruksdata AB (Farming Data Ltd.) provides computer technology for Swedish farmers. One application is artificial insemination, whereby Farming Data processes relevant facts and figures about a farmer's cows to generate a selection of suitable bulls for breeding. The system makes possible a guaranteed improvement in livestock quality.

In addition, DP is used for forage control by regulating feed mixes and dosages for optimum milk yields throughout the year.

Farmers can also get DP help with bookkeeping and paperwork routines in their dealings with organizations and the authorities.

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Our April 25th Supplement

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Computerworld's communications specialist, Ron Frank, takes a close look at this very complicated area in our April 25 supplement. It will include information on how to go about configuring a data communications network that will solve your particular problems. We'll describe some successful communications networks and discuss the utility of various kinds of equipment. When we put it all together, you'll have an excellent overview of this increasingly important EDP tool.

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Better Training in Tech Writing Urged

HOUSTON – "Documentation is the weakest link in most programming shops," according to Dr. Bobby Waldron, director of the computation center at Lamar University.

Speaking at an installation management session at the Computer Caravan/73 here, Waldron said, "We are able to judge and manage programming teams, but it is different from conventional management."

Agreeing with Waldron, Frank Mabry said "we should demand better training in technical writing."

Mabry, a systems programmer at Baylor College of Medicine, said the most important part of what the programmer has done depends on "adequate technical communications.".

The best programming output at his installation often comes from student programmers who work for about $2/hr, Waldron said. "It is the best $2 we spend anywhere. Our only problem is to keep them from doing too much."

Walt Walters, a consultant, took issue with university curricula because they do not "adequately prepare programmers for commercial applications."

The technical qualities of DP personnel are often overemphasized with too little attention given to personal characteristics that produce "superior results," he said.

Some News...Briefly

Student Picks Number, School Wins a Mini

BERKELEY HEIGHTS, N.J. – Governor Livingston Regional High School has received a free "Edusystem-5" minicomputerized educational system from Digital Equipment Corp.

The minicomputer with associated peripheral equipment was top prize in a recent contest won by 12-year-old David Rosenthal, a junior high school student. He correctly tallied the number of times the word, number or Roman numeral "eight" appeared on a contest poster designed by DEC to promote the company's PDP-8 family of minicomputers.

As the contest winner, Rosenthal could designate which school would receive the system. He chose Governor Livingston Regional High School, which he will attend next year.

The Edusystem-5 package consists of a PDP-8/F minicomputer with 4K words of memory, console terminal, education software and training credit for one faculty member.

Grant Aids Study Of Justice Systems

PITTSBURGH – A $147,000 grant for a three-year international study of criminal justice systems has been awarded to Carnegie-Mellon University by the Ford Foundation.

The research project, titled "Criminal Justice Systems – Planning Methodology and Cross-National Comparisons," will test several hypotheses about the administration of criminal justice in different nations by using a planning tool known as the Justice System Interactive Model (Jussim). The computer program developed by Dr. Alfred Blumstein, director of the University's urban systems institute and head of the project, allows criminal justice administrators to test the effect of a single change on the whole system; for example, the effect that a variation in the arrest rate might have on court workloads, detention population and probation officer requirements.

Law Printing Speeded

DENVER – The State of Colorado has installed a computerized type-composition system in an effort to save time and eliminate clerical errors in the publication of the state's session laws.

The new system should also result in a substantial savings to taxpayers over a period of years, according to James C. Wilson Jr., revisor of statutes and director of the Colorado Legislative Drafting Office.

The system, developed by Data Retrieval Corp. of America, Milwaukee, was used this year in the composing process for the 800-page *Session Laws of Colorado 1972.* The state will also use the system for the publication of the revised statutes in 1973, and future supplements to the statutes.

System to Cut Paper

WASHINGTON, D.C. – A new computer-based system that might eventually take some of the paperwork out of international trade will be tested here soon.

The system, under development for over a year, uses computer systems and uniform commodity and other transportation codes to replace the paper documents now needed for a U.S. business to do business abroad.

The system will be built around two computers – one here in the Department of Transportation and the other in the UK – which will communicate trade information directly, thus eliminating the delays associated with the paperwork procedures between the two countries.

Seating Improved

NEW YORK – A minicomputer is saving Air France approximately $35,000 annually, according to a spokesman for the airline, by reducing the time needed for passenger check-in and eliminating overboarding and redundant seat assignments.

The minicomputer is part of the Multiflight Boarding Pass System developed by General Computing Equipment Corp. of Garland, Texas.

Each agent has a display console which shows specific seat status, allowing the agent to assign seats and issue boarding passes automatically.

Coast Erosion Foreseen

CORVALLIS, Ore. – Thirty-five years after a jetty was constructed at Bay Ocean, a small Oregon resort town, the altered erosion patterns caused the town to be washed into the ocean.

According to Dr. Paul D. Komar, assistant professor of oceanography at Oregon State University, disasters like the 1952 Bay Ocean eradication can now be predicted by computer and perhaps avoided.

Komar has developed a computerized system to estimate sand movement along beach and harbor areas, showing where the coastline will increase due to sand buildouts and where it will erode.

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IEEE to Examine Software Reliability

NEW YORK – The IEEE Symposium on Computer Software Reliability, April 30-May 2, is designed to examine the topic from a combined practical and theoretical viewpoint.

The nonconcurrent sessions at the Americana Hotel here will cover introductory discussions, software testing, modeling and analysis, management techniques and programming methodology.

Each session consists of technical papers as well as a panel on a related subject.

"What is Software Reliability and Quality Assurance, Anyway?" is the theme of Monday morning's panel in the introductory session. Papers will examine large real-time control software systems, distributed systems and virtual machine techniques for improving system reliability.

Software Testing

The session on software testing features papers on optimal software test planning through automated network analysis, design and construction of an automated software evaluation system and a user's experience with Automated Code Evaluation System (Aces).

Modeling and analysis will be examined Tuesday, with panel sessions titled "What's a Bug and Who Says You Can Count Them?" and "Can a Hardware Reliability Man Find a Home in Software?"

Topics of papers range from discussing operational testing and software reliability estimation during program development to the software error effects analysis: a qualitative design tool.

Societies / User Groups

"What Can Management Do Besides Holler If It's Late, and Try to Hire Smart Programmers?" is the theme for the Wednesday panel on management techniques.

The session on programming methodology will examine programming style, structured programming techniques, ultrareliable programming and an interface system for improving reliability of software systems.

Preregistration before April 21 costs $45 for IEEE members and $55 for nonmembers. After that date, the price is $50 and $60, respectively. The fee for IEEE student members is $8.

Information is available from Registration Chairman, Software Reliability, Box 171, Old Bethpage, N.Y. 11804.

Why you should go to the Computer Caravan.

The new iomates. See all 13 in Kansas City, Apr. 11-13.

36 NCC Sessions Treat Cost Effectiveness

NEW YORK – The cost-effective use of computers will be examined in the 36 sessions on DP methods and applications at the National Computer Conference June 4-8.

"With computers and associated DP manpower representing an increasing portion of corporate budgets, our program will focus on the cost-effective utilization of computer power and the latest techniques and applications which hold promise for improved performance on a day-to-day basis," noted methods and applications chairman Robert W. Bemer.

Paying Its Way

"The key is making sure that the computer more than pays its way. To meet this goal, sessions are designed to take a pragmatic view of each topic under discussion and to promote maximum dialogue with the audience," he said.

The installation management part of the program will consist of 12 sessions covering performance evaluation and measurement, software products, in-house training and economics of remote terminals. Other sessions will be on confidentiality and security, data integrity and the "law of computers."

Several sessions will focus on performance evaluation.

Sessions on DP in government include computers in the elective process, urban services, the State and local scene and computers in the Congress.

ASIS Meeting to Discuss 'Forecast' for Data Service

BLOOMINGTON, Minn. – "Forecast for Information Service" will be the theme of the Second Mid-Year Conference of the American Society for Information Science (Asis), April 26-27, at the Sheraton Motor Inn here.

The colloquium will survey the state-of-the-art, research and educational implications for library/information systems specialists.

Further information is available from Jack King, Library, Hamline University, St. Paul, 55101.

Cunningham Fills ACM Post

NEW YORK – Joseph F. Cunningham has been appointed executive director of the Association for Computing Machinery.

He was formerly chief of the ADP Management Branch of the Office of Management and Budget and was responsible for the coordination of the Federal Government ADP effort.

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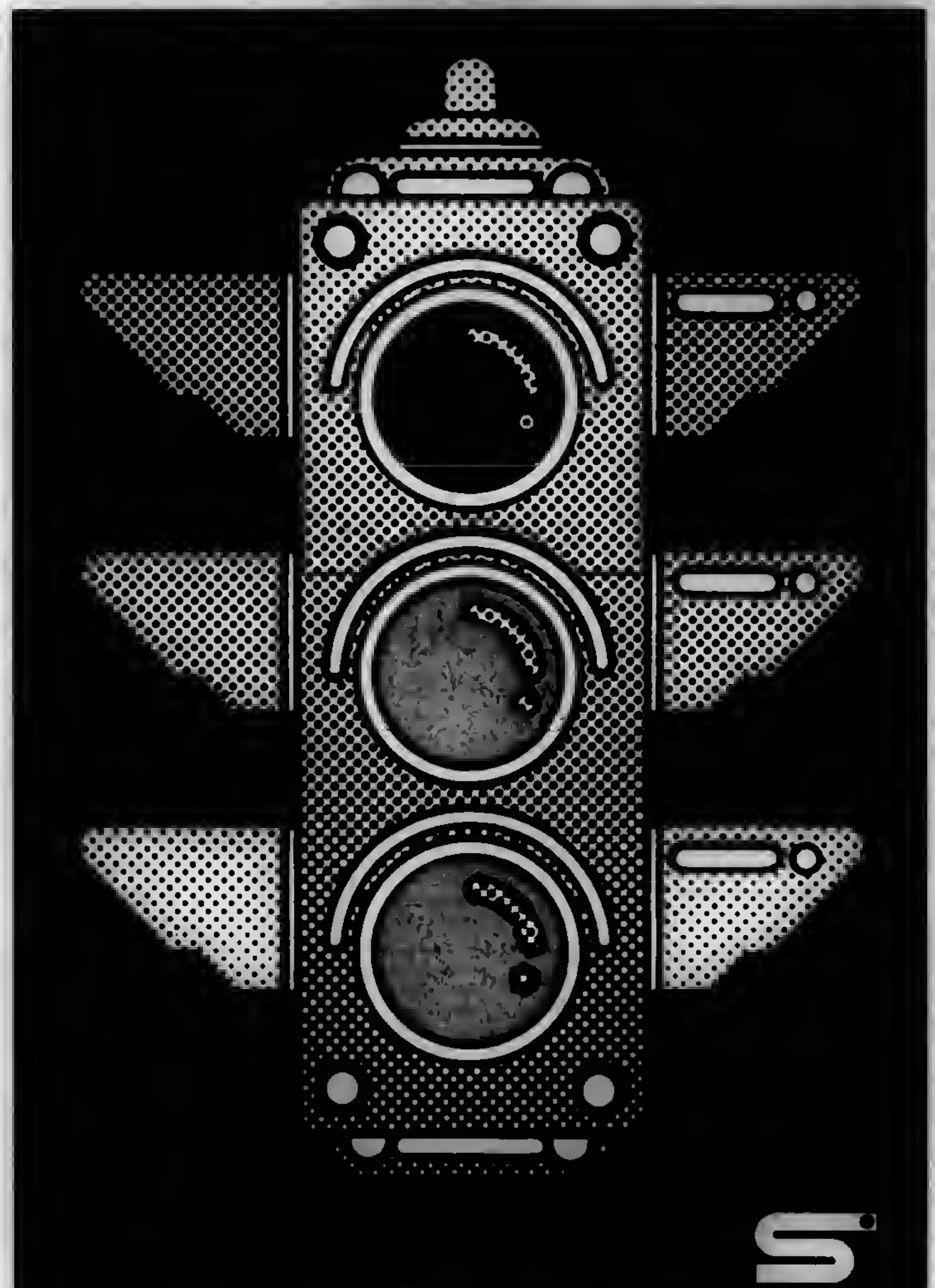

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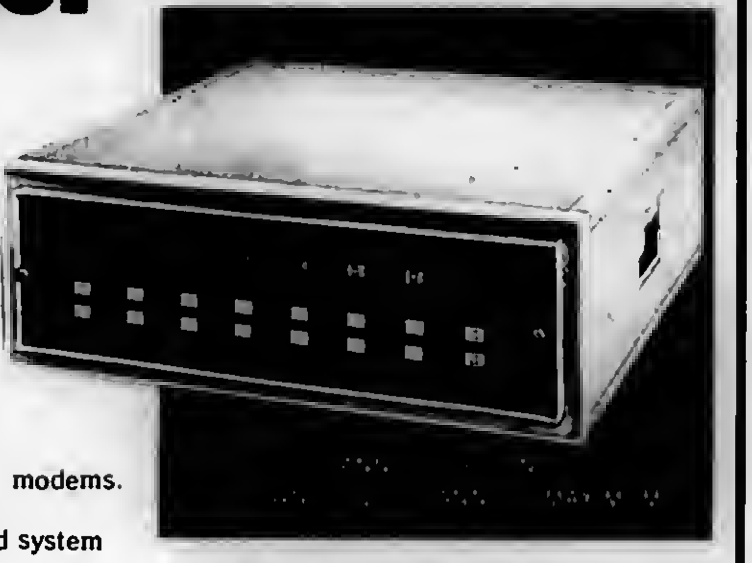

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AMA Course on DP Management Looks 'at Whole DP Picture'

NEW YORK – The American Management Association is sponsoring a three-day course on DP management here April 25-27.

Designed to "look at the whole DP picture," the course will examine such topics as planning DP utilization, motivation and the role of the top DP executive.

Staff Productivity

The session on managing and controlling data processing operations will discuss measuring productivity of operations staff, determining efficiency of equipment usage, use of outside experts and user chargeback.

Other sessions investigate how to cure an ailing DP department as well as advances in technology and their effect on DP management.

The course costs $300 for AMA members, and $345 for nonmembers. The association is at 135 W. 50th St., 10020.

Computers in the Arts Symposium Theme for Artists, Musicians

YPSILANTI, Mich. – Artists, musicians and computer fans will have a chance to gather and demonstrate their skills using computers in the arts at a workshop here April 30 – May 4 at Eastern Michigan University.

In the area of music composition, participants will be divided into those with music composition experience and those artists interested in sound production by computer.

Visual art workshops will feature sessions led by Ken Knowlton, Bell Labs, using the Explor graphics language, and Alan Sutcliffe from International Computers Ltd.

On May 5-6, a "Symposium on the Computer in the Arts" at the Cranbrook Academy of Art Galleries, Bloomfield Hills, Mich., papers will treat topics on music, visual art, literature, dance and architecture.

The final symposium event is a computer-choreographed dance written by Jeanne Beaman and performed by the Eastern Michigan University Advanced Performing Group.

Admission to the workshop series is $75 before April 20, and $11 for the symposium. After April 20, the rates are $85 and $13.

For information contact Kurt F. Lauckner, Mathematics Department, Eastern Michigan University, 48197.

Tektronix Users Unite

BEAVERTON, Ore. – The organization of a Tektronix Information Display Products users' group is underway.

The primary purpose of the users' group is to provide a central point for exchange of information among the users of Tektronix products. The group will also provide opportunities for users to meet on a national and regional basis.

Those interested in such a group should contact Jon A. Meads, cochairman Tektronix IDP Users' Group Committee, P.O. Box 500, 97005.

Moving Up

- Dr. A.S. Hoagland, of IBM's Systems Development Laboratory, has been reelected president of the IEEE Computer Society.

Albert L. Hopkins Jr., Department of Aeronautics and Astronautics, MIT, was named first vice-president.

Second Vice-President is Dick B. Simmons, director of Texas A&M University's data processing center.

- Robert L. Ashenhurst has been appointed editor-in-chief of *Communications of the ACM*. He is also editor of the *ACM Monograph* series.

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CI Notes

CDC, Romania Launch Firm

NEW YORK – Control Data Corp. and the Romanian Ministry of Machine Tools and Electrotechnique have created a joint venture firm to manufacture peripheral equipment in Bucharest.

Products will include card readers, punches and a printer used in terminals, CDC said. In addition, it is expected that the new firm will engage in R&D activity to enhance products and develop new ones, a spokesman said.

CDC will own a 45% interest, with a unit of the Ministry of Machine Tools and Electrotechnique holding 55%. CDC will contribute technology valued at $t.8 million.

Data Products Licenses Hungarians

WOODLAND HILLS, Calif. – Data Products Corp. has received government approval to issue a license for the manufacture of printers to Videoton Corp. of Hungary.

Initially, Data Products will ship complete Model 2310 and 2410 line printers for use in Videoton's 1010 mini, the firm said. Later, Data Products will ship components, and ultimately Videoton will manufacture some mechanical elements.

No Jury at Telex Trial

TULSA, Okla. – Attorneys for IBM and Telex Corp. agreed recently to a non-jury trial in the antitrust case filed by Telex. The trial date is April 16.

Xerox to Be Absent From NCC

EL SEGUNDO, Calif. – Xerox will not be exhibiting at the National Computer Conference, June 4-8, in New York.

Apparently the firm could not advance its production schedule to have a 530 system ready for the exhibit.

GE-Fairchild Pact Off

PHOENIX – General Electric Co. and Fairchild Camera and Instruments Corp. have terminated talks on the proposed manufacturing takeover by Fairchild of the GE-PAC and GE-TAC lines [CW, April 4].

"Subsequently, more detailed discussions between GE and Fairchild and discussions with customers have led to the conclusion that, contrary to the original belief, customer needs would not necessarily be served by a joint Fairchild and GE process computer company," a GE spokesman said.

Supershorts

Eastman Kodak Co. has agreed to market ICP, Inc.'s microfilm reader/printer.

— — —

Mohawk Data Sciences Corp. shipped its 1,000th System 2400 to Firestone Tire and Rubber Co., which now has more than 60 systems on rent or on order.

State of the Industry—Part I, Domestic

U.S. Shipments Could Grow 70% by '76

By E. Drake Lundell Jr.
Of the CW Staff

MONTVALE, N.J. – Shipments of U.S. computer-related equipment manufacturers to the U.S. user market will grow by 70% to 80% in the period between 1971 and 1976, according to a "consensus" of the four largest research firms in the business.

Afips Studies Market

To help overcome some of the problems caused by the differences of opinion on the size of the DP market, the American Federation of Information Processing Societies (Afips) last year held a symposium with the major organizations in the business to try to find a consensus on the marketplace.

The results of that symposium were recently published in a pamphlet on "The State of the Computer Industry In the U.S."

This is the first of a two-part series on the report.

That consensus was obtained at a workshop sponsored by the American Federation of Information Processing Societies (Afips) last year in which Auerbach Associates, Inc., International Data Corp., Arthur D. Little, Inc. and Quantum Science Corp. participated.

The results of that workshop, published by Afips, noted "by almost any standard the computer industry is maturing. Its volume of business is large, its ways of doing business fairly well established – and its growth rate has notably slowed.

"Yet for a mature economic sector the industry still lacks good definition and quantification," the report said.

Presently, "there are approximately 5,000 companies which to varying degrees, can be regarded as the suppliers in the computer industry," according to the report.

"The hardware subsector includes approximately 700 firms, the supplies subsector approximately 500 and the service subsector approximately 2,200.

"Major support subsectors such as electronic components, education and media suppliers contain approximately 1,000 firms. Other minor subsectors providing automated instrumentation equipment and process control devices total approximately 1,200," the report said.

'Modest' Expansion

Overall, the trends in most industry measuring areas (new build shipments, installed base growth and revenues) "indicate the computer industry will continue to expand, but at a more modest pace than in the past," the study found.

The value of "new build" shipments was placed at $5.1 billion for the domestic marketplace in 1971, and the estimate for 1976 was that shipments would be between $8.25 billion and $9.7 billion, an increase of 70% to 80%.

The installed base of equipment at the end of 1971 was placed at $30.9 billion and the 1976 estimate of the installed base was put between $40 billion and $57.5 billion, the Afips report related.

Afips indicated these estimates include almost all types of equipment, from general purpose computer systems through mini and dedicated computers to peripheral equipment.

Breaking down the figures, the domestic shipments of general-purpose computer systems were estimated at $4.2 billion in 1971 and forecast at about $7 billion to $7.75 billion for 1976.

The shipment rate of minis will grow from $250 million in 1971 to between $600 million and $750 million by 1976, the group estimated.

The report noted there were wide differences between the value of computer equipment installed and the number of machines installed.

For example, while large computer systems were by number only one-third of the 54,470 systems installed in 1971, they represented 75% of the value of the installed based.

On the other hand, minicomputers represented 30% of the number of systems installed and only accounted for 6% of the value of the installed base.

Afips included plug-compatible peripheral equipment with the figures for systems shipments.

"Seen in the context of the past, the growth rates for new build shipments and installed base projected for 1976 seem healthy but quite conservative," Afips noted, explaining that the growth was explosive between 1955 and 1968.

After a slump in the 1968-70 recession, "the 1970-71 figures and 1972 preliminary figures presage a resumption of growth, but it is too soon to observe whether or not the resumption will be at the prior high growth rates."

Afips said most observers "think not," because while there is still a U.S. demand for computer equipment, "there is no longer a vacuum to be filled" as there was in the past.

Revaluations Seen Helping U.S. Firms in Foreign Trade Efforts

NEW YORK – The recent dollar revaluations can only help U.S. DP firms increase the yield on sales and equipment rentals abroad, Patrick J. McGovern, president of International Data Corp., told industry representatives here recently.

Since export revenues in marks, pounds or francs are worth about 10% more than before, U.S. exporters have the option of lowering prices to expand their market share or maintaining equivalent local currency prices and receiving about 10% larger value, he noted.

The non-U.S. portion of the DP market has contributed over 50% of the total profits realized in the industry in the last two years, he said. For example, although 40% of IBM's revenue is from operations outside the U.S., that portion accounts for 55% of the firm's profits.

Balance of Payments

IDC figures estimated that the U.S. computer industry contributed about $1.2 billion to the 1972 balance of payments situation, McGovern said.

About $350 million to $400 million in earnings were repatriated last year, and value of shipments exported minus imports from U.S.-controlled plants abroad totaled about $800 million, he added.

"U.S.-based firms installed about $2.8 billion of equipment internationally in 1972, about two-thirds of which were built and installed outside the U.S.," he noted. In addition, he said, about $1 billion was actually exported from U.S.-based plants.

IBM World Trade Cuts Prices

NEW YORK – IBM World Trade Corp. has reduced purchase and rental prices on the major part of its data processing systems product line and related equipment.

Among the countries affected are West Germany, France, Switzerland and Japan, a spokesman said.

"It was not a linear reduction," he explained, as price cuts varied from box to box and from country to country.

"IBM continuously evaluates its prices to ensure that the products are properly priced. After considering many variables such as cost of doing business, the effect of the international monetary situation on cost at various manufacturing locations, production status, IBM product relationships, etc., the present price changes have been initiated," he said.

Changes in purchase price were effective March 30, and rental rates April 1, he added.

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Europe Striving to Strengthen Own DP; Link With U.S. Group Seen Possible

By Molly Upton
Of the CW Staff

LONDON – The mounting pressure for Europe to have "at least one major computer group" was evidenced at recent hearings of the Commons Committee on Science and Technology.

Speaking of the need for a regrouping of European DP manufacturers, European Economic Commission official Christopher Layton observed the EEC would not exclude the possibility of a merger between an American and European group, but would insist there "be an element of powerful control within Europe."

As the European Commission is committed to ensure an open Common Market, current government policies of buying from national computer makers will not last indefinitely, Layton observed.

Also, despite government protection, none of the small, European-based producers of CPUs seems to be independently viable on a long-term basis, Layton said.

Viable Alternative

Thus, it is essential to develop strong competitive forces in which Europeans have a significant interest as an alternative to domination by IBM, he said.

A regrouping of the European industry is in order, he said, but cautioned that merging for the sake of merging would not solve the problem.

For instance, the combination of ICL, Siemens, AEG-Nixdorf, CII and Philips, which together have a revenue less than one-tenth that of IBM, might involve such high costs and great difficulties in combining different product lines and managements that the effect would be to increase IBM's share of the market.

However, companies supported by governments and institutions of the European Community should be urged toward a regrouping of the European-owned industry.

Manufacturers should find partners with complementary capabilities that would produce a merger resulting in economies of scale, while governments should exert "firm but sensitive pressure" on firms to combine, Layton said.

IBM, Honeywell Rap 'Buy Europe' Policies, Call Them Discriminatory

LONDON – Both Honeywell and IBM have criticized the current "discriminatory purchasing policies" designed to build a stronger European computer industry.

Testifying before the Committee on Science and Technology, Edwin Nixon, managing director of IBM UK, said that although IBM is popular in many parts of Europe, he doubted it was popular with the European Economic Commission itself, according to *The Financial Times.*

What About the User?

"Europe may well want to have a computer industry," he acknowledged, but "buy national" policies distort the market and thus are detrimental to the user, he said.

IBM employs 82,000 Europeans and manufactures 90% of products sold in Europe in European plants.

Clarence Spangle, executive vice-president of Honeywell Information Systems, described the UK's "buy ICL" (International Computers Ltd.) policy as a "double subsidy" for ICL.

He rapped the government for encouraging Honeywell to set up a plant in Scotland, and then pursuing the buy ICL policy.

Honeywell's business in the UK would be about 10% higher if allowed to compete freely for government business, he said.

Honeywell, he added, has reinvested all UK earnings, and returned no profits to the U.S. He also challenged the concept of nationality, noting Honeywell has more shares held in EEC nations than ICL.

Spangle suggested that European firms might be wiser to join with U.S. or Japanese firms, rather than with each other.

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Pitfalls Are Plenty When Components, Systems Makers 'Poach on Territory'

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Over the past few years there has been some worry in the computer industry that components makers would begin moving into the low end of the computer manufacturing business.

And there has been an opposite worry that computer manufacturers would begin making more components on their own and therefore cut the component manufacturers' business.

Both these possibilities may yet happen, but there are many risks associated with them, according to Jim Geer, director of marketing for commercial systems at Fairchild Camera & Instrument.

Geer noted at a recent meeting here that component costs were dropping rapidly, while at the same time the number of functions on a chip was increasing, and the need for speed and additional functions was rising.

At the same time, most members of both market segments want to maximize the value they add to a product, which leads to more integrated manufacturing, he said.

These trends would tend to lead the components firms and the computer firms to begin "poaching" more and more on the other's territory, he said, but he warned there were a great many pitfalls along the way.

For example, the two industries, he said, are quite different. A firm should concentrate its energy in the areas it knows best instead of entering fields it is not particularly competent to deal with, he claimed.

In addition, sometimes letting someone else make a product is the cheaper way of doing the job when compared with in-house product development, he said.

If a components maker enters adjacent markets, it can sometimes lose some of its traditional customer base – customers who don't appreciate their former supplier competing with them, he added.

There are also problems for the computer companies which want to do more of their component manufacturing in-house, he noted.

Big Investment

It takes a great deal of investment in both research and capital equipment to get into that side of the market – particularly in the area of integrated circuits and semiconductors, he observed.

At the same time, computer companies should be aware that a great deal of technological obsolescence in the semiconductor business exists, since it means that their research costs will be high to keep up with the technology.

Marketing arrangements are also different in the semiconductor business, he added, pointing out that most sales are through a distributor network for the firm that could not use all of its capacity in-house.

Also, he claimed there is a long lead time between component announcement and volume deliveries in the semiconductor and components business, placing the figure between three and five years for most new devices.

On the other hand, the structure of the computer industry is foreign to the components and semiconductor manufacturers, he said.

There is better price stability, he stressed, in the computer end of the market, but this goes hand-in-hand with higher marketing cost for the products in that field.

And finally, he noted, the cost of software is an important consideration.

Markets Open

However, Geer stated, considerations of software and service are not as important in the "hot iron" segment of the computer market as they are in the end-user part of the business, and he indicated this is the one market segment where the components and semiconductor makers might be able to compete.

There are some other niches in the marketplace, he found, for the integrated circuit manufacturer, but these are limited and risky because of the high cost of service and support and the need for a large amount of capital for lease financing.

So "while there will be some poaching, many of those who poach will fail," he said.

At the same time, he said, computer makers and IC manufacturers should develop closer ties with each other to reduce development time for a new product or system.

By closer cooperation and joint development in some cases, he indicated, the computer equipment makers can incorporate the advanced products made by the semiconductor and integrated circuit makers into their products faster and therefore possibly get a jump on the competition.

INVITATION FOR BID
STEPHEN P. TEALE CONSOLIDATED DATA CENTER

The State of California intends to release an Invitation For Bid (IFB 73-03) on April 16, 1973, for the new Stephen P. Teale Consolidated Data Center to be located in Sacramento, California. The purpose of IFB 73-03 is to elicit proposals for a prime contractor to implement the new center.

The IFB requires the prime contractor to assume responsibility for all aspects of the following, including the responsibility where subcontractors are involved: (a) supplying and installing new hardware and software to provide DP services for 34 State entities who now receive their DP services from 13 separate computers; (b) conversion of 6300 programs and 2800 data bases; (c) training of 150 to 200 Center personnel and up to 1100 departmental personnel; (d) project management.

The new Center must not have more than 3 CPU's, which are to process 100,000 jobs/month of which 80% will be submitted from remote locations. The services provided by the Center to the various State departments will include local and extensive remote batch processing and on-line update/inquiry and time-sharing.

Benchmarking of the specific proposed configurations for all qualified bids will be required and all work must be completed not later than December 1974. The IFB will be approximately 11,000 pages in length and costs $200 per copy in advance. Volume 1 can be obtained for $25.00 and defines the basic overall needs. Any person interested in obtaining a copy may do so by contacting Mr. Ira B. Isbell in writing, with a check for the required amount, at Stephen P. Teale Consolidated Data Center, Business & Transportation Agency, 1120 N Street, Room 2101, Sacramento, California 95814, not later than 12:00 Noon, April 15, 1973. The IFB must be picked up in Sacramento. Bids will be due by 2:00 p.m., July 16, 1973.

Formal bid specifications shall be governed by the IFB. This ad is for information purposes only and does not constitute a formal bid specification.

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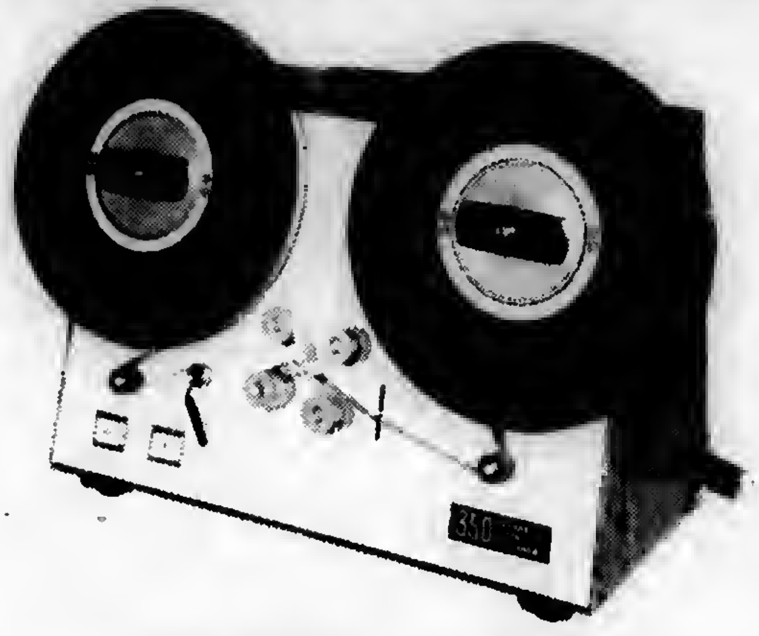

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3330 Double-Density Head Ready; Now Awaiting Drive Manufacturer

GOLETA, Calif. – Double-density 3330-type disk storage systems are now only a drive away. Information Magnetics Corp. is offering a double-density disk-recording head, the Infomag 4040NT, for use on IBM 3336-type removable disk pack systems.

At present the company is in small quantity production because no firm is yet marketing a double density 3330-type disk drive.

"Most of our production has gone to companies working on double-density drives," said Paul Coleman, a spokesman for the company, "but none of them have announced yet. It just may be that the companies are more interested in pushing single 3330-type drives since these aren't being sold in as great quantities as some people would like."

The double-density disk head's narrow-track design provides 384 track/in. with a recording density of 4040 bit/in., doubling the 3330-type system capacity.

Offered with related support assemblies, the 4040NT is mechanically compatible with the standard 3330-type head. The price will be under $500 for small quantities, Coleman said.

Information Magnetics Corp. is at 5743 Thornwood Drive.

Boothe, Rockwood Write Off 360s

Rockwood Computer Corp. and Boothe Computer Corp. have decided to reevaluate their computer holdings.

For Rockwood, the writeoff of $47.6 million before taxes will result in a loss of about $35 million for the year ending March 31. It's IBM 360 portfolio, after the revaluation, will have a net worth of about $11 million, Rockwood said.

Boothe's year-end report will show a special charge of about $35 million, which includes a $13 million reduction announced earlier, the company said.

Boothe added it doesn't expect to report a profit or loss from its 360 leasing business until net asset value is recovered in 1978.

Orders & Installations

The Federal Reserve Bank of Richmond, Va., has ordered a dual Contem 45 system for online transfer of funds and securities between Federal Reserves offices in neighboring states.

Trans World Airlines and Continental Airlines have ordered Di-An Controls' Series 8000 ticketing system. The system will be linked to the airlines' central computer which contains passenger reservation records and calculates fares.

Gulf Oil Corp. has ordered dual Teleswitcher 510 communications control and message switching systems from Teleswitcher Corp. The two systems will be used to control message traffic over Gulf's private communications network.

Sunnyland Packing Co. has installed an NCR Century 200 to handle inventory control, invoicing and payroll for its meatpacking operations.

Sage-Allen & Co. has ordered a CS-1400 Credit Authorization System from Datatrol Inc. to be used in Sage's nine specialty department stores.

Nasa has ordered a Xerox Sigma 5 for use in its Atmosphere Explorer satellite program.

The Hartford National Corp. has installed Trilog Associates' PSS system for participant accounting for employee benefit plans.

Holly Stores Inc., women's apparel division of S.S. Kresge Co., has installed Dennison's Meritag ticketing and data retrieval system.

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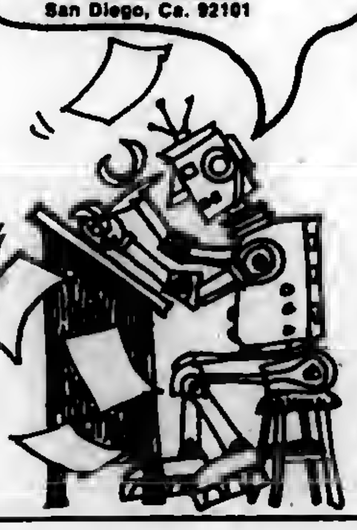

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Investors See Steady Profit Pace for IBM

By Molly Upton

Of the CW Staff

NEW YORK – IBM should continue its five-year pace of 24% to 26% pretax profit margin, despite several factors affecting the current IBM scene, according to a panel of "IBM watchers" at the Sixth Annual Institutional Investors Conference here.

Panelists agreed that a consent decree would likely result from the Justice Department suit, and generally discounted any ill effects for IBM.

James Peterson of Investors Diversified Services, Inc. did mention, however, that a requirement to divest itself of its components division could seriously hamper IBM's earnings prospects. But he said he didn't see this as a likely occurrence.

He also noted that if IBM divested itself of some of the more "peripheral" areas, such as Science Research Associates, which produce lower profit margins than the DP Division, this would be to IBM's benefit, and might well satisfy the Justice complaint.

The four panelists unanimously agreed that the foreign segment is a key factor in future earnings, and noted the increasing contribution to earnings, from 32% in 1967 to 54% in 1972.

William S. Deakyne of Chemical Bank said the foreign segment could conceivably account for two-thirds of earnings by 1980.

A very real question, though, is market potential, according to John L. Rutledge of Cyrus J. Lawrence & Sons.

However, there are real needs for more DP applications, and for improved applications, he observed.

"DP is still in its infancy in terms of what it does for people," he said.

Communications Demands

In addition, he said, the move to source data automation will entail increased development in the telecommunications area, and involves sophisticated systems work, so the field will likely be held predominantly by the big firms, he noted.

Examining the Justice suit, Rutledge observed that "the government was in a tough position, because in many ways it is not in the government's interest to be too punitive toward IBM.

"After all," he noted, "IBM is one of our major supporters of our balance of trade position."

Peterson pointed out that the Justice Department hasn't asked for divestiture of the components division, but that it was a key proposal for structural relief put forth by Control Data in its suit against IBM, and may have been "a significant reason for the very liberal settlement with CDC on the suit.

"On the surface, the consent decree could look very good for the Justice Department, be very meaty, have a lot of negative things for IBM, but I don't really think the end result will hurt IBM any more than the 1956 Consent Decree," Peterson said.

In arriving at their estimates for margin growth, the panel cited various supporting factors.

Rutledge noted that although the buying spree that occurred when leasing companies bought 360s at the end of the production run boosted margins to 27% to 28% – even in 1972, when there were "many problems" – IBM managed a 25% to 26% margin.

Steady as She Goes

He noted IBM has "good controls," and saw the same range of margin as over the last five years, 22% to 26.5%.

Peterson said he thinks "we're going to be constantly surprised that margins are on the upside." He stressed the positive effect selective divestiture could have, and that management has "better control than it has had in the past and the economy is strong now . . ."

Daniel Mandresh of Alliance One Institutional Services, Inc. said he thinks IBM is expecting margins to hold about level for this year, as it did last year.

He was a little more optimistic, and said if one segregated the "enormous other income account" totaling $200 million, considering the cost constraints in effect at IBM, one could see operating margins on the level of those in the 1968 to 1969 time frame."

This, with an "associated continual growth in the other income account, worth about 2% margin, gets us to the 28% level," Mandresh said.

Deakyne took another approach, separating foreign growth from domestic growth. IBM roughly makes about 20% pretax in the domestic market and 30% in the foreign market, he noted.

The foreign margin peaked, in his opinion, in 1970, at 34%. IBM is very cautious about the labor situation abroad, he said, and "business has grown a lot faster than IBM anticipated, so they got a lot of utilization out of not enough plant, possibly," and it is likely overhead will increase, he said.

"Whereas domestically I think the company is in a position to increase its margins over the next couple of years, the key variable to watch is the foreign side. If those foreign margins start to track down to the 25% level, I think margins as a total may go nowhere," Deakyne said.

But on the whole, he said, he thought there was room for some margin improvement.

New IBM Lease... Is 'What You See What You Get'?

NEW YORK – Does the saying "what you see is what you get" apply to the new IBM 48-month lease plan? Is IBM planning to move toward more of a purchase rather than rental base? What are the implications of this plan for IBM's future strategy?

These were some of the questions discussed by panelists at the recent Sixth Annual Institutional Investors Conference.

William S. Deakyne said that although there are many possible ways to look at the plan, one cannot really judge the impact until later, when it is clear who signs for the plan, and how strongly IBM markets it..

Superficially, the plan could indicate that IBM thinks the virtual memory equipment is going to be around for four years, he observed.

"Or in fact, maybe IBM doesn't think the stuff is going to last four years, but they'd like to have a lot of control over the rental base four or five years from now when they might be ready to obsolete this equipment," Deakyne said.

Too much significance should not be attached to the announcement of the 48-month plan, James Peterson cautioned.

Daniel Mandresh noted that from a legal standpoint, IBM was the only mainframe maker that previously did not offer long-term commitments. If one considers the move as a "locked-in lease, in the framework of locking out competitive activity," this could indicate IBM feels quite confident in its ability to perpetuate the policy, he added.

But John L. Rutledge said: "It may be the opening of a possible way of getting a consent decree."

What the 48-month plan really is doing "is putting IBM on a similar footing with the rest of the competition," he added.

Mandresh added that he thinks IBM doesn't expect the 48-month plan to be that successful but views it as a base to give it "flexibility in future strategy."

IBM may be aiming toward a large purchase base by the end of four years. It may be "expanding its plans to protect against leasing company returns, which has really not become much of a problem yet. However, in the 1974-75 time frame one can visualize a fairly heavy number of these coming back."

Deakyne said he thinks IBM is still rental-oriented. "I think the company has been taking steps to prevent purchases from getting out of hand. I think they want to keep this under control, and I think they can live with 15% purchase content."

Rutledge said maintenance of a rental base is no longer as important to IBM as it was in the days when the keypunch constituted most of the business.

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TRADE QUOTES

Computerworld Stock Trading Summary

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CLOSING PRICES THURSDAY, APRIL 5, 1973

SOFTWARE & EDP SERVICES

EXCH		1972-73 RANGE (1)	CLOSE APR 5 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 3	1 1/4	- 1/8	-9.0
A	APPLIED DATA RES.	3- 7	3	- 1/4	-7.6
O	APPLIED LOGIC	1- 4	2 1/8	- 3/8	-15.0
N	AUTOMATIC DATA PROC	65- 99	69 1/8	-6 1/8	-8.1
O	BRANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	3- 14	3	0	0.0
O	COMPUTER DYNAMICS	1- 4	3/4	- 1/8	-14.2
O	COMPUTER NETWORK	2- 7	1 3/4	0	0.0
N	COMPUTER SCIENCES	3- 10	3 5/8	- 1/4	-6.4
O	COMPUTER TASK GROUP	1- 2	1 1/2	+ 1/8	+9.0
O	COMPUTER TECHNOLOGY	2- 8	2 3/4	- 3/8	-12.0
O	COMPUTER USAGE	5- 14	5 3/4	0	0.0
O	COMRESS	1- 3	5/8	- 1/8	-16.6
O	COMSHARE	5- 10	6	- 3/8	-5.8
N	CORDURA CORP	6- 28	6 3/8	- 7/8	-12.0
O	DATATAB	3- 9	2 3/4	- 1/2	-15.3
O	EDP RESOURCES	1- 8	1 1/2	- 1/8	-7.6
A	ELECT COMP PROG	1- 5	1 1/8	0	0.0
N	ELECTRONIC DATA SYS.	43- 65	42 3/4	-3	-6.5
O	INFORMATICS	3- 11	3 1/2	- 1/4	-6.6
O	I.O.A. DATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 1/4	- 1/4	-7.1
O	KEYDATA CORP	7- 13	7	- 1/4	-3.4
O	LOGICON	4- 9	4 5/8	- 5/8	-11.9
A	MANAGEMENT DATA	2- 10	2 1/2	0	0.0
O	NATIONAL CSS INC	8- 41	21	-10 1/2	-33.3
O	NATIONAL INFO SRVCS	1- 5	1 5/8	+ 1/8	+8.3
P	ON LINE SYSTEMS INC	5- 19	14 7/8	-1	-6.2
N	PLANNING RESEARCH	3- 17	3 1/2	- 1/4	-6.6
O	PROGRAMMING METHODS	20- 25	22 1/2	0	0.0
O	PROGRAMMING & SYS	1- 2	3/4	0	0.0
O	RAPIDATA INC	5- 27	13	-3 1/4	-20.0
O	SCIENTIFIC COMPUTERS	1- 4	1 1/8	- 1/8	-10.0
O	SIMPLICITY COMPUTER	1- 5	1 7/8	+ 1/8	+7.1
O	TBS COMPUTER CENTERS	3- 6	2 7/8	0	0.0
O	TCC INC	1- 3	1/2	0	0.0
O	TYMSHARE INC	7- 12	7 5/8	- 1/8	-1.6
O	UNITED DATA CENTER	5- 8	5	- 1/4	-4.7
N	UNIVERSITY COMPUTING	7- 26	9 3/8	-1 3/8	-12.7
A	URS SYSTEMS	5- 10	5 3/8	- 3/8	-6.5

PERIPHERALS & SUBSYSTEMS

EXCH		1972-73 RANGE (1)	CLOSE APR 5 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	20- 49	20	- 1/4	-1.2
O	ADVANCED MEMORY SYS	12- 23	14 1/8	-2 5/8	-15.6
N	AMPEX CORP	5- 15	5	- 1/4	-4.7
O	ANDERSON JACOBSON	4- 8	5 1/2	- 1/4	-4.3
O	BEEHIVE MEDICAL ELEC	1- 9	8 3/4	- 3/8	-4.1
A	BOLT,BERANEK & NEW	5- 21	8 7/8	- 5/8	-6.5
N	BUNKER-RAMO	6- 14	6 1/8	- 3/8	-5.7
A	CALCOMP	9- 25	10 1/2	- 3/8	-3.4
O	CAMBRIDGE MEMORIES	9- 15	10 3/4	- 3/8	-3.3
U	CENTRONICS DATA COMP	6- 28	19 1/4	-2 1/4	-10.4
O	CODEX CORP	6- 25	12 1/2	0	0.0
O	COGNITRONICS	1- 5	1 5/8	- 1/4	-13.3
O	COMPUTER COMMUN.	1- 7	2 1/4	- 1/8	-5.2
A	COMPUTER EQUIPMENT	2- 4	2 3/8	- 1/8	-5.0
O	COMPUTER MACHINERY	7- 13	8 7/8	-1	-10.1
O	COMPUTER TRANSCEIVER	2- 9	2 5/8	+ 1/8	+5.0
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	23- 39	23	- 3/8	-1.6
A	DATA PRODUCTS CORP	3- 7	3	- 1/8	-4.0
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3	- 1/4	-7.6
O	DI/AN CONTROLS	3- 8	2 3/4	0	0.0
N	ELECTRONIC M & M	3- 8	3 5/8	0	0.0
O	FABRI-TEK	2- 5	3 1/4	- 1/8	-3.7
O	GENERAL COMPUTER SYS	6- 16	7	0	0.0
N	GENERAL ELECTRIC	59- 74	61 5/8	-3 5/8	-5.5
N	HAZELTINE CORP	7- 13	7 1/R	- 5/8	-8.0
U	INFOREX INC	14- 36	13 5/8	- 3/8	-2.6
U	INFORMATION DISPLAYS	1- 5	3/4	0	0.0
O	INFORMATION INTL INC	8- 25	11 3/4	- 1/4	-2.0
A	LUNDY ELECTRONICS	6- 14	6 1/4	- 1/8	-1.9
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	21	-1 5/8	-7.1
N	MOHAWK DATA SCI	6- 27	6 3/8	+ 3/8	+6.2
O	ODEC COMPUTER SYST.	3- 12	3 3/4	- 1/4	-6.2
O	OPTICAL SCANNING	2- 16	5 1/4	0	0.0
O	PERTEC CORP	5- 17	5 5/8	- 3/4	-11.7
O	PHOTON	3- 15	3 3/4	(SUSPENDED)	
A	POTTER INSTRUMENT	5- 21	5 1/4	- 3/8	-6.6
O	PRECISION INST.	2- 13	2 3/4	- 3/4	-21.4
O	RECOGNITION EQUIP	5- 15	4 3/4	- 3/4	-13.6
N	SANDERS ASSOCIATES	10- 21	9 1/2	- 1/2	-5.0
O	SCAN DATA	2- 13	2 3/8	0	0.0
O	STORAGE TECHNOLOGY	17- 39	20 3/4	-2 1/2	-10.7
O	SYCOR INC	7- 11	10 1/4	- 1/2	-4.6
U	TALLY CORP.	6- 15	5 7/8	-1 3/8	-18.9
N	TEKTRONIX INC	34- 64	30 1/4	-5 3/8	-12.9
N	TELEX	4- 15	3 7/8	-1 1/8	-22.5
O	WILTEK INC	10- 26	12	-2 1/4	-15.7

SUPPLIES & ACCESSORIES

EXCH		1972-73 RANGE (1)	CLOSE APR 5 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	7	+ 1/4	+3.7
A	BARRY WRIGHT	9- 14	8 3/4	-1	-10.2
A	DATA DOCUMENTS	17- 26	18 3/4	- 1/4	-1.3
O	DUPLEX PRODUCTS INC	8- 16	8 1/4	+ 1/4	+3.1
N	ENNIS BUS. FORMS	6- 10	5 7/8	- 1/4	-4.0
O	GRAHAM MAGNETICS	15- 27	14 1/2	-1 3/4	-10.7
O	GRAPHIC CONTROLS	10- 15	10 1/4	+ 1/8	+1.2
N	3M COMPANY	76- 88	81 1/4	-4 1/4	-4.9
O	MOORE CORP LTD	42- 59	58 3/8	+ 1/2	+0.8
N	NASHUA CORP	48- 62	48	-2	-4.0
O	REYNOLDS & REYNOLD	37- 77	45 1/2	- 1/2	-1.0
O	STANDARD REGISTER	14- 20	17 1/2	0	0.0
O	TAB PRODUCTS CO	14- 23	14	-1 1/2	-9.6
N	UARCO	19- 28	18 7/8	-1 1/8	-5.6
A	WABASH MAGNETICS	6- 11	6 1/4	- 1/8	-1.9
N	WALLACE BUS FORMS	21- 26	22	-1 3/8	-5.8

COMPUTER SYSTEMS

EXCH		1972-73 RANGE (1)	CLOSE APR 5 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	147-244	221 5/8	-18 1/8	-7.5
N	COLLINS RADIO	14- 27	22	-2 3/4	-11.1
N	CONTROL DATA CORP	42- 78	44 1/4	-1 5/8	-3.5
O	DATA GENERAL CORP	36-131	37 1/4	-3 1/4	-8.0
O	DIGITAL COMP CONTROL	3- 25	3 1/8	- 1/8	-3.8
N	DIGITAL EQUIPMENT	72-105	80 3/4	- 1/2	-0.6
N	ELECTRONIC ASSOC.	6- 13	6 1/2	+ 1/4	+4.0
A	ELECTRONIC ENGINEER.	6- 14	9 1/4	- 5/8	-6.3
N	FOXBORO	23- 41	25 5/8	- 7/8	-3.3
O	GENERAL AUTOMATION	13- 55	29 1/2	-4 1/2	-13.2
U	GRI COMPUTER CORP	1- 5	1 1/8	- 5/8	-35.7
N	HEWLETT-PACKARD CO	46- 94	81 3/8	-4 1/8	-4.8
N	HONEYWELL INC	106-170	115	- 1/4	-0.2
N	IBM	333-451	422 7/8	-15 7/8	-3.6
O	INTERDATA INC	7- 16	8 1/2	-1	-10.5
N	MEMOREX	7- 38	7 1/8	-1 3/8	-16.1
O	MICRODATA CORP	5- 10	7 1/4	0	0.0
N	NCR	27- 38	28 7/8	-2	-6.4
N	RAYTHEON CO	27- 47	28 7/8	-1 1/4	-4.1
N	SPERRY RAND	30- 50	40 3/4	-3 5/8	-8.1
A	SYSTEMS ENG. LABS	4- 16	4 3/4	- 3/8	-7.3
N	VARIAN ASSOCIATES	14- 22	13 1/2	-1 1/2	-10.0
N	WANG LABS.	18- 61	18 7/8	-1 1/8	-5.6
N	XEROX CORP	121-172	147 5/8	-6 5/8	-4.2

LEASING COMPANIES

EXCH		1972-73 RANGE (1)	CLOSE APR 5 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	3- 18	2 1/2	- 1/2	-16.6
O	BRESNAHAN COMP.	1- 3	1 1/8	0	0.0
O	COMDISCO INC	3- 18	12 1/8	-1 1/8	-8.4
O	COMMERCE GROUP CORP	4- 11	4 1/8	- 1/4	-5.7
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4	- 3/8	-8.5
U	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	6 1/8	- 1/2	-7.5
M	DATRONIC RENTAL	2- 4	2	- 1/8	-5.8
A	DCL INC	2- 10	1 3/4	+ 1/8	+7.6
A	DEARBORN-STORM	16- 26	15 5/8	-2 3/8	-13.1
A	DPA, INC.	5- 8	6	0	0.0
A	GRANITE MGT	4- 11	3 3/4	- 5/8	-14.2
A	GREYHOUND COMPUTER	4- 11	4 1/8	- 5/8	-13.1
A	ITEL	7- 12	7 3/8	- 1/2	-6.3
N	LEASCO CORP	11- 24	10 7/8	-1 1/2	-12.1
O	LEASPAC CORP	6- 15	7 1/4	- 1/4	-3.3
O	LECTRO MGT INC	1- 4	1 1/8	+ 1/8	+12.5
A	ROCKWOOD COMPUTER	2- 7	1 5/8	0	0.0
O	SYSTEMS CAPITAL	3- 20	6 7/8	-2 1/8	-23.6
N	U.S. LEASING	19- 35	24 1/2	+ 1/8	+0.5

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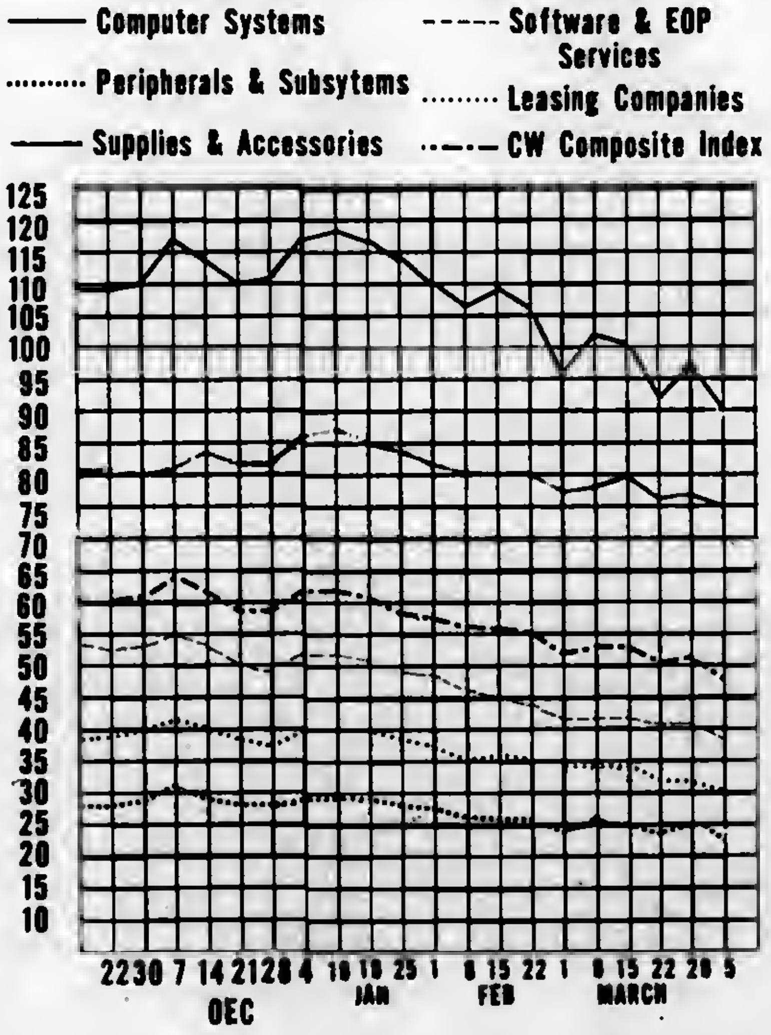

Earnings Reports

URS SYSTEMS
Three Months Ended Jan. 31

	1973	a1972
Shr Ernd	$.15	$.07
Revenue	6,781,000	6,088,000
Spec Cred	b99,000	.....
Earnings	503,000	252,000

a-Restated. b-Consists of settlement of some notes from Remote Computing Corp. and recognition of an installment payment on the sale of Rocky Mountain Airways.

DOCUTEL
Year Ended Dec. 31

	1972	1971
Shr Ernd	$1.78	.....
Revenue	23,691,000	$7,112,000
Spec Item	a2,025,000	d3,457,000
Earnings	4,222,000	(6,026,000)
3 Mo Shr	.74	.....
Revenue	8,115,000	3,368,000
Spec Cred	e901,000	.....
Earnings	1,881,000	(315,000)

a-Tax loss carryforward credit. d-Debit; writeoff of deferred research and development expenses.

WALLACE BUSINESS FORMS
Three Months Ended Jan. 31

	1973	1972
Shr Ernd	$.36	$.28
Revenue	10,552,000	9,234,000
Earnings	657,000	508,000
6 Mo Shr	.69	.55
Revenue	19,835,000	17,590,000
Earnings	1,247,000	990,000

GENERAL AUTOMATION
Three Months Ended Jan. 31

	1973	1972
Shr Ernd	$.34	$.23
Revenue	6,182,000	3,631,000
Tax Cred	250,000	197,000
Earnings	726,000	402,000
6 Mo Shr	.68	.36
Revenue	12,064,000	6,508,000
Tax Cred	586,000	302,000
Earnings	1,451,000	611,000

TRATEC
Nine Months Ended Jan. 31

	1973	1972
Shr Ernd	$.15	$.11
Revenue	467,900	252,200
Tax Cred	.....	9,700
Earnings	54,100	39,800

SANGAMO ELECTRIC
Year Ended Dec. 31

	1972	1971
Shr Ernd	$1.43	.....
Revenue	87,239,000	$82,462,000
Spec Chg	.....	d1,685,000
Earnings	3,881,000	(771,000)

d-From sale of Transitel Computer Support Systems Division, related writeoff of certain assets and satisfaction of commitments.

COMPUTER MACHINERY
Year Ended Dec. 31

	1972	1971
Revenue	$29,616,000	$8,885,000
Spec Cred	a168,000	.....
Loss	1,954,000	6,790,000
3 Mo Shr	.08	.....
Revenue	10,275,000	1,903,000
Spec Cred	e61,000	.....
Earnings	373,000	(3,745,000)

a-From sale of securities.

COMPUTER TRANSCEIVER SYSTEMS
Nine Months Ended Nov. 30

	1972	1971
Shr Ernd	$.11	.....
Revenue	1,959,000	$1,317,400
Tax Cred	42,500	.....
Earnings	100,000	(87,600)

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NEWSPAPER

NEWS IN BRIEF

Bill Would Extend Tax-Free Software

CW West Coast Bureau

SACRAMENTO, Calif. – A bill that would continue permanently California's moratorium on the taxing of software has reached the state assembly where it is expected to be passed. It would then go to the Senate where modification attempts are likely.

Emergency legislation enacted last year exempted certain software from taxation as tangible personal property.

But the exemption runs out after this year and groups opposed to the software tax have been arguing that the exemption, as it is, is too ambiguous.

IRS Figures Find Public Making Fewer Tax Errors

WASHINGTON, D.C. – Computer verification of tax returns for fiscal year 1972 indicates that the general public is either following instructions better or becoming better mathematicians, the Internal Revenue Service said last week.

During that year there were errors in 3.8 million returns, according to the computer verification, or an error in one out of every 20 filed compared to one out of every 16 in 1971 and one out of every 12 in 1970, IRS said.

Guard Looking for Maturity?

HARTFORD, Conn. – Two lookalike computer printouts inadvertently led to a rather interesting recruitment drive by the Connecticut National Guard recently.

Among those receiving letters from the Guard stating, "I have just learned of your release from a successful tour of active duty," was 74-year-old Frank H. Smith of Hartford, who was discharged from the Army in 1918 at the end of World War I.

Smith is now an adjutant in an American Legion post and was included on a list of all post adjutants which was sent to the Guard from the Connecticut headquarters of the American Legion. This list was apparently mixed up with a list of all state men recently discharged from the military, officials said.

On the Inside This Week

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Tornado Levels DP Center, 90 Hours Later CPU Is Up

Reconstruction Southern Style

By Don Leavitt
Of the CW Staff

CONYERS, Ga. – Ninety hours after its original site was struck by a tornado, Lithonia Lighting's 360/50 was "up and running" in a temporary room hurriedly built in a local warehouse.

The rapid recovery was made possible, according to DP manager Charles Darnell, by hard work by his own staff, an "impressive dedication" to the job by IBM engineers – even though the CPU was on third-party lease from Randolph Computer Co. – and good audit trails provided by his teleprocessing software.

The tornado hit at 6 p.m. on a Saturday and left the DP center a shambles. A water main ruptured above the CPU flooding it and the surrounding area. Sections of the raised floor were scattered "all over the place."

Darnell was one of the first Lithonia employees on the scene after the storm. He could do nothing except cover the equipment with plastic sheeting to prevent further water damage.

Dirty Disk

Debris was everywhere, and so were the company's tapes and disks. Darnell found the system disk pack in a puddle of dirty water, and tapes were recovered outside where the computer room had been. He locked the disks and tapes in the president's desk – "which happened to be the only secure place left."

IBM engineers were on-site early Sunday morning working to determine the actual damage. During the next 70-odd hours they moved the equipment to a Lithonia warehouse that was still in good shape, though only two miles away. Working with heat lamps and fans, they cleaned and dried all the parts, then reassembled them.

Meanwhile Lithonia personnel built a room within the warehouse to serve as a temporary home for the DP operations. Largely plywood sheeting, the new shelter includes a window-sized air conditioning unit to maintain reasonable op-

(Continued on Page 2)

User's Tale of Woe

From Delivery To Sign-Off... It's a Long Time

By Ronald A. Frank
Of the CW Staff

MERRIMACK, N.H. – What are the rights of a user between the delivery date of his system and the day he officially accepts the equipment?

There is no easy answer, especially when an installed system has been operating off-rent for more than seven months due to operating problems and differences between the user and his vendor.

This is the situation facing Compro, Inc., a small minority-owned service bureau here. The user took delivery of a Control Data 3200 disk-oriented system in August 1972 after obtaining a contractual commitment from CDC that it would provide certain capabilities before the user was obligated to sign off and begin rental payments.

Included in the contract were a Pert time-scheduling software package, IBM-compatible Cobol and a communications interface to the 3200 for Viatron terminals.

Backup Promised?

In addition, the vendor gave Compro verbal assurance, according to Compro, that a backup system would be available somewhere in the area in case of maintenance problems. It was apparently agreed

(Continued on Page 2)

Old Autoflow Gets New Look

PRINCETON, N.J. – Autoflow II has been introduced by Applied Data Research (ADR) as a successor to the company's original flowcharting package. The new software has a range of interrelated facilities aimed at solving problems by providing documentation in all phases of program development.

In addition to expanded language-processing capabilities within the 360/370 Assembly and Cobol flowcharting processors, Autoflow II may now include two separate-cost options.

The Cross-Program Auditor (CPA) option extends the system as an inter-program analysis and reporting tool.

At the same time, an Extended Test Compositor (ETC) feature is being added to handle production of all types of textual documentation.

Though originally intended to sup-

(Continued on Page 4)

'$10 Billion Not Enough'

Birth of 370: a Look Back

The first release of previously secret IBM documents in connection with the various court cases occurred when Greyhound Computer Corp. appealed the dismissal of its suit against IBM. Included with the appeal brief was a set of exhibits which contained a selection of IBM records covering the 1962-1970 period. Events were described leading up to the adoption of the much higher purchase and maintenance costs by IBM when it released the System 370s in 1970.

What follows here is a three-part analysis of how and why the first questions of increased maintenance were brought forward, and a look at some interesting ramifications to the 370 maintenance pricing policy.

By Alan Taylor
Special to Computerworld

Analysis

IBM's Data Processing Group (DPG), under IBM Corporate pressure in May 1969, had been asked to cut 1970 expenses by $100 million, but was trying to have Corporate reduce this cut by half. Even so, this would involve cutting back the DPG research on the coming 370 computers to a "no-growth level."

The reason behind the Corporate request was not that DPG's operations had been unprofitable. Indeed, over the eight-year period, while the System 360s had been developed and marketed, DPG's profit picture had averaged 29.5% of all revenues, or in absolute terms, DPG had made over $4 billion profit on sales of $14 billion.

What was the role of the adjusted multipliers? Page 26
Is IBM risking a major fall? Page 28

Nor did the request have anything to do with some particular sin of the group.

The cut was to ensure that IBM's absolute profits reported in 1970 should not show an absolute profit decline from a 1968 peak.

1968 Profit Bulge

The basic problem was 1968 profits which had been higher than planned for by IBM. The high profit had come from customers buying 360s, systems which IBM would have preferred to keep as IBM property. IBM had thought it had these sales "contained" by the policy changes of 1965. But IBM forecasting had failed.

Chairman of the Board Thomas J. Watson Jr. had warned his stockholders about the 1968 bulge in profits, and internally had again planned to take action to reduce the volume of sales.

But the stockholders were complaining. They were writing letters to Watson objecting to his warnings. This they said, could keep the price of the IBM stock down.

Watson was listening to the complaints. If the IBM 1970 profit figures somehow could be kept greater than the 1968 "bulge" figures, even though the purchase of equipment had been stopped, Watson would not expect to hear such criticism from the stockholders. No one saw how to increase revenues to do this – so the only alternative available was to cut expenses.

And so the instructions went out to cut the expenses. All told, throughout IBM,

(Continued on Page 24)

Delivery to Sign-Off ... a Long Time

(Continued from Page 1)

that the 3200 would go on rental only when all the contract conditions had been met.

The user claims the Pert is not yet reliable so Compro rents outside time for its Pert runs. The Cobol software is operating but the conversion from IBM Cobol D to CDC Cobol had to be developed in-house by the Compro system staff.

The communications interface is not ready. "Whenever they have connected the Viatron terminals to the CPU, the rate of dropped records is very high," said Carl Findlay, Compro president.

Under the contract CDC agreed to provide a working interface so the Viatron terminals could be hardwired to the 3200. But CDC system representatives have told Compro that an Ack-Nack handshaking sequence is not needed. This would mean that the terminals interfaced to the CPU would constantly be sending data to the mainframe with no indication of whether the information had been received properly and entered into storage. This type of interface would not meet the terms of the contract, according to Findlay.

Carl Findlay, president of Compro, works on CDC 3200 system while Jackie Matte of the firm's systems staff checks progress.

The Viatron interface should not be a difficult problem for CDC, Findlay said, because CDC supplies nationwide maintenance and other field services to those users who still operate Viatron equipment.

The communications interface is the first step in a planned expansion phase for Compro that Findlay claims is now stalled. After the Viatron terminals are interfaced in local mode, Findlay plans to connect the Viatron terminals at his largest user sites so they can input their data directly into the 3200.

But even more important than the interface question is the recent operating failures of the 3200. In a recent period from March 23 through April 5, Findlay related, the 3200 was fully operational for only 50 hours out of a possible 312, or 16% uptime. And CDC has not been able to provide Compro with a backup 3200 as promised, he added.

The maintenance situation has become so bad that CDC last week agreed to sign a full-time resident custom engineer to the Compro installation to increase preventive maintenance in an attempt to improve system reliability.

"I wouldn't dare run a payroll for a customer," Findlay said, "the system is too unreliable." Among the failures that have occurred in recent weeks are a total loss of power that blew "more than 30 fuses" when a CDC CE attempted to switch the system to its alternate power source. This failure caused a disk crash that resulted in eight hours of downtime, Findlay declared.

The card reader has been rebuilt at least twice, Findlay said, and an automatic shutoff switch for the card unit ordered last year has still not been installed. Earlier this year, a variable resistor in the CPU caught on fire and had to be replaced. It took three days to replace the resistor and get the system back up.

The maintenance experts at his site have told Findlay unofficially that he has just about the worst operating uptime figures they have seen, Findlay stated.

In addition, the 3200 is operating at only a fraction of the performance promised by CDC, according to Findlay. The 3200 is now operating at about 25% to 50% of the performance of the IBM 360/30 that Compro had used at an outside service bureau before the in-house installation.

Between the initial installation and now, CDC has consistently tried to get rental payments but Compro has refused. Findlay did make one concession in December when he agreed to begin monthly maintenance payments.

Additionally, the vendor refused to install a tape system until Findlay agreed to sign off the system, he claimed. But Findlay threatened to go to Minneapolis to see CDC management about his problems and the tapes were delivered shortly thereafter.

Findlay is no newcomer to CDC equipment. He worked as a CDC systems analyst for some time before beginning his own business with the help of a Small Business Administration loan.

8/72	3200 delivered
9/72	incorrect Fortran compiler installed with Pert
10/72	Cobol compiler problems reported to CDC
11/72	Cobol compiler problems fixed
1/73	first in a series of card reader problems
1/73	problems with sort routine
2/73	fire in CPU, three-day outage
3/73	disk problem, seven-day outage
4/73	power failure and disk crash, system down eight hours
4/73	CDC assigns full-time CE to site

. . . some dates that Findlay remembers

Among Compro's existing clients is New Hampshire's Hillsborough County. "The welfare checks for the county have been late for three months and the officials are upset," Findlay admitted.

Lately, there has been little demand that Compro sign off the 3200. Early in March a CDC official wrote Compro that all contractual obligations had been met, and called for Findlay to sign off by March 22.

The Compro chief invited the CDC official by phone to visit his site. "I told him that if he felt the equipment and the communications interface were operating properly, we would sign off the system," Findlay said. The CDC representative has yet to arrive.

Last week when CDC assigned the full-time CE to the site to correct the downtime problems, the subject of sign off and monthly rentals never came up.

A CDC spokesman said the company had no comment on the situation.

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Tornado Hits, Center Reconstructs

(Continued from Page 1)

erating conditions.

Power lines were installed and the new center began working the following Wednesday afternoon.

IBM Plans Ahead

IBM's support has included shipping a backup 360/50 to the new location "just in case there is water damage that we don't know about yet," Darnell said.

The backup unit was delivered just 10 days after the twister hit, and will remain available – apparently without cost to Lithonia or Randolph Computer – for 30 days or until Lithonia and the local IBM engineers say it can go.

While moving and restoring the hardware were vital, logical recovery of the company's records was just as important as far as Darnell was concerned. Happily, the Environ/t-Total data base management system Lithonia had been using made that part of the recovery "very easy," he said.

Environ/t is the teleprocessing monitor portion of the system and includes a transaction logging facility to protect the user against lost transmissions. Once he found that audit trail, Darnell knew exactly which messages had been received and serviced and which had not.

That meant, he explained, that by Monday, April 2, while Lithonia's own CPU was still down, the company was able to move its data base to a borrowed machine, determine what inventory had been lost, and generate reports for insurance purposes.

Meanwhile, outlying Lithonia locations were continuing their normal transmissions and these were being accumulated for processing as soon as the mainframe was ready.

Once the 360/50 was up again, the Total data base processing was fast enough, Darnell added, so that the central files were completely current by Saturday afternoon, just shy of one week after the storm hit.

That "probably wouldn't have been possible" with any other software support system, Darnell concluded.

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'Balance Privacy and Progress'

Credit Act Needs 'Strengthening'

Credit Reporting System Ills Defined, Charters Urged

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. – Although the Fair Credit Reporting Act has improved credit reporting systems, there are still many problems with privacy of records in such computerized systems.

There are also major problems in the control of such systems, according to a report of the National Commission on Consumer Finance.

Because of this, the commission said Congress should "consider the eventual federal chartering" of such computer-based agencies "both to assure the accuracy and confidentiality of their credit information and to achieve open and economical access to their data."

Balancing Needs

The commission, in a recent report to the President and to Congress, said that "protection against the invasion of privacy in the computer age must be achieved by balancing the need to preserve privacy against the desire to maximize benefits of efficiency inherent in the new technology."

But at the present time, it noted, there are no legal guidelines upon which such a balancing can take place.

The commission noted that credit records in computer data banks might be treated so that "an invasion of privacy could not be established unless the complaint alleged that the private information was given publicly or communicated to the public at large.

"This requirement would probably prove to be an ineffective means of protection against computer invasion of privacy, since rarely would computer information be published."

Thus, the group said, "a different standard must be created that would limit the nature of the computer information disclosed as well as the audience to which it is disseminated."

In a separate opinion on the study, commission member Rep. Leonor K. Sullivan (D-Missouri), said that while "the computer may be ready to take over a multitude of consumer transaction accounting chores," the public is "not yet ready for the computer."

The consumer credit industry must learn to "tame" the computer or at least provide adequate training to "the human beings who operate computers and those who initiate the harassments which result from computer errors," or the industry "will lose more in customer goodwill than it can ever gain in accounting efficiency," Sullivan stated.

In the future, credit decisions "will become increasingly less personal and more automated," making it essential for Congress to strengthen the Fair Credit Reporting Act, she felt.

Experience with the present measure, Sullivan said, shows that the Act should be amended to provide "clearcut authority to the Federal Trade Commission to issue compliance regulations which would have the force and effect of law," as was originally proposed by the bill, but defeated in the Senate.

In the area of control of computer-based credit information systems, the commission admitted serious questions do exist, and suggested that such systems might be best set up and regulated like public utilities.

Resolution of the issue of control "is critical to consumers' ability to obtain adequate amounts of credit at reasonable prices."

The present "deficient" system will probably become more deficient in the future, the commission said, just at the same time that retailers and other credit granters will come to rely more on the systems.

The demands for accurate and comprehensive information reinforce "pressures bringing about a consolidation of credit reporting agencies.

"First, the nature of the demand for information requires rapid storage and retrieval of information – a function that can be handled efficiently only by computers. Computer technology obviously favors large, centralized credit reporting agencies," the commission contended.

At the same time, it noted that the mobility of the general population makes it necessary that any credit reporting agency be nationwide in scope, or at least be able to tie into national systems.

In addition there is also a growing movement of banks into the credit area through electronic transfer of funds and bank credit card systems.

As this is happening, the commission said, banks will come to "own the major portion of the available credit information.

"Moreover, banks will be under no obligation to share credit information with competing firms whose own credit information will become increasingly less reliable as banks enlarge their share of the market."

Because of this, the report said, "it appears . . . that in the long run the credit reporting industry has the ingredients of a public utility."

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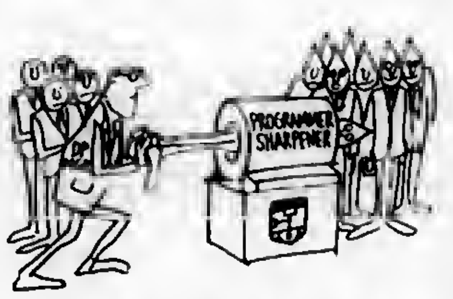

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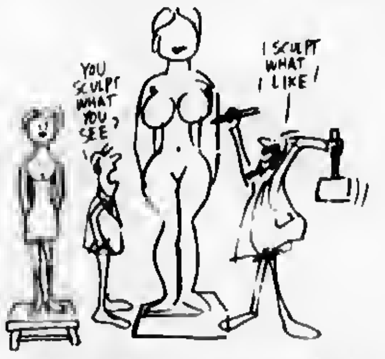
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With On-Line Data Entry Users Work to Keep System Up

By Molly Upton
Of the CW Staff

KANSAS CITY, Mo. – With the move to on-line data entry, one has to recognize the increased commitment to keep the system up, attendees at the Computer Caravan/73 workshop on on-line entry agreed.

There is a definite need for users to learn more of the intricacies of data retention in the event of power failures and disk crashes, one user pointed out.

Although workshop leader Dick Baker of Chemagro said his system loses only the last line of an entry with either kind of failure, another user from Champion said his firm's system retains all its records.

"You can keep the processor up, with backup power supply, but how about getting the data to the center?" Baker asked. This could become an increasingly serious problem as the volume of data transmitted increases, he observed.

Chemagro drew up a long-range plan and began installing CRTs – IBM 2260s – last November. It now has cash input and accounts payable on the system, he said.

In addition to the goal of an integrated information system the firm wanted to reduce much of the paperwork and put the data entry into the user departments as well as provide user inquiry.

Already through attrition the accounts payable department has been reduced by two persons, and Baker said the input accuracy has been excellent, less than .05%, although very little edit checking is done.

Extra Preparation

Since users are going to want "more and more" once such an on-line system with inquiry capability is implemented, the DP department should be aware of core requirements, and "know where it's going and tell the users what it's prepared to offer," Baker said.

Chemagro currently has an IBM 360/30 64K with two 2260s hardwired to the CPU. It has ordered an additional 30K of memory. The firm uses the IBM Lotus package, and is "very pleased" with it, according to Baker.

"There really are two types of maintenance the department should be concerned with, hardware maintenance and software for the CRTs," he said. He recommended that users "do a good job testing the software prior to implementing the program and system testing.

With Dbomp (data base organization and maintenance processor) and Lotus, Chemagro cannot directly update its data base, nor is it feasible to run inquiries on information as input, Baker said.

At noon the firm dumps the data from the work disk onto another non-Lotus file, preprocesses it and updates the files. This procedure also serves as a safeguard for possible disk failure, he said.

On-line entry, Baker said, has already eliminated receiving reports, and the firm is keeping purchase orders only temporarily. Eventually, there will be no paperwork on these two items, as all the information will be in the file.

One user with Hazeltine equipment found a fellow Hazeltine user who said he would be glad to explain how the Champion company manages to retain all its records in the event of a failure.

Champion uses Lotus but not Dbomp, and with some internal programming and a backup tape, the company's system automatically restarts. Champion uses a standard IBM work file, which permits rapid access, the user said, whereas Chemagro has to do some preprocessing to eliminate wait times when inquiring.

Chemagro's CRTs are shared by various user departments, so if there is a failure, those people have other work to do, noted Baker.

"We hope to eliminate the data center eventually, which is a realistic goal," Baker said.

How About No-Fault for DP?

SAN FRANCISCO – A recurring theme voiced across the country in Caravan panels on data communications concerns the placement of a "user's no-fault clause" in vendor contracts.

The need for this contract is most evident in multivendor installations where operations can grind to a halt through fingerpointing, users feel.

Steve Tiler of Del Monte Corp. explained at a session here that sometimes operations can completely stop while the vendors argue who is at fault.

In the no-fault clause, users would add to the standard contract a section stating if a vendor claims the problem lies in another vendor's equipment, his analysis will be accepted.

But if after evaluation, the problem is really found in the original vendor's equipment, that vendor must pay the user the costs to find and correct the fault.

While some users were apprehensive that any vendor would sign such a clause, other users told of installations where the "no-fault" agreement had been signed and had been implemented to the user's benefit.

Windy City Next Stop

KANSAS CITY, Mo. – The 2,000 attendees at the Caravan here bring the total for eight cities to 23,000.

The Caravan goes to Chicago next, April 17-19.

Scanning Saves

TWA System Allows Continuous Processing

KANSAS CITY, Mo. – Although Jack Kennedy of Trans World Airlines here cited impressive savings from the use of optical scanning over keypunch operations, his data preparation operation is beginning to convert entirely to key-to-disk equipment.

The purchase of a Recognition Equipment Inc. scanner on which TWA signed a five-year lease in 1967 has saved the firm about $160,000/yr every year since the 1968 purchase date and about $260,000 this year with the expiration of the lease agreement, he told a Caravan/73 session.

In addition, he estimated that if his shop were strictly keypunch, he would need about 55 additional operators, which would amount to an additional $350,000/yr.

High volume and suitable applications are needed for scanning, he stressed. With the variety of documents involving passenger travel and freight shipments originating around the world his center employs about 136 typists on specially equipped IBM Selectric typewriters equipped with OCR fonts.

Proofreaders check about 85% of the documents typed, he added. These documents are then processed by the scanner. Other applications are handled by Univac buffered keypunches.

The system is set up to continuously process the documents, with edit checks and exception reports handled down the line by the computer center.

Quality control of input documents is a critical factor, he noted, adding that such factors as humidity can affect throughput rate for the reader, which is installed in the computer room.

Document reject rate, he said, can be extremely expensive. He found a reject rate of over 1% would eat up the savings.

The cost per station now, with $20/mo rental on typewriters, comes to close to $140/mo, as there is a $3,500/mo maintenance charge for the scanner, along with supply expenses and scanner operator salaries.

The key-to-disk units will offer table lookup and reformatting as well as editing capabilities. While TWA will initially make "discriminatory use" of editing, Kennedy ultimately hopes to eliminate the verification function.

Study to Probe the Evil Computer

CW Washington Bureau

WASHINGTON, D.C. – With the aid of a grant from the National Science Foundation, the Stanford Research Institute will conduct a study on how computers are – or could be – put to socially wrongful use.

The five-month, $21,000 study under the direction of Donn B. Parker will consider just who are the perpetrators of such crimes, their motives, opportunities and methods; the attitudes of prosecutors and investigators; and whether present laws and procedures are adequate for dealing with such acts.

In conducting the program, the investigators are to complete a coded inventory of more than 100 cases and catalog the research already documented in the study of such crimes.

The cases to be studied include ones in which computer programs were stolen for resale; embezzlements in the range from petty crime to well over $1 million; vandalism of machinery and software; political or ideological sabotage of computer systems; and selling computer time and pocketing the proceeds rightfully on the part of the proprietor, NSF said.

Autoflow Successor Includes Two Options

(Continued from Page 1)

port quick updating of narrative descriptions of DP operations, ETC can in fact be used for any documentation, letter writing or cataloging functions, an ADR spokesman noted.

Common Denominator

To extend the utility of Autoflow in another direction, CPA can extract information common to any number of input programs, rather than analyze a single program as an independent unit.

In effect, ADR explained, CPA is a systems-oriented tool, since it can examine many programs in the context of their functional interaction.

Program and system maintenance, for example, is simplified under CPA since it allows the user to find all occurrences of and references to a specific data name, or to a series of names which may or may not be synonyms.

The new option also helps the user determine if and how a particular data item is altered, to ascertain the impact of a proposed change in the item.

There are 10 general types of information that can be requested from CPA including name, general syntax and file activities, as well as file organization. The option also allows searches for common Cobol language statement usages – such as STOP literal – that are critical in conversion efforts.

Area searches, allowing the printing or counting of references to specific data areas defined by location within the analyzed modules, will be possible, ADR said, with an enhancement that should be available the end of the second quarter of this year.

Other CPA features enable users to link the new options facilities with those of ADR's Librarian system for source program maintenance.

Growth of the Autoflow system had been evolutionary up until the introduction of CPA and ETC. The Autoflow logic – which won the first patent awarded a software program – was primarily a flowcharter for IBM 360 Assembler language programs.

Since then, it has been extended to handle more than 20 input languages and to run on five different second- and third-generation computers. Often used to document the logic of completed programs, Autoflow later gained a Chart facility that permitted charts to be developed from preceding statements of what should be done.

Automatic Distribution

Autoflow II will be distributed automatically to current users of Autoflow. New users may acquire the rights to Autoflow II on a permanent license for $3,630.

The processors required to work with particular input languages are separate and additional cost items: Cobol, $2,750; BAL, $990; Fortran, $2,310; and PL/1, $3,300.

The CPA option is available for $2,750 and the ETC feature can be acquired for $1,980.

ADR is at Route 206 Center, 08540.

DP Seen Aiding Creation of Bogus Insurance

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Rigged computers apparently were used to create more than $2 billion in phony insurance policies for Equity Funding Life Insurance Co., a firm now involved in a wide-ranging life insurance scandal.

Investigators for the California Department of Insurance have claimed that the company had only $1.2 billion of actual insurance in force out of a total of more than $3.2 billion.

This would provide a direct infusion of cash without payment of commissions or other fees.

The investigation of the company, which is still underway, appears to have disclosed that the company computers were tampered with by certain company officials so that all phony insurance business would have a special computer "key" known only to them.

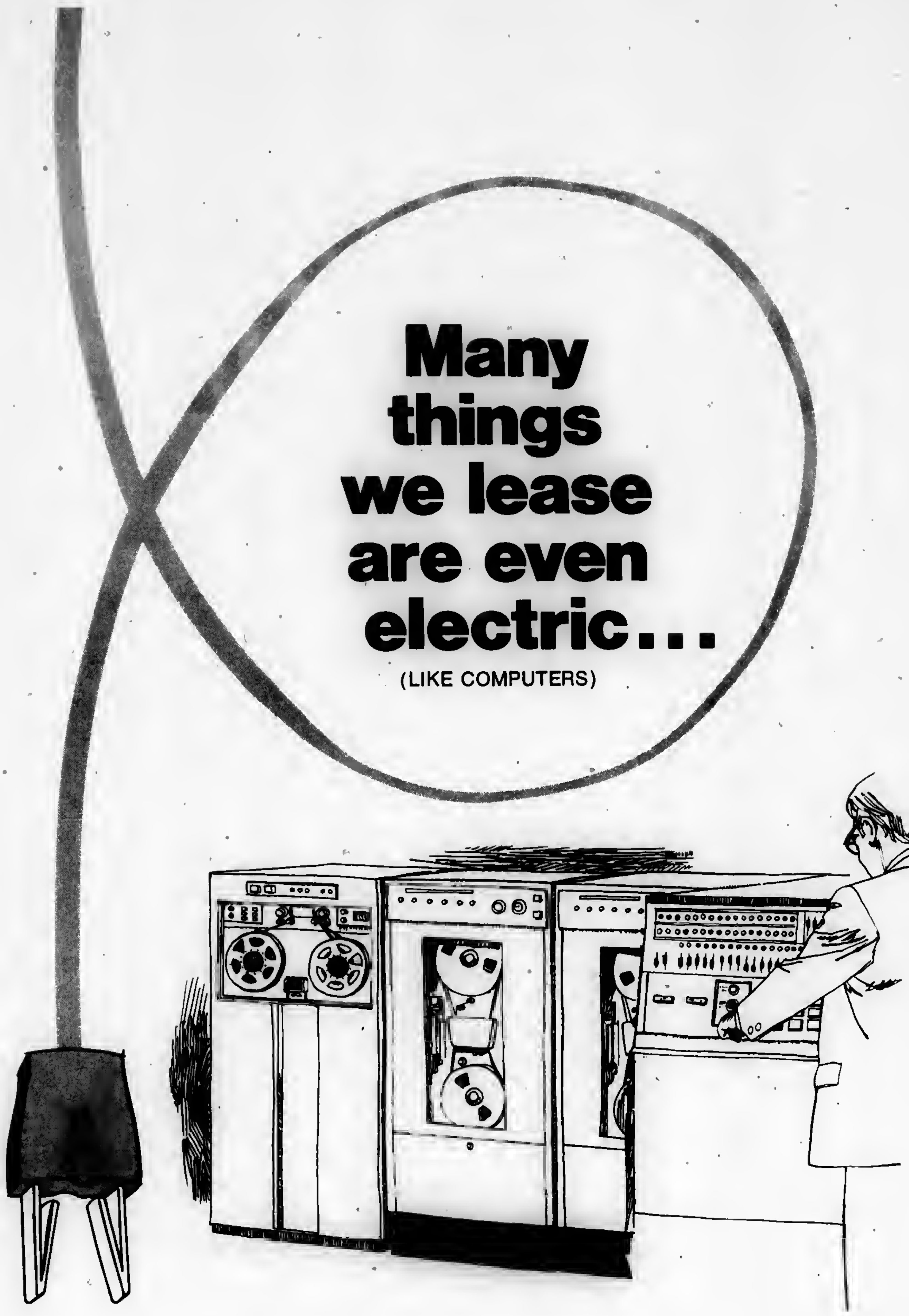
Only Good News

The officials always knew the exact status of their business, the investigators said, but when an outside auditor attempted to check up on policies, the computer would feed information only on the good insurance.

The phony insurance was reportedly created so it could be resold to other insurance companies at 180% of the first year's premium.

Most of the bogus insurance was permitted to lapse after the initial year, but Equity Funding still had to pay the second year's premiums, according to its agreement with other companies.

Because of this, a vicious circle was created, requiring the creation of additional bogus policies to pay the second year's premiums, the investigators said.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CHECK YOUR WALLET AND YOUR WATCH

GOULD

Independent Peripherals, OS

Airline Switches and Saves $350,000/Yr

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Western Airlines is staying aloft and saving $350,000/yr with the help of two fully booked IBM 360/65s equipped with independent switchable peripherals.

The 360/65s operate with both on-line and off-line programs ranging from reservations, trip profit and loss, plane balancing and customer development to a direct reference system advising on weather, hotels and skiing conditions.

The system's costs are kept low with switching devices linking peripherals to both mainframes and key-to-disk and key-to-tape devices, which have all but eliminated the keypunch.

By converting the off-line 360/65 to OS last year, it was possible to get rid of a 360/30 and a Model 20.

The main reservations system data base is contained on IBM 2314 disks. But the overall Western system also includes 12 Telex tape drives and eight Telex disk drives plus sizable core from Fabri-Tek on both mainframes.

Other non-IBM hardware includes 12 Computer Machinery key-to-disk units.

One of the Two 360/65s in the Western Operation With Tape Drives

While the independent peripherals have produced Western's $350,000 yearly savings, stress on standards has played a significant part in making the overall operation efficient, according to Eugene D. Olson, vice-president of data processing and systems.

And although it had letters of intent for two 370/158s, Western does not plan to move up soon because of the good economics of its current equipment.

Installed in October 1968, the reservations system is the heart of Western's computer operations since the information it accumulates fuels many other programs.

Keeping track of 12 million seats available for sale annually, the system handles 60,000 to 70,000 message/day on peak days, according to Olson.

The reservations system is fully duplexed to every major Western office except Hawaii. There are three 2,400 bit/sec lines to points such as San Francisco, Portland, Seattle, Denver, Salt Lake City and Minneapolis and if any one line fails, all the terminals from that one line can be switched to the other two and still operate normally.

The reservations network consists of 550 CRT terminals and about 200 IBM 1977 teletypewriter terminals.

The network is activated as reservations agents respond to customer telephone calls and query the system on flights and seat availability.

A direct reference system gives reservations agents instant access to data about weather, hotels, skiing, bulletins, fares, tariff regulations and meal information. There are even maps of some resort areas.

Other Applications On-Line

A system to balance weight and manage fuel to achieve optimum fuel loads and flap settings is also employed. The fuel management is important both to avoid fuel burnoff and to purchase fuel at those stops where it is least expensive, Olson said.

A cargo control system captures statistics at ramps so they can be made available to downline stations.

Reservations clerks take calls from customers and check flight availability through on-line CRTs.

"Every time a flight takes off, the next city it is to stop at is sent a message giving complete status of the cargo . . . the way it's to be off-loaded and onloaded, fuel, etc. so they know how much space there is for cargo," Olson explained.

But the on-line system also yields important marketing information from the reservations data bank, Olson said, enabling Western to analyze the telephone prefix number distribution and keep track of where the bulk of its business is coming from.

Exception reports are produced on persons who fly often on Western so contacts can be made to encourage them to continue.

Mini New Member

A new addition to the on-line system and one that will be expanded this year is a 24K byte Four-Phase minicomputer installed recently in Honolulu.

It is a self-contained processor with a 2.5M byte disk system and CRT displays that show cabin layouts and seat charts for passenger check-ins.

Additional minis will be installed at Los Angeles, San Francisco, Seattle and Minneapolis by May 1, and plans call for tying them into the reservation system later this year.

Everything in this on-line system is physically switchable to the backup 360/65, used primarily for off-line commercial and business data processing, including basic financial and accounting functions for the company and its 10,000 employees.

A trip profit and loss system analyzes the profitability of each of the flights, pulling together all costs and relating them to route segments.

An aircraft maintenance system schedules maintenance and overhaul. "We have to keep track of each component part," said Olson. "Each component has to be removed at a certain time."

A runway analysis program gives the pilot information about flap and power settings for takeoff and landings under various conditions at various airfields.

A flight operations program schedules crews optimally, reducing crew time spent away from home.

The non-peak hours are used for such support activities capturing the whole system onto tape two to three times a week in case of catastrophic failure.

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We are pleased to announce the availability of DUCS-V (Display Unit Control System - Version 5). DUCS-V will concurrently support both the IBM 2260 Display Unit as well as the IBM 3270 Display Station in a local environment. The 3270 Display Stations are simulated in 2260 mode with no alteration necessary to the user's programs. The basic DUCS-V Program (2260 support only) is a licensed program product available from C F S, INC. for a monthly lease fee of $25.00. The DUCS-V 3270 simulator feature is also a licensed program product available for an additional $15.00 per month. The 3270 Simulator may be added to any DUCS-V System subsequent to the initial installation of DUCS-V without user reassembly or linkage editing.

DUCS-VI will be available during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goran.

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Human Error Found Cause of Overpayment In Weekly Paycheck

By Bob Wright

Of the CW Staff

DURHAM, N.C. – An overpayment of over $1,100 in the weekly paycheck of a city sanitation worker has been blamed by officials on "human error," either in keypunch verification or original coding information.

According to Keith Brooks, the finance department's manager of data processing, the unidentified city employee had been authorized a pay raise to $3.12/hr, but received a raise to $31/hr. The overpayment, now corrected, lasted from November to the beginning of this year. The employee involved failed to report the error.

Brooks said the mistake originated from either an improper keypunch verification or an error in the information on the original raw-data coding form, such as a mark-sense time card.

"We feel like it was an error in keypunch, but we do not hold our cards and cannot verify this. We had to assume that the coding form was filled out wrong and punched. All we know is that it got into the machine and the machine did not kick it out," Brooks said.

Not designed to detect such an error at the time, the Burroughs 2500 system has since incorporated coding to prevent writing a weekly check over $300.

A First

To his knowledge, Brooks said, this was the first time in his eight years with the city that such a mistake had been printed out without someone noticing it immediately.

Because the city employs daily and part-time workers, such as recreation people who are paid $30/day, the system is not designed to proof an hourly rate. The biweekly payrolls are balanced to a gross figure, while the weekly payrolls are balanced to total number of hours.

Manual controls outside of data processing and within the finance department are responsible for computer input.

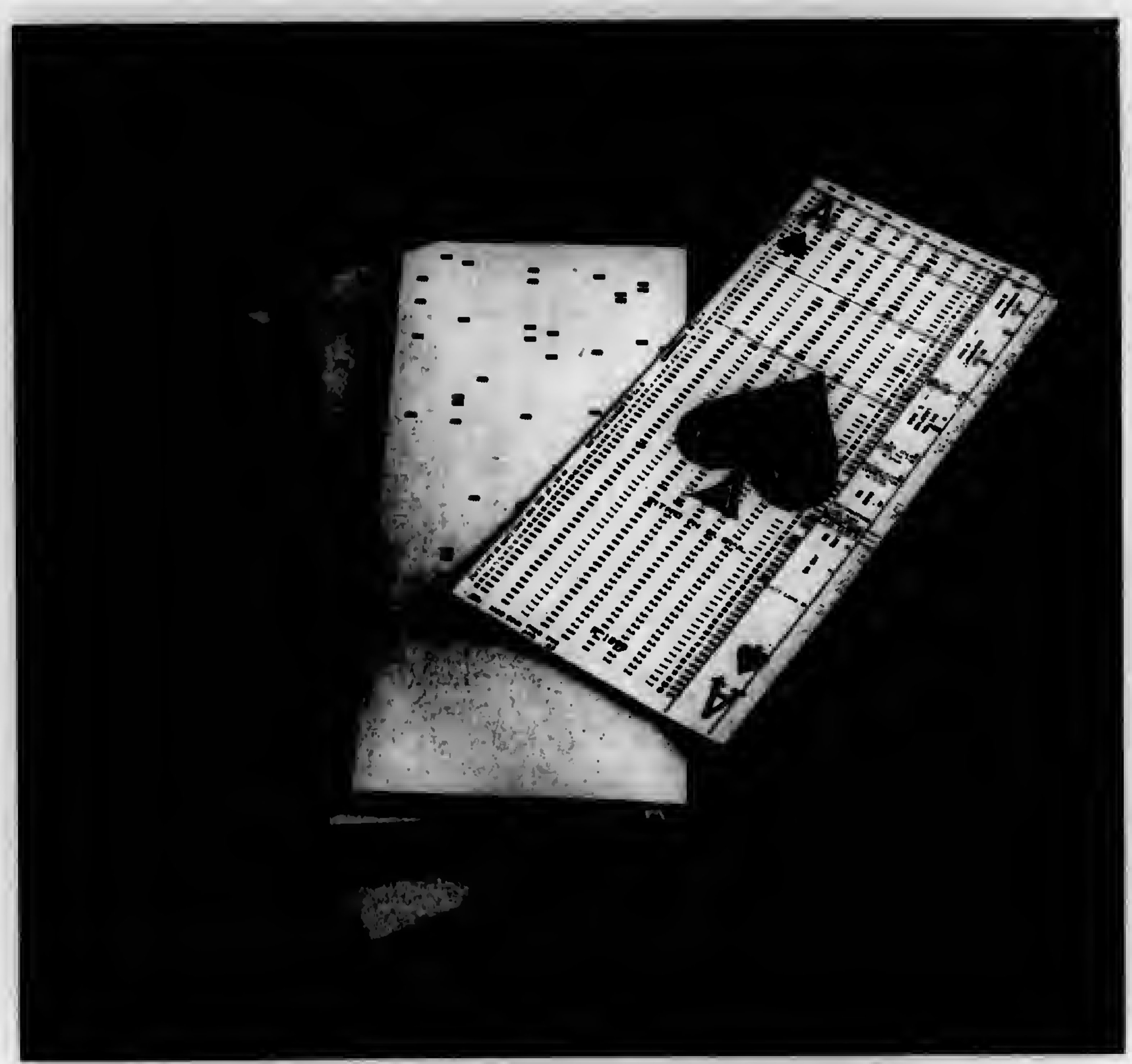
Since the error, according to Brooks, these controls have been tightened with the adoption of a check-list report where the payroll division head initials all names and their corresponding amounts.

In addition to the more stringent manual checking, the system now has personnel information included to further check an employee's pay amount.

Such pay-range, pay-step and class-code information still does not eliminate the possibility of payroll error with workers outside the regular payroll system. The manual, check-list report, however, is designed to cover these accounts.

Durham's annual audit or year-end closeouts caught the overpayment error.

After the yearly audit was made, further analysis isolated the time when the city employee received his last payroll and also the period of overpayment. Payment on the last check was stopped and Durham got its money back.



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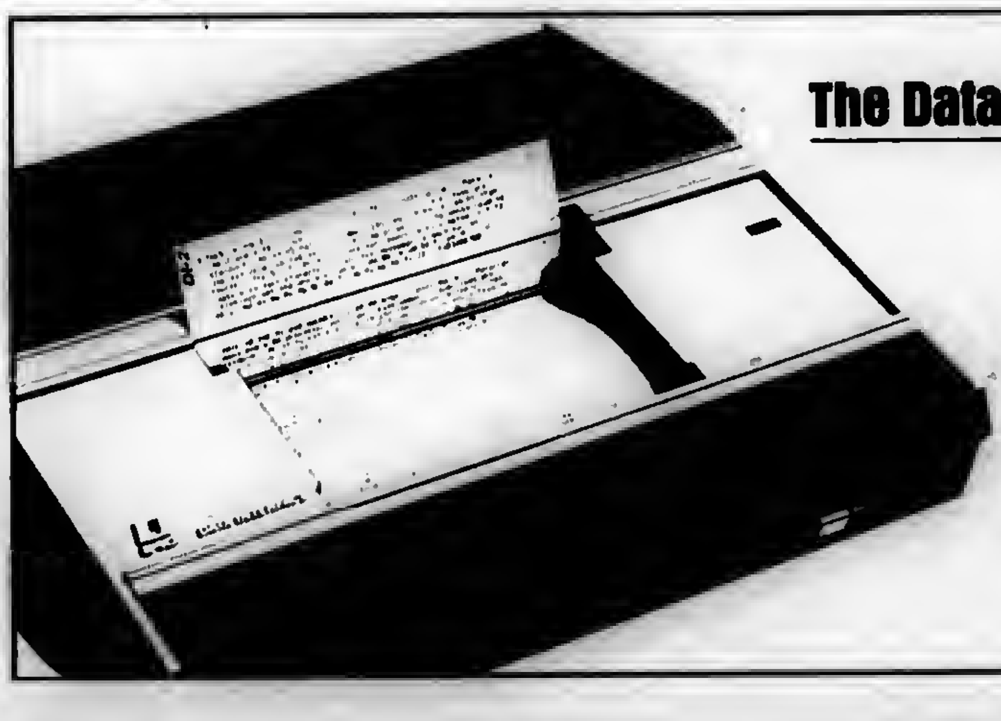

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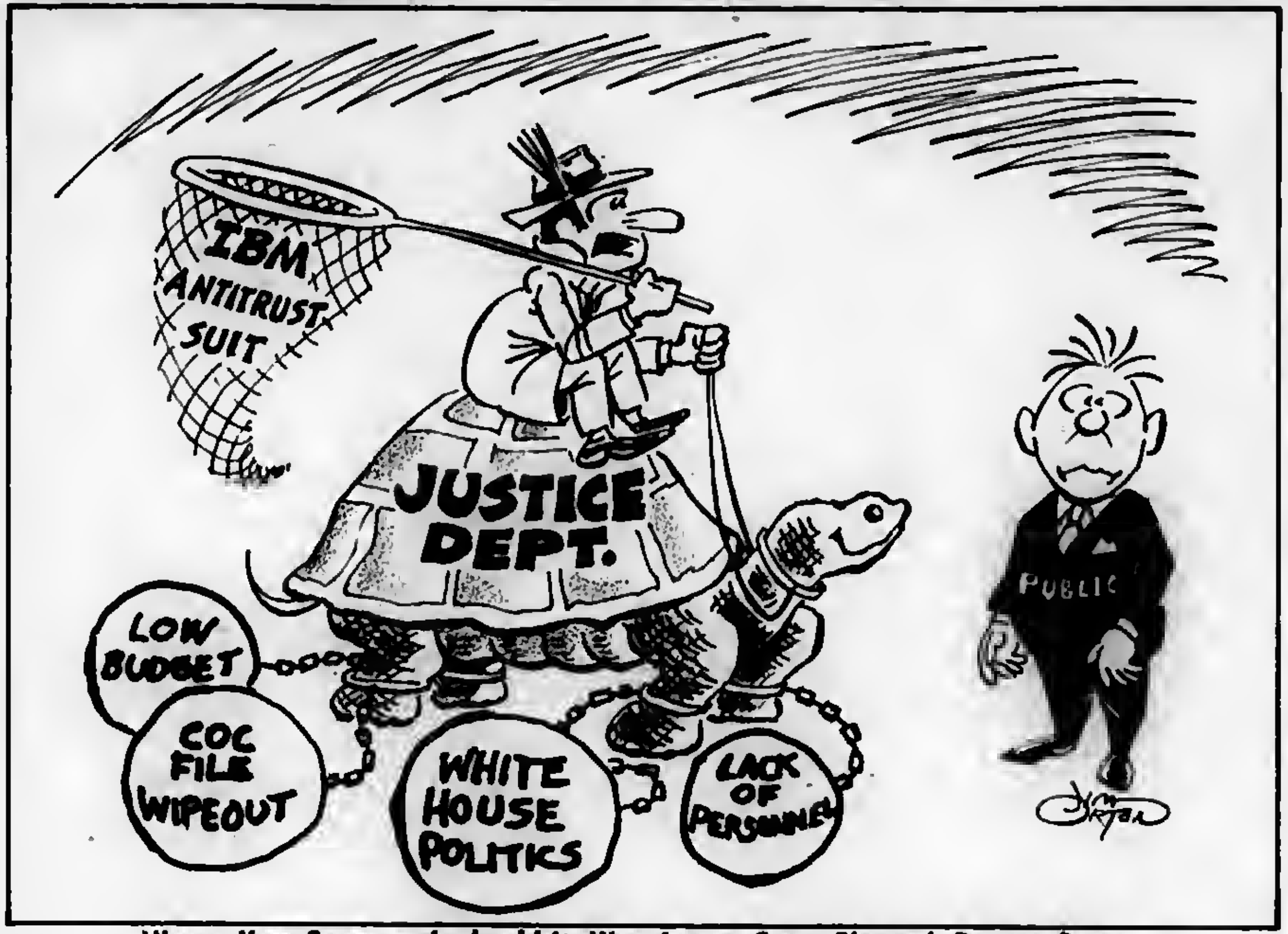
Editorial

Spirit of Cooperation

The news from the latest meeting of the Computer Foundation Organizing Committee is a solid vindication of the spirit of the Certification and Testing Advisory Committee's recommendation to the Data Processing Management Association last year. In Chicago the responsible leaders of nine societies showed that when professional matters are at stake, they can, and will, work together.

Equally encouraging is that they clearly understand the price to be paid by the individual societies for such cooperation. The leaders did not put aside any subject. The problems of the credibility of the CDP examination, the problems of finance, the problems of the Registered Business Programmer Examination, these and many other problems were aired openly and honestly.

If the future members of the Computer Foundation remember the spirit shown by the members of the organizing committee in 1973, then the future of the Foundation is assured.



'Have You Seen a Jackrabbit Wearing a Gray Flannel Button-Down Sweatsuit and Track Shoes?'

Letters to the Editor

Link Training To Career Development

In reference to the article on "Users Differ on How to Pick, Train Staff" [CW, March 7], I would like to add that the key to successful personnel development is to link training to career development.

By doing this, training is taken out of isolation and tied to the needs of the job levels and the individuals filling these jobs. The first step in accomplishing this is to think of training as "manpower development."

To be effective, the manpower development activity must work with current and meaningful job descriptions and career paths that are supported by the organization.

The EDP training must be linked to the job levels, so that as one moves up through the organization, the training requirements for the level are defined.

Further, a definite EDP training plan for each staff member should be developed. Based on the results of a skills assessment, a training plan for each staff member can be built that is linked to a job level and tentative career path. Not until this is done, is it possible to develop a budget based on specific needs.

The cost of unstructured training in terms of time away from the job and course costs is too high to allow it to be uncontrolled.

EDP personnel should be encouraged and motivated to think in terms of long-term careers within their company. A well-planned and organized manpower development program is a contributing factor in accomplishing this.

Edwin F. Kerr
Executive Vice-President
Q.E.D. Information Sciences, Inc.
Wellesley Hills, Mass.

In Defense of RPG: More Productivity

The comments by Marvin S. Ruth in the March 28 issue that RPG II is for the unsophisticated, but a he-man wants his Cobol, smacks of the attitudes of programmers in the early 1960's who felt the only way to get into bed with a computer was good old assembly language and Cobol was for sissies.

If RPG II does not support a particular environment, then let's make it. There was a time when there were numerous applications that had to be written in assembly language because of the lack of I/O support in Cobol. We are on at least our sixth version of Cobol and fifth of Fortran; RPG is only up to number two.

Our company includes a service bureau in which all but two of the 400 programs are written in RPG. It is true that on occasions we had to think a little harder to find a solution within the confines of RPG, but the solution was there.

Our defense of RPG is that (1) programmers are at least twice as productive in RPG as in Cobol; (2) virtually any commercial application can be written in RPG – we would not hire a systems analyst who was not capable of satifying this claim; (3) RPG is a more machine-independent language than Cobol; and (4) there is little evidence of performance degradation due to possible inefficiences of the compiler.

Gary Mokotoff
President
Data Usage Corp.
Fort Lee, N.J.

'No Need to Defend'

It is shocking when a systems analyst cannot discuss the merits, weakness and limitations of a computer language without making a blanket accusation that "advocates are small thinkers with limited ability."

The letter which followed Marvin S. Ruth's letter in the same issue makes it unnecessary to again discuss or defend RPG II to Ruth.

As manager of a corporate DP installation, I have consciously decided to continue the use of RPG II based on present and immediate future needs of the company. Computers and languages are only tools used to provide the product (service) required by management.

The use of phrases such as "die-hard Cobol man, onto bigger and better things, reality hit, Mickey Mouse language, green-hat accountants, ask IBM, big brother, awaken the Romans, modern-day analysts, state of the art growth companies," etc. indicates Ruth's thinking may be more closely aligned with vendor marketing strategy than the management by which he is employed.

If his company is contemplating an upgrade to 370 DOS/VS with CICS, which dictates a conversion to his favorite language (Cobol), why is he concerned about places to send a resume?

George E. Fitzgerald
Newburyport, Mass.

'No Ideal Language'

I have been reading with interest the pros and cons of RPG II as "the" programming language. Certainly any knowledgeable DP professional should know that no one programming language is ideal for all situations.

The recent emergence of the parameter-driven load and go inquiry and reporting systems seems to have been overlooked by most DP installations as programming tools to complement any programming language.

These systems are powerful, efficient and easy to use and can reduce programming turnaround time and overhead to a minimum.

Stuart Kerievsky
Vice-President
Sigma Data Computing Corp.
New York, N.Y.

'Sophisticated'

Anything that is easy may be made hard with little effort. Reading the letter on "Beware of RPG II Perils," I found in a few short paragraphs many of the basic problems which haunt our profession.

When the gentleman refers to those who make RPG II work as more gifted than himself and follows this statement with his long reentrant experience using 360 BAL as support for his unspoken boast, I am left unimpressed.

A one-language programmer is somewhat like a prize fighter with one arm. What should the board do? Wait until they hire a DP manager, then order the hardware that he is experienced with?

Could this service bureau justify, on a cost-effective basis, a 360/40 so the DP staff may use their favorite language? I also wonder if seasoned programmers are not a little like seasoned oak and just a bit hard to change.

I have found that IBM SEs are not only qualified but anxious to give instruction, assistance and advice on the use of all their program products.

My advice to potential employers is: beware of DP personnel who blame inefficient performance, inaccurate results and excessive development time on hardware or software.

RPG II is a sophisticated language and demands sophisticated, open-minded, flexible programmers if its total performance is to be achieved. As a matter of fact, this is the best language you could use on the System/3 Model 10.

R.S. Buzzard
Mexico, Mo.

Manuals Incomplete

Regarding a letter written in the March 14 issue, under the headline "Beware RPG II Perils – Nothing Hard Is Easy." I read this with more amusement than the writer attained from trying to program in RPG.

I currently have an IBM 360/22 installation. Ninety five percent of our programs are written in RPG. We have had great success and little, if any, problems in utilizing RPG. We do a great deal more than "just printing reports." We have a full order entry system in use with tie-ins to a daily allocation and product status listing tied in also to accounts receivable, sales, billing, inventory, etc.

We have complete histories (customer and product), accounts payable, payroll, general ledger and various other applications – all of which run efficiently, quickly, problem-free and are all programmed in RPG.

The language is far from inadequate. It is the easiest to program, debug, maintain, and is extremely efficient in core utilization. We have 32K on our system and have a library of over 400 active programs written in RPG. These programs, plus numerous others which are no longer in operation, were programmed by my programmer and myself.

I feel there are two basic problems for those individuals who try to program in RPG. First, the manuals supplied by IBM, regarding RPG, are incomplete in their explanation of the language. The reason for this is that Cobol was the universal language and all support was geared toward that language and very little toward RPG.

The second problem is the lack of competent RPG programmers available to use this language efficiently. Of course, the second problem relates in part to the first.

William Seara
Director of DP
Cosmetically Yours, Inc.
Hastings-on-Hudson, N.Y.

Stop Status Buying

Sometimes it is a pleasure to read Letters to the Editor and sometimes it is agony.

A quote from a letter – "RPG and RPG II advocates are small thinkers with limited ability . . . "

Now, that is agony!

Users of RPG do so because of their specific requirements: hardware cost, personnel capability and availability and the boss's wallet. Users of Cobol, ALC, PL/I, etc. do so for the same reasons.

Some people think they must buy a Cadillac when a Ford can perform the same function.

It is about time that size and complexity is junked as criteria for evaluating a computer installation and time for status buying to stop!

George F. Leavy
Long Branch, N.J.

(Other letters and viewpoints on Pages 11-14)

Information Processor, Data Processor Different Breeds, but We Need Standards

The Taylor Report

By

Alan Taylor, CDP

A few days ago I was at a Washington, D.C., meeting of the Ansi X3 Sparc Committee chaired by T.B. Steel. The committee is responsible for noting the need for new standards in the field of information processing systems.

During the morning Steel was called out of the room, just as I was discussing a proposed certification system for DP documents and operational applications. When he came back Steel was steaming. It turned out he had just heard that Educational Testing Service in New Jersey, had been sending out the College Board scores for his daughter to some 30 colleges across the country. At least that is what the colleges had thought they had been receiving from Princeton.

According to Steel, the scores being sent out were not his daughter's. He had heard that a mistake had been made in the data maintenance systems used to create the letters for the various colleges – and that the scores being distributed were not his daughter's. ETS would need a good lawyer, he said.

Yet, of all the people in the country Steel is one who should have been most understanding of the problem. He has figured in deciding waht standards are needed and what standards are not needed in information processing – both in his X3 capacities and also as a Share representative. *I have never seen a suggestion from him, or from the whole standards or academic operation, that mistakes like this one should be systematically avoided!* So why should he blame ETS?

And yet the mistakes can be avoided, but only if we professionals train ourselves to avoid them – by training ourselves in what data processing is, and what information processing is – and recognizing the differences. For there are major differences.

Data processing is what used to be performed on keypunches and tabulators. Information processing only became possible on any scale with the growth of the computers. But neither our educators, nor our standards bodies have even started to appreciate the differences between them, nor to prepare the profession to handle the items that are correct in data processing, but incorrect in information processing.

Obsolete Training

One of my greatest objections to information processor training, as I see it practiced, is that it is in many ways still training people as they were trained for keypunch systems. Then the task was to take a set of numbers, with a few labels attached, and make them into various summaries or reports.

The training concerned flowcharting the report creation process, understanding how someone would want the report formatted, organizing a system so the necessary decks were created, preserved and organized – all very similar to data processing training today.

Unfortunately, no one seems to have noticed that the subject matter being processed now is often very different from the subject matter that could be handled by tabulating machines. We still do handle the work that was once on the tabulating equipment. It is indeed a major part of our workload, and will probably continue so for some years.

But now we are handling some much more vital work – dealing with real things, a man's capabilities, a reactor's safety limits and a corporation's opinions and claims. We have passed the limits of 80-column tabulators, and now deal with the information carried along with the figures, and not just the figures themselves.

The problem with information is that it is much more than simple data. The figure or symbol "2" denotes the whole nature of the concept "two." The use of the figure means a calculation can be safely undertaken because the nature of the concept is understood by all as the same thing. It was the same for Newton and Babbage as it was for the programmers of Stonehenge II.

Information includes, however, items as well as numbers. In data processing we call items by the names that we give them.

A Test on Information Processing

1. A question on a reference asks, "Is the applicant a good worker to your knowledge?" Mr. Jones' reference says, "He is always the first in the office." Miss Brown's says, "She is always hard at work whenever I look through my door." Mr. Smith's says, "His production quality is excellent." What data content is there? What information content is there in addition to the data?
2. A report to a senior officer about a company product says, "The frequency of sales of our computers is related to:
   (a) The sophistication of the customer.
   (b) The reliability (up-time) of the hardware and software."
   What data content is there? How many versions of information can you find in addition to the data? How would you determine which was which?
3. A complaint about possible leakage of secret information is answered by the statement, "I have examined the secret information and the suggested leak. None of the items in the 'leak' document is identical with the ones in the secret information."
   What data content is there? What information content is there? How, and why, do they differ?

A named item is intrinsically deciding what standards are need-cause names can be inaccurate, while numbers can't. Information processing is intrinsically different from punched-card accounting. Information processing involves understanding the nature of the items being processed, as well as the nature of the mathematical attributes of their data.

Unfortunately, little or nothing of this is taught in information processing schools. These teach the method of processing, but not the nature of processing, even less do they teach the nature of data processing systems, and the dangers involved when the names are confused with truth or reality and are simply hidden.

The Dunning Letter

For instance, it seems to be quite reasonable to send out nasty letters to a person whose record includes an "overdue" flag. Any data processor can do that – and many punched card systems did, and still do that.

An information processor, by contrast, could look in the system and determine whether the flag was recently updated, whether the system is such that all people not known to have credit are debtors – or whether the name is such that a credit could easily be misapplied by the corporation rather than by the person outside.

For instance, in the case of Robert D'Unger, [CW, Letters to the Editor, March 21] an *information processing* system would look to see whether a credit existed for Dunger, Unger and other likely versions of the name before sending out a dunning letter. A punched card system could not do this, of course – but then punched cards are not information processors.

Obedience or Accuracy

The difference in the two concepts – data processing and information processing – and the two occupations concerned can be neatly defined as the difference between doing what one is told to do in general, and doing it carefully, watching to see that the result is correct.

The data processor's highest claim is that he is obedient – the information processor's goal is that his results will be correct in the outside world.

Or, to be precise, the data processor is a skilled tradesman following orders. The information processor is a professional who uses his skills and authority to carry out a difficult job well.

IP Is Difficult

The information processor's job is difficult. A debtor is someone who is not definitely known to be in credit – although he may in fact be in credit.

There are many other traps to catch someone unwary in understanding the reality behind the data. The information processor must know them all.

(There are a few simple cases where the data says one thing – but the reality may be different – and where all the information content that is necessary is actually there. For example, in the box alongside see how you can test yourself on information processing.)

IP Is Responsible

The responsibility of information processors is far, far greater than the responsibility of data processors. Data processors answer only to the owners of the data. Information processors must also answer to Steel's daughter, or the college opportunities she may have missed, and to Robert D'Unger, for the accounts that have been messed up, and to the society for the way we in the DP community have failed to measure up to the need.

Yet, even so, information processors have nothing to be ashamed of.

Watch Abuses

They are now finding their professional responsibilities in exactly the same way that the doctors and the CPAs found theirs – by watching the abuses coming from current standards of responsibility.

Now the task is to provide understanding of those abuses – so that those who wish can become professional information processors, while those who do not care to will be able to be seen as charlatans, to be driven out of the professional practice of information processing.

That time is not yet here – not quite. Now is the time for education, standards and leadership.

Hopefully, X3 and Sparc will give leadership more willingly in the future, now that they have had a taste of the problems themselves.

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Letters to the Editor

Ads Discriminatory?

The type of unequal opportunity practiced by one of *Computerworld's* advertisers, Applied Data Research, Inc., is blatantly illegal. An ad in the March 21 issue announces positions for "Customer Service Representative, Female or Male" and "Computer Software Salesman." Apparently women at ADR are equal enough for lower-paid jobs but not for the higher-paid sales positions.

This is not only discriminatory, insulting and psychologically damaging to women readers, but also against the law.

The position should read, "Computer Software Sales Representative, Female or Male."

Anita Murray
Manager
Systems and Data Processing
Bunge Corp.
New York, N.Y.

...And a Reply

In our opinion the term "salesman" is a generic one and to date has never discouraged women from applying for the position.

Ironically, our problem has been that we cannot get "women" to apply for the customer service position, and inserting "female only" would be "discriminatory" toward the males.

The customer service representatives in our company, of whom the majority are women, represent the technical part of a sales-support team which commands respect and recognition equal to our salesmen and they are compensated based on performance just as our salesmen are.

Furthermore, ADR can never be accused of not providing equal employment for women. Women throughout ADR hold positions of responsibility and authority in various capacities from the programmer level on up to our corporate attorney.

Ms. B.J. Hahlbeck
Manager, Field Administration Services
Applied Data Research, Inc.
Los Angeles, Calif.

Programmer Not Guilty

As a former applications programmer, I have to stand up and shout when someone blames programmers for existing problems.

I am assuming that Robert D'Unger's problem does not center around an alpha name list, but rather his name as it appears on computer-printed mailings (bills, invoices, checks, etc.)

In all the systems I have worked with (either purchased or written in-house) I have never seen one that edited the name field for special characters. There are some exceptions.

One is the removing of selected special characters from print lines in an effort to speed up printing. This is done only because these characters do not exist on the print chain and therefore print as blanks anyway.

Also, some systems such as those that emboss plastic cards cannot have special characters due to the limitations of the embossing equipment. There may also be others that I am not aware of.

Nowhere other than under the conditions already stated have I ever heard of anyone programming to eliminate special characters from name fields or writing special routines to accept special characters in the name field.

Granted, in Cobol the possibility of eliminating special characters by improper definition of the field does exist.

I would assume, though, that this is not a conscious effort on the programmer's part.

As a general rule with systems I have seen, it is up to the individual who prepared the input source document to check all printed output for errors when adding new accounts or changing existing ones.

Working with these observations I fail to see how anyone can blame programmers for this problem.

I would be more inclined to agree with H.R. Sides' explanation of the problem and say Gigo, or John B. Beall's explanation concerning the print chain [CW, April 4].

M.A. Stark
Systems Programmer
Grand Rapids, Mich.

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Letters to the Editor

(The following letters are in response to a March 21 editorial in Computerworld on the inability of a computer to spell Robert D'Unger's name correctly. A second editorial on the problem appeared in the April 4 issue along with other reader comments.)

Sorting Problem 'Easy to Solve'

The editorial statement that apostrophes do not belong in English names is the type of statement that drives everyone except computer types right up the wall.

Whether apostrophes belong in English names is irrelevant. Apostrophes do exist in the names of people. Computer programmers do not have the right to determine how names are spelled. They must make accommodations for existing spelling.

As you state, the problem is in sorting, or more generally in comparison of alphanumeric character strings. However, the problem is "easy" to solve in English and probably in other languages.

Standard transliteration rules are available for transliterating between alphabets.

However, sequencing does not have to follow the rules of the English alphabet which has no standard position for such characters as the apostrophe.

The "trick" is to record two name fields, one to be used for display when character sets are limited and one to be used for sequencing. Standard rules should then be developed for building the key field from the name.

Cobol programmers should not be leery of apostrophes. Alphanumeric literals are bounded by quotation marks, not apostrophes. The character string " ' " is not the same as the figurative constant QUOTE.

W.M. Compton
Sr. EDP Research &
Development Analyst
Dhahran, Saudi Arabia

This is a Matter For Standardization

...The only sorting difficulty would be in the use of IBM card sorters, which should no longer be major sorting tools.

The present spellings of his name "D Unger," "Dunger," and the like, are probably due to much-needed but ill-designed edit checks accepting only alphabetics in name fields.

The designers of the checks should be told that last names can contain embedded blanks (yes, Virginia, there is a blank character), hyphens and periods; and data processing systems should be able to store a person's name exactly as he wishes it to appear.

Indeed, is it not a major advantage of computer systems that data such as names can be stored once, and not fall victim to transcription errors?

Because of the existence of names like D'Unger's, the "Mc..." family and the Vons, there is a valid question whether the prefix should be treated as part of the last name (I would look for D'Unger under D, McTaggart under M, but Ludwig von Beethoven under B). But this is a matter for standardization, not jokes.

Edward G. Nilges
Programmer/Analyst
Computer Center
Roosevelt University
Chicago, Ill.

Man Not Subservient

...You are telling D'Unger that man is subservient to computers. I strongly disagree!

I work very hard at convincing my students that "man is the master and computer is the slave." The March 21 editorial leaves the impression that "the computer" is something we all are going to have to "channel [our] efforts into living with" rather than being a technological advance which is freeing man to do what no other creature on earth can do – think.

A man's name is one of his most precious possessions: he has it from birth until death. I don't think D'Unger is complaining about where his name is listed alphabetically – all he's asking is that *his* name be used.

That isn't asking for very much. Man invented Cobol, why can't man change it?

David M. Dayton
Associate Professor
Grove City College
Grove City, Pa.

DPers 'Nonresponsive'

The editorial in the March 21 issue was an excellent illustration of the nonresponsive attitude so frequently displayed by the so-called data processing "professional."

It is precisely such a lack of responsiveness that has resulted in so many frustrations on the part of credit customers attempting to rectify billing errors and receiving no response other than computer-generated letters threatening all sorts of dire consequences for failure to pay outstanding balances (how many millions of dunning letters have been sent as a result of a negative zero balance?).

Your signature, "A poor English-speaking computer," was totally appropriate. How about getting a human being into the act?

Harry W. Clement
Supervising Data Processing
Systems Analyst
Department of Finance
State of California Government
Sacramento, Calif.

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Lack of Communication, Coordination Can Lead a Project to Certain Failure

By Miles Benson

Special to Computerworld

Viewpoint

Some people build computer software by assembling a huge team of programmers and letting management herd the project to completion.

Other choose a small group of particularly skilled people, point them in the right direction and let their professionalism and responsibility carry the project through.

The first method presents enormous communication and coordination problems.

Surprisingly, so does the second.

This is the story of three highly skilled programmers who nearly put together a flexible, versatile time-sharing system. Nearly – but not quite.

To begin, let's give the programmers disguised names. There is O.S., the operating system specialist; L.P., the language processor specialist; and I.F., the interface specialist.

And let's also give the players a disguised environment. They are members of the staff of the computer center at New England Tech (NET).

NET operates its computer center with the second philosophy described above. The employees are hand-picked, because of their strength as highly motivated individual contributors.

Division of Labor

When the research grant came through from Marketronics to build a specialized T/S system for its 4000 line of computers, it was a natural for the NET staff.

O.S. could build the T/S operating systems, and L.P. could construct an APL interpreter to run on the system. And when the time came to hang it all together, I.F. could be called in to help build the interface.

That's the way it all got started. O.S. sat in his private office and designed the operating system. L.P. sat in his private office and designed the APL processor.

They talked from time to time about what the interface should look like. Sometimes they went to I.F.'s office and got his opinion.

Once O.S. came into L.P.'s office and told him to "slow down," that they were "getting out of phase." O.S. said L.P. was much further into *his* part of the project than O.S. was into his.

Come Again?

But L.P. took that as a joke. Would a responsible computing specialist ever seriously suggest that another delibertately slow down his work? L.P. couldn't buy it and continued to work at his own pace.

Neither specialist ever thought about bringing that short conversation to the attention of management. The possibility that they had a big problem which would need the attention of someone else never occurred to either of them.

When the APL interpreter was up and running, and the operating system was still losing interrupts and hanging up in random locations, it became clear that they were, in fact, out of phase – and in trouble.

I.F. was called in to help with the operating system, but the interface itself would now have to be deferred.

Then L.P. got reassigned. There was an accumulation of fixes to the vendor's 4000 Fortran compiler which only L.P. could take care of and APL was, for the time being, done.

Too Much of Everything

Well, the operating system just took longer than anyone had ever imagined. Even with two men working on it, there were too many bugs to be exterminated, too many lost characters on the teletypewriter lines, too many missed disk revoluations, too many memory protect violations. When O.S. finally announced he had a reliable and viable operating system, he was greeted with a dull thud.

L.P. had just given notice. His work fixing the Fortran compiler hadn't been challenging enough. And Vermont A. and M. had just received a grant to build a translator-writing system. L.P. jumped at the opportunity to join the staff.

It's hard to say just when a project is a failure. O.S.'s T/S operating system really is in great shape and the user community loves it. APL isn't running under it, though. L.P. hadn't documented his design, and when he left he was in such a hurry that he didn't fill anyone in on his work.

I.F. looked at the listing, but he never did find all the interface hooks which should have been there in order to join the operating system and APL.

Can a project be a failure because one part wasn't integrated? Can it be a failure because one part was done too fast?

It can, if communication and coordination aren't sufficient to overcome these problems.

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The Professional's Viewpoint

QDP—a History of 'Exchange'

(Quality Data Processing, which has been in the news recently because of its expulsion from the Computer Foundation Organizing Committee, represents a different type of data processing society – one that has worked for 10 years without officers, membership dues or formal meetings, while making positive contributions to data processing.)

By Ron Stewart

Special to Computerworld

In early 1963, 11 ADP professionals, including myself, in the metropolitan Chicago area formed a very loosely organized group.

At first, the group was primarily from the insurance industry and was dedicated to helping each other – with advice, information, backup computer facilities and a little programming or systems design, on a moonlighting basis. Almost all the contacts between the original members were by phone.

By late 1964, the group had grown to 20 and informal meetings were being held monthly. The next step was an increased interchange of material between the participants. Operating procedures, program modules, operating system and software modifications, in-house standards, documentation techniques, organization structures and employee acquisition data were exchanged.

Creating Bylaws

By 1965 the makeup of the group had altered appreciably, although it was still primarily made up of middle management, and was nearly 50% insurance industry-oriented. Because of the increasing activity, it was decided to create some bylaws and a name for the group.

Limited bylaws were created and "Quality Data Processors" became our official name. Still, within the organization, the prime objective of QDP – to exchange information – continued unchanged.

Within this requirement several concepts apparently evolved automatically. Among these were the ideas of no official records or minutes, no membership fees or dues and no treasury. These ideas were retained.

During 1966, several members of the group became interested in three ideas which were to have a lasting effect upon the organization.

- We wanted to publicize the EDP profession.
- We started offering free advice and support to churches, schools and other organizations unable to acquire DP services.
- We noticed, and disliked, the great liberties being taken by some EDP professionals, as far as providing the business community with a *quality* product.

It was during this initial exposure to various DP trade schools (through QDP's guest lecture program) that several people in the DP education field became interested in QDP, including Robert Sennet, who was our representative at the Computer Foundation Organization Committee meeting.

After a couple of years of developing a good working relationship Sennet approached me (I was acting as spokesman for the group – there were no elections and no officers, even in those early days) about further formalization of the organization, and broadening its scope, along the lines already evolving.

As a result of his approach, in 1970 the QD Processor group became QD Processing – more or less structured as it is today. Sennet and myself were nominated cofounders of the newly evolved organization, as the entire group wanted to maintain the concepts of minimal record-keeping, no officers or elections, no membership dues or membership fees, no official meetings and no treasury. Thus the cofounders became the coordinating facility for the new organization.

This area of a coordinating facility was carried over from the old organization, with the idea of all activities being volunteer ones, and a stressing of the anonymity of membership.

No tasks were assigned – volunteers would be asked to fill any upcoming needs.

No membership lists were circulated to the membership – and needs for contact with the other members passed through the coordination facility provided by the cofounders. Equally, any requests for support or membership were also filtered through the cofounders.

In fact, certain requirements of anonymity for the individuals – and against poor quality support – were written into the QDP bylaws, as was conformance with the various no-profit laws.

Thus QDP evolved into a working, volunteer group providing ADP services to the community and with a healthy interest in professional quality.

We were properly able to offer membership to Ken Lord after both cofounders had agreed that having him as a member would forward the purposes of the group – and also to assign him the task of working on the Computer Foundation Organizing Committee subcommittees, for which he had volunteered.

If anyone else is interested, our bylaws do provide for local organizations in other parts of the country.

Ron Stewart is a cofounder of Quality Data Processing.

Letters to the Editor

PLC Responsible For Cobol's Course

James Manley in his March 28 letter has intertwined development and standardization of Cobol, Ansi and PLC. Ansi is not responsible for the development of Cobol and X3 does not direct the efforts of Codasyl.

PLC is responsible for the development of Cobol, and nobody else. Ansi (X3J4) is independent of PLC and is responsible for specifying Cobol standards. In the course of preparing standards for Cobol, Ansi thoroughly reviews the current language specifications (as published in the *Cobol Journal of Development*) and is a prime generator of proposals to PLC for modifications to these language specifications.

However, any person or organization may also submit proposals or suggestions for Cobol changes to PLC.

It is not always obvious whether to submit a suggestion to PLC or Ansi, so anyone with suggestions might just as well send them to the addresses given by Manley with the understanding that they might be forwarded to PLC for consideration if appropriate.

Fred L. Forman
Arlington, Virginia

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Random Notes

Plot Option for CUE Package Adds Graphics for Evaluation

CUPERTINO, Calif. – Boole & Babbage, Inc. has begun deliveries of a plotter option for the previously available Configuration Utilization Evaluator (CUE) software monitor package.

CUE produces tabular reports presenting average performance figures for the various components over time. The plotter option pinpoints peaks and valleys of the CUE measures as a function of time.

The option requires a plotter, the company noted from 18990 Homestead Road, 95014.

'Ramis' Gains Host Interface

PRINCETON, N.J. – Users can combine the processing capabilities of conventional programming languages and the retrieval and reporting capabilities of the Ramis file management system through a programmer interface feature recently introduced by Mathematica, Inc.

The interface allows programmers to code in Cobol, Fortran or PL/I, but use the Ramis facilities to retrieve, change or manage records stored on the data base.

Mathematica is in the Princeton Station Office Park, 08540.

'Analystic' Service Updated

WALTHAM, Mass. – Investment managers and corporate planners gain flexibility in studying significant financial and economic data, through the use of the Analystic III service now available on the Interactive Data Corp. remote-computing network.

The service allows users to work with several different data bases, including the Value Line analytical data base-1 of financial information, developed by Arnold Bernhard & Co., an economic base built by Lionel D. Edie & Co., and containing information on more than 6,000 economic variables; and Interactive's own securities price data base.

The company is based at 486 Totten Pond Road, 02154.

Package Meets Osha Needs

NEW CITY, N.Y. – OS/360 users can develop data needed to implement and monitor policies and create reports related to the Occupational Safety and Health Act (Osha), with a Health/Safety report program from Information Science, Inc. (ISI).

The package also allows the user to enforce accountability among supervisors by comparing actual illness-and-injury costs with budget estimates. The program runs in 140K bytes and costs between $25,000 and $35,000.

ISI is at 18 New Hempstead Road, 10956.

'Cytos/II' Puts 16 Users on 1130

SAGINAW, Mich. – Sixteen terminals can access an IBM 1130 simultaneously, with users working in their own choice of languages, under the Cytos/II multiprogramming operating system now available from DNA Systems, Inc.

Cytos/II resides in the foreground partition in conjunction with IBM's Distributed System Program (DSP), which normally allows an 1130 to control a System/7. As in an S/7-1130 linkup, the users' jobs are actually processed – in a time-sliced mode – in the background partition.

The DNA operating system allows users to develop, test and execute programs written in Fortran and RPG, and in the MSP/7 macro assembler for S/7 operations. In addition, the Cytos language itself provides a full set of utilities to manipulate data sets on disk.

This facility to work directly with data sets can be used to create information files for application programs, or to build and work with source programs which can be input directly to the appropriate language processor.

A full context/line editor feature of the Cytos command language is particularly useful in working with source programs, the company noted.

Throughput is increased under Cytos/II by the spooling of all peripherals.

Cytos/II has been designed to run on a 16K core 1130 with five disk drives, communications adapter, line printer and 2741 or Ascii-type terminals. Another version of the system, however, is available for Digital Scientific's Meta-4 computing systems.

Either version may be leased from DNA Systems for $290/mo, or for $5,995 on a one-time basis.

The company is at 1258 S. Washington, P.O. Box 1424, 48605.

Performance Monitors Can Steal Data

By Don Leavitt
Of the CW Staff

SAN DIEGO – Fairly simple changes in data reduction software would allow modern performance monitors to be used to intentionally obtain sensitive data from an otherwise secure computer system, Dennis R. Chastain warned here recently.

An analyst for the U.S. General Accounting Office (GAO), Chastain raised this point at a performance evaluation workshop run here recently by the Association for Computing Machinery and the National Bureau of Standards. The necessity for security must often be a greater concern, he said, than the measured performance of a system.

In discussing whether the measurement tools could be used to obtain sensitive data from the system, the GAO analyst said it would be "unreasonable to suspect" that the older hardware monitors made up of probes and counters could inadvertently access any specific data.

Software monitors might more easily record sensitive data inadvertently, but, again, the standard data reduction software would be unable to process such unexpected material.

Using monitors to intentionally obtain sensitive information from computer systems "is quite another matter," he added, noting that some hardware monitors now include minicomputers which could record alphanumeric data being processed by the mainframe.

Unlike security hardware; security software does cause some degradation in the performance of a system.

File access security, he noted, is basically a check at "file open" time to determine whether the user attempting to open the file has basic permission and clearance to access the file.

I/O processing security involves checks on every input and output instruction to insure, first of all, that the user trying to access the data is the one who processed through file access security at file open time. After that, a check will be made to determine his authority to do what he wishes with the file.

Data Transmission Security

Data transmission security software makes sure that both the terminal and the specific user at the terminal are authorized to receive data, before it is transmitted.

A properly designed system should not add overhead greater than 5% to 10% of any resource for these three levels of software security, Chastain said.

Actually, the task of measuring the effect of security software on the overall system can be difficult, Chastain admitted. Hardware monitors which can report activity at selected memory locations can be used, but traditional computer simulation packages such as Scert and Case cannot be used for this evaluation, because security software modifies standard supervisory software.

Models of the detail required have to be constructed in lower-level simulation languages such as Simscript, SAM or ECSS, he said, and the user has to have the same level of understanding of the problem as the original writer of the security software itself.

Software monitors, imbedded in the supervisory software, could be used to measure the effect of the security software, but the monitoring instructions themselves impose a degree of overhead on the system, Chastain noted.

'BBL' Aids Plans, Simulations

WALTHAM, Mass. – Basic Business Language (BBL), now available on the First Data Corp. remote-computing network, looks a great deal like conventional Basic but is specifically designed to cope with problems in the management sciences area.

The system provides about four times as many statement types as Basic and is aimed at three applications:

- Financial planning and reporting, including forecasting, budgeting, cash flow and similar operations.
- Risk analysis and monte carlo simulation.
- Imminent event simulation, queuing models and statistical analysis.

No Size Limits

BBL is said to impose no artificial limits on report size and complexity of data being presented. If too many columns are defined for the stated size of the paper, the system stores the extra data and prints it, with appropriate headings and spacing, on secondary pages after the basic portion of the report is complete.

Once developed, BBL routines can be cataloged for later stand-alone production use or for linking to other routines to create larger systems.

BBL statements support various financial functions and probability distributions. Results can be output on a line printer in graphic or tabular format.

BBL provides data types for definition and use of many frequently used deterministic and probabilistic functions.

Numeric List

To back imminent event simulation, the system includes a set of numeric list statements that define and process lists of data which can grow or contract in length.

Written largely in Fortran IV and developed by Core & Code, Inc., Wellesley, Mass., BBL is available on the network for First Data's normal resource charges plus a royalty surcharge.

First Data is at 400 Totten Pond Road, 02154.

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Since January, 15 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the billion dollar class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

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'Bottomline' Predicts DP Costs by Job, Then Reviews Actual, Expected Results

MCLEAN, Va. – OS/360 users can generate forecast budgets for DP operations, in as much detail and for as long a period in the future as the user wants to consider, and later compare actual costs with the budgeted figures, with the Bottomline cost allocation package from Tesdata Systems Corp.

The report of actual costs can be used as a billing document, if the DP center works on a chargeback basis, or as an historic record of how much of the center's resources were devoted to each job. In any case, Bottomline also produces variance reports for management review detailing the reasons for any descrepancies between budgeted and actual costs.

Since the system is keyed to tables of user-defined charges for the various DP resources, and alteration of these table values can be made through control card entries, Bottomline also provides management with facilities for cost modeling and for predicting the effect of price changes before they are formally implemented.

The system starts through its report cycle by taking data about jobs expected to be run during the up-coming prediction period. This data should include the name of each job, the number of times it is to be run, its normal running time and the specific system resources – printers – it requires. Shifts, if significant, and dates on which the job is to be run are also entered.

This data, multiplied by the defined costs of resources, produces the predictive budget report, with the detailed information available to the users who requested the anticipated jobs, and the summary data available to DP center management with a forecast of what it faces.

Accounting data collected during actual production (via IBM's System Measurement Facility – SMF – or any other means), factored by the resource cost tables, form the base of the billing reports, the comparison to budgeted costs, and, if needed, the variance report of differences.

Tesdata sees Bottomline as a complement, and not an alternative, to both scheduling and job accounting systems. The new system allows users to see ahead of time what their anticipated DP operations are going to cost them, and to make value judgements about the proposed workload based on that knowledge.

The system operates in 130K bytes of storage under OS/360. No firm price has been established yet, but a Tesdata spokesman said he felt it might be made available to current users of the company's scheduling packages for around $10,000, and to others for somewhat more.

Tesdata is at 7900 W. Park Drive, 22101.

CSA Seeks Reactions To Draft Standard On Organization ID

REXDALE, Ontario – There apparently is no single code system that can be used across-the-board to identify organizations referred to on data files being exchanged by users. So a Canadian Standards Association (CSA) study group has proposed adoption of an open-ended scheme that would allow use of any of several identification code systems, as long as the system being used is itself clearly identified.

The proposed standard (Z243.16) is being distributed to the Sectional Committee on Computers for evaluation and comments from interested outsiders would be welcome, according to committee secretary, Hartley Rogers of CSA.

The proposal is much like one currently under study in the U.S. by the American National Standards Institute X3 committee. Both see that various code systems are in relatively broad use already, including Social Insurance numbers here and Social Security numbers in the U.S., and the numbers Dun & Bradstreet assigns to corporations.

Both proposals anticipate the use of a code identifier prefix, in addition to the specific number, so that receiving users will know what type of number they have to handle. Both groups anticipate the need for a central registration authority to control and allocate the code identifiers.

The Canadians note that their proposed standard would not provide for distinct identification of subdivisions of an organization. Critics of the U.S. plan are concerned that any standardized identification would provide an access key to other, more personal files on one-man organizations.

Standards for identification of individuals on files to be passed from one user to another have similarly been proposed in both the U.S. and Canada, and in both cases have run into comparable opposition.

Copies of the proposed Canadian standard are available from CSA at 178 Rexdale Blvd.

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COMMUNICATIONS

Data Briefs

Microprogrammable CRT Includes Changeable ROM

SALT LAKE CITY, Utah – The Super Bee from Beehive Medical Electronics is a microprogrammable CRT terminal with its own built-in processor and detachable keyboard.

The unit has a read-only memory which can be changed for any input/output configuration or coding structure. The keyboard can also be changed to correspond to the application.

The terminal transmits data at rates up to 9,600 bit/sec and features an addressable cursor and upper and lower case characters. Some options include editing, polling and high-resolution video display.

The terminal costs $2,495 from 2600 S. 870 West, 84119.

T/S Terminal Suited for Multics

BURLINGTON, Mass. – Computer Devices, Inc. has introduced a portable time-sharing terminal designed for users of Honeywell's Multics system.

The 1030/Multics Teleterm features 128 upper- and lower-case Ascii characters and a keyboard similar to the Model 37 Teletype, the firm said.

The terminal has a thermal printer and weighs 22 pounds, the firm said.

Prices start at $3,350 or $97/mo on a three-year lease. Delivery is 10 days from 9 Ray Ave., 01803.

Mini-Based Processor for Banking

BOHEMIA, N.Y. – A minicomputer-based communications processor designed for banking and other financial users is now available from Periphonics Corp.

The Bank-Comm 7 can be interfaced to any central computer and any local or remote terminal network, a company spokesman said. It can also operate as a stand-alone system.

The processor is built around a PDP-11 mini and comes programmed to meet the user's particular terminal configuration and application.

A basic Bank-Comm 7, including a 4K mini, interface logic, line and mainframes interfaces, costs $35,000. Delivery is 4 months from Airport International Plaza, 11716.

Terminal, Cassette Interface

SALT LAKE CITY, Utah – The Univac 610 Tape Cassette System interfaces with the Uniscope 100 Display Terminal to provide expanded terminal data-handling capabilities.

The cassette system provides up to 1.4M characters of storage. It also allows the Uniscope 100 to operate unattended.

Purchase prices start at $1,800. One-year rental charges range from $70-$85/mo, or $57 under a 60-month lease plan. Deliveries are scheduled for the fourth quarter of 1973.

Is Bell Foot-Dragging?

DAA Installation Delays May Harm Users

By Ronald A. Frank
Of the CW Staff

MAHWAH, N.J. – Lack of information concerning the proper use of Bell Data Access Arrangements (DAAs) is hampering the installation of independent data terminals, according to a Western Union Data Services Co. survey. The study implies that DAA service is proceeding slowly in many areas.

Data Services supplies non-Bell TTYs and other terminals to users who must interconnect to telephone company facilities through DAAs. In many cases, incomplete interconnection data coupled with delays in DAA installations are affecting data users, the survey showed.

During a recent six-week period covering the installation of 1,780 terminals, more than 50% of the equipment was delayed due to some type of DAA problem, the survey found. Data for the study was gathered on a week-by-week basis and covered terminals across the country in all parts of the Bell System, and some areas served by independent phone companies.

States Vary

The problems become especially serious for interstate customers who have to deal with several Bell operating companies in different states. The lead times required to obtain DAAs can vary from two to 10 weeks, the survey showed. As an example, New England Telephone customers typically wait six to eight weeks for a DAA while the delay from New Jersey Telephone ranges from three to four weeks. And when a customer served by an independent phone company orders an access arrangement, the wait can be as long as three to four months, the study found.

In some cases, Data Services has purchased a connecting device for the independent phone company and helped local repairmen install the unit to expedite the operation for the customer.

In such instances the independent phone company was not familiar with the interconnection procedures needed to allow the use of customer-provided equipment, a Data Services spokesman said.

Because of the problems associated with customer-provided terminals, Data Services will soon publish a *Users Guide to DAAs*. The guide will include specifications and order codes for the three varieties of data couplers.

According to the guide, the CBS DAA is preferable to the CBT version for DP installations or usage with non-Bell data terminals because this equipment is "subject to possible interference from the CBT's relay electromagnetic radiation or contact bounce."

With the CBT unit, the user can obtain power from the terminal while the CBS coupler requires that phone company power by used, Data Services said.

To have automatic answer capability with the phone handset on the telephone for installations with CBT and CBS DAAs, the phone should be wired so the coupler controls the line with the ringer connected on the line side of the exclusion key, the company said. A telephone is not required with the CBT model if the user's terminal receives data in an unattended mode and there is no need for voice coordination.

Western Union Data Service's terminals at the sites covered in the survey include TTY Model 33s, 35s and General Electric Terminet 300s.

The DAA guide will be available by the end of May, a spokesman said. The company is at 16 McKee Drive, 07430.

Xynetics Adds Flatbed Plotter To Data 100 Remote Terminals

CANOGA PARK, Calif. – Xynetics Inc. has introduced a remote flatbed plotting capability for users of the Data 100 intelligent terminals.

The remote job entry system allows 360/370 Hasp users to operate a flatbed digital plotter at off-site locations for automatic drafting applications.

The capability allows Data 100 users to interface their Xynetics plotters and operate on-line; or the remote plotter can operate off-line using a magnetic tape generated on the terminal.

Punched cards are loaded into the Data 100 terminal system and transmitted to the CPU at 2,000 bit/sec. After processing by the mainframe, the output data is transmitted back to the terminal and directed to the Xynetics plotting system.

With an optional magnetic tape unit, the terminal can run in local mode at the remote site to produce output on the plotter. As part of the plotting capability, Xynetics supplies Fortran level graphics software for operation on the IBM CPU operating with Hasp.

For users with Data 100 systems, the plotting capability adds about $2,000/mo. The RJE terminal costs about $1,400 from Data 100, according to Xynetics.

Although not presently available, a spokesman said the remote plotter could also operate with other terminal/mainframe systems.

Xynetics is at Box 1450, 91304.

Sir 1000 Video Display Has Firmware-Programmed Modules

DEER PARK, N.Y. – Megadata Corp. has introduced the Sir 1000 video display system with a firmware-programmed processor.

Over 100 factory-supplied firmware modules are available to tailor the terminal system to such applications as IBM emulation, text editing, message formatting and code translation.

The Sir 1000 can be interfaced with thermal or impact printers and a floppy disk storage unit can also be attached. Synchronous, asynchronous and serial data can be handled and the system can include RS-232, TTL or other common interfaces.

The standard keyboard includes an alphanumeric Selectric-type font but additional character sets including Models 28 and 33 TTY, numeric pads and alphabetic clusters are available. The display includes a four-way cursor, fixed horizontal and vertical tabs and five cursor control keys.

The Sir 1000 can operate with most major CPUs including IBM 360/370, Univac 1200, Burroughs 5500, CDC, HIS, Xerox and other systems. The character repertoire includes upper-case Ascii, upper- and lower-case Ascii and special graphics.

The terminal cost ranges from $3,500 to $4,000 with 60 day delivery from 10 Evergreen Place, 11729.

Watchdog Group Formed

CHICAGO – A Telecommunications Trade Practice Committee has been formed by the Chicago Better Business Bureau.

Designed to develop a consumer awareness of the telecommunications industry and establish voluntary standards, the group will recommend procedures and review inquiries and complaints about telecommunication companies. The committee will also serve as a discussion group for the exchange of technical data.

Chairman of the group is George Gregg, president of Gregg Communications Systems, Inc. Members include Romney Harlow, president of Private Telecommunications, Inc.; Charles Popp, vice-president of MCI; and Richard Smith, assistant vice-president of Illinois Bell Telephone Co.

The Better Business Bureau is at 430 N. Michigan Ave., 60611.

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SYSTEMS&PERIPHERALS

Bits & Pieces

Itel Offers 158 and 168 Users Monolithic Memory

SAN FRANCISCO – Itel Corp. has monolithic main memory for the IBM virtual storage models 158 and 168.

The speed and technology of the Itel memory are identical to its IBM counterpart, according to Itel. Itel will also match IBM's design capacity, 4M bytes on the 158 and 8M bytes on the 168. First delivery of the 158 memory is set for November 1973, and March 1974 for the 168. Prices will be "10% to 15%, below IBM, an Itel spokesman said. The firm is at One Embarcadero Center.

Turnkey Systems for Small Firms

CAMBRIDGE, Mass. – Two turnkey minicomputer-based business systems for accounting and order-processing applications are available from Input Output Computer Services, Inc.

The accounting system includes payroll, accounts receivable, accounts payable, general ledger and labor distribution programs.

The order-processing system handles order entry, invoicing, inventory reporting, sales analysis and accounts receivable.

Basic hardware in the systems is the DEC Data System 300, using the PDP8/e as the central processor. Other components include a disk for random access storage, line printer, video display terminal and magnetic tapes.

Price for the accounting system is $45,000. Price for the order-processing system is $48,000.

Third-party leasing is also available from 138 Mt. Auburn St., 02138.

'Naked' Cassette as Fast as Tape

IRVINE, Calif. – A cassette system with search speed capabilities comparable to magnetic tape decks is offered by Computer Automation for use with the firm's Naked Mini and Alpha minicomputers.

Available in single, dual, triple or quadruple configurations, the system reads and writes at 12 in./sec and searches at 120 in./sec. Single cassette storage is about 250K bytes on a standard 300-foot tape.

In direct access mode, the system devotes one of its dual tracks to prewritten address marks so that the entire length of the tape can be treated as a sectored disk, the firm's spokesman stated.

"This means that the entire tape can be searched with a nominal access time of 10 seconds, about 10 times better than most cassette systems, . . . and in the performance range of magnetic tape systems," he added.

The complete single-cassette system, including transport, interface controller, cabling and software, is priced at $2,850 from 18651 Von Karman, 92664.

'Step' Up Enhancement

User's 360/22 'Just Like' a Model 30

By E. Drake Lundell Jr.
Of the CW Staff

OLD SAYBROOK, Conn. – "We can't tell the difference between a 360/30 and our enhanced 360/22 except when it comes time to pay the bills."

That is the claim of Andrew Speare of the Kramer Division of Conarc who has been serving as a "Beta test" user for the past five months for the Step-22 storage enhancement package made by Information Control Corp. The enhancement package is available from Genesis One Computer Corp.

Speare stated the enhancement for the Model 22 has so far enabled the firm to save over $2,000/mo compared with a 360/30 with comparable operating efficiency.

Further, Speare implied, the Model 22 may be upgraded to operate like a 360/40.

Channel Is Basis

The basis of the Step-22 unit is a selector channel which allows the Model 22 user to upgrade his system from 64K bytes to up to 128K bytes of main memory and permits attachment of 2314 and 2319 disk subsystems.

The 360/22 is an ideal machine for this type of upgrading, Speare asserted, as the Model 22 is basically a Model 30 with slower channels.

The internal cycle speed of 1.5 µsec is identical for the two machines, but the 22s from IBM were only able to handle the 2311-type disk drives as the channel could not operate fast enough for the faster 2314s and 2319s, he noted.

The unit comes in a basic configuration of just the selector channel enhancement which allows users to attach two 2314s. This is the equivalent of six or seven 2311s, a spokesman for Information Control said.

A basic 360/22 configuration renting for $2,175/mo on a two-year lease, the firm said, includes the cost of both the controller and the disks.

A maximum configuration of 128K bytes of memory and nine 2314 drives (one a spare) and the controller rents for $5,340/mo, the firm added. Both prices include maintenance, ICC noted.

Presently the only question concerns maintenance for the CPU used in the system, Speare said.

IBM has inspected the system and said that if it had a switch to return the system to its original condition it would be maintained – even though IBM rejected the system on the first inspection, Speare added.

Missed Switch

"Obviously they missed the switch, an ICC official said, "since the system is equipped with one." A second inspection of the system has already taken place and Speare is awaiting the results.

The system should open up a new alternative for users considering upgrading or turning to leasing companies for their equipment, Speare felt.

A 64K-byte 360/30 rents for $9,080/mo with two 2314 drives for a total on-line storage of 60M bytes. The same unit from leasing companies with all independent peripherals is presently going for around $6,706/mo based on a typical 55% net lease.

A Model 22 central processor rented directly from IBM, with the Step-22 feature will cost approximately $6,296/mo – about $2,800 under the IBM total system price and $500 under the leasing company price.

The problem of getting the 22 to perform equivalent to a 360/40 is more difficult since the 40 fetches two bytes on each cycle while the 22 and 30 fetch only one.

However, Computer Hardware Consultants and Services has developed an accelerator for the Model 30 that permits it to fetch two bytes on each cycle. The Information Control memory with the Step-22 system is also a 2-byte configuration, sources noted.

ICC officials, however, said they were not ready to claim 40-like performance for the system, but Speare said he saw no reason the system could not resemble the 40 unless IBM had incorporated some registers unknown to him.

LEC Unveils Data Entry System

PLAINFIELD, N.J. – Lockheed Electronics Co. (LEC) has unveiled a data entry system built around LEC's MAC 16 minicomputer and an intermediate disk storage subsystem.

The Data Entry/Management System is a shared processor system that edits, formats, verifies and stores data entered through typewriter-like, video display and keypunch replacement terminals.

Hardware configuration for the system consists of the MAC 16 mini, up to 32 terminals (one of which is the supervisor's terminal), magnetic disk subsystem, magnetic tape drive and cassette tape reader – for program entry.

In addition, the system can be expanded with a medium-speed line printer, additional core memory and disk storage.

The supervisor's terminal can transfer disk-stored data to magnetic tape for subsequent processing on a central larger computer. This operation can be performed at the supervisor's discretion, and is done without interrupting the other operators.

The data entry terminals provide alarms, checks and interlocks to assist operator accuracy and throughput. Further, the keypunch replacement and video display terminals incorporate a display that indicates status information and shows error messages, including instructions for the next operator step.

The medium-speed printer option permits printing data stored in the system or from magnetic tape. This capability is designed for users with audit requirements or a need for off-line balancing.

In addition to a full line of operating software, the Data Entry/Management System includes a program for logging and printing out operator and system performance statistics.

This data can be used to determine operator training requirements and measure system efficiency.

The shared processor – MAC 16 – has a 1 µsec cycle time, 16-bit word size (2 char. byte/word), 8K words of memory, expandable in steps to 4K to 128K.

The disk subsystem provides 5M bytes of storage in a standard configuration. The disk controller permits up to three additional drives to be attached for a total of 20M characters of storage.

The tape drive and tape controller are designed for writing on IBM-compatible standard one-half inch tape. Options of 556 bit/in. 7-track, as well as 800 and 1600 bit/in. 9-track, are available.

The cassette system utilizes a Sykes cassette drive operating at 2 in./sec. Maximum character capacity is 300K characters.

Keypunch replacement terminal (foreground) and video display terminal (background) are two of three standard terminals available with LEC's Data Entry/Management System.

The system can also be provided with a Data Products Model 2310 line printer. This provides 80 columns of printing or alternatively the 2410 printer can offer a 132-column capability.

LEC will provide application and maintenance services through its own service organization. Systems will be sold or third-party leased with a typical 20-station system costing about $180,000 from U.S. Highway 22, 07061.

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'Wizards for Wizards'

Thinking Multiprogramming? Consider Decsystem 10

By Michael Weinsteln
Of the CW Staff

In certain situations, users are finding that the Decsystem 10 is cheaper and more powerful than the lower end of the IBM 370 series.

While this does not indicate that the system is better for all users considering multiprogramming operations, it does suggest that users so inclined should add the Decsystem 10 to their evaluation lists.

For the most part, IBM systems were developed from batch-processing systems onto which terminal-oriented and interactive operations were grafted.

Analysis

In contrast, the Decsystem 10 began as an interactive and time-sharing system that later acquired batch capabilities.

Thus it follows that in other than the super-large applications the DEC system is better at interactive work while the IBM units are better at batch processing.

Weaknesses of the Decsystem 10 – and its relative low profile for the average user – are to a large degree manifestations of Digital Equipment Corp. itself.

While DEC has always built good hardware, it has been under the philosophy of computers built "by wizards for wizards."

Much more than IBM, the firm has left the operation of systems – once they leave the production floor – to the users.

Further, the "wizards for wizards" view has led to an inadequate library of applications routines.

Leave It to User

It is assumed that the user knows what software he wants and will write his own.

On the operations side, DEC is far more helpful and personnel at the Maynard, Mass. plant appear quite accessible to discuss technical or other problems.

IBM's historical role is one of providing black box-oriented systems. IBM provides what many users feel is the best support available with users having easy access to a large number of applications software and other support.

Once again the basic trade-off of moving to a non-IBM source comes into play: users trade support and assurance for cost savings and greater power.

For many users this trade is worth considering – especially if they have the expertise to "carry it off."

Center Serves Micrographics

NEW YORK – The Microfilm and Information Technology Center (MITC) is an exhibition and information supply center dedicated to micrographics and data processing equipment.

Located at One Park Ave., the center provides Greater New Yorkers with a centralized source to meet manufacturers, service organizations and publishers serving the microfilm, telecommunications and related information technology fields.

Diablo Printer Added To Datapoint Series

SAN ANTONIO, Texas – A 30 char./sec impact printer, the Diablo, is available from Datapoint Corp.

Added to the firm's line of peripheral attachments available with the Datapoint 2200 minicomputer, the Diablo servo-driven printer uses the standard multipart 132-column form and ties directly into the Datapoint 2200.

Printing either forward or backward, the printer also can "slew" across blank areas at the printing rate. Where text justification is needed, incremental spacing is possible to 1/60th of an inch. Paper, fed via friction or sprocket, can move vertically in both directions, thus allowing graphic application.

Purchase cost is $6,300. One-year and two-year leases are available at $156/mo and $141/mo, respectively. Maintenance is $35 with installation at $120. Delivery is 10 weeks from 9725 Datapoint Drive, 78284.

Electrostatic Reader Makes 30-Sec Prints

ROCHESTER, N.Y. – An electrostatic reader-printer delivering dry 18 in. by 24 in. positive prints – either aperture card or roll form – from 35mm microfilm in 30 seconds is available from Kodak.

Within the Ektron unit, a 2-lens turret provides both 14.5X and 10X magnifications on an 18 in. by 24 in. viewing screen, a spokesman said.

Print density is controlled by a single knob that regulates the exposure intensity and exposure time.

For multiple printing of the same image, a repeat control is available with all prints cut from 400-ft rolls of electrostatic paper.

Cost of the Ektron unit is $6,545 from Business Systems Markets Division, 343 State St., 14650.

Power Supply Can Handle 220V Sources at 250 mA

NEW YORK – A high-voltage power supply, capable of delivering up to 15KV dc average at 250mA when operated from 220 V lines, is available from Spellman High Voltage Electronics Corp.

The Model RS217 consists of a single-phase high-voltage transformer and bridge rectifier in an oil-filled tank.

If a variable auto transformer is used on the line, the power supply is adjustable from 0 to 20KV dc.

Single unit price is $750 with volume discounts available from 1930 Adee Ave., 10469.

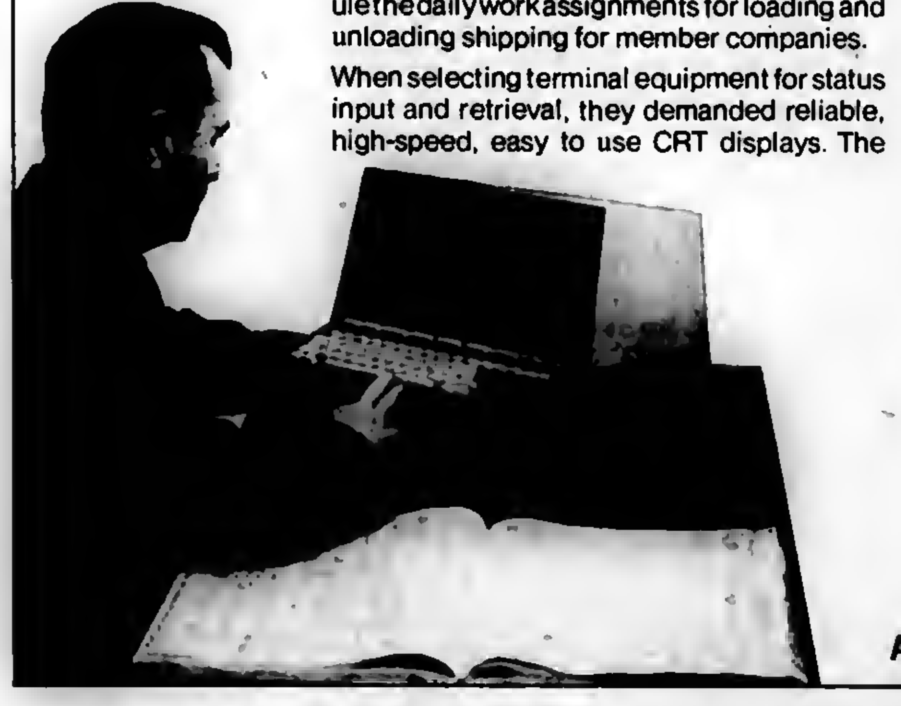
Microfilm Reader Operates On Flashlight Batteries

MENOMONEE FALLS, Wis. – The Realist Compact microform reader "is the first big screen (8 in. by 11 in.) portable reader to offer flashlight battery operation," according to a spokesman for Realist Inc.

In addition to battery operation, the reader can operate on any standard AC voltage, he added.

The reader comes with dual magnification and a built-in storage compartment that will accommodate 200 microfiche or almost 20,000 pages of information.

Price is under $100 from N93 W16288 Megal Drive, 53051.



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DATA EQUIPMENT
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Includes Tenant Accounting

S/3 Handles Realty Management Records, Reports

AKRON, Ohio – Weaver-Rosca Realty is using a small DP system to support its diversified property management organization.

Since the computer came on the scene, the firm has enjoyed a business explosion, with increases in volume of more than 400%. Wanda Weaver, secretary of the company, gives DP system much of the credit for the firm's ability to handle a staggering additional work load, while, at the same time, improving services to tenants and owner-clients.

"Without the System/3 Model 10, our office staff would be swamped with accounting detail and paperwork," said Weaver, who designed the many computer applications.

"More important," she added, "we would not be able to apply the property management techniques, or provide the owner reports that have been important factors in the rapid growth of our client list."

Range of Properties

Weaver-Rosca now manages about 2,000 residential, commercial and industrial rental properties, representing millions of investment dollars. The properties range from small dwellings to large shopping centers, and from medical and professional buildings to industrial parks.

Virtually every facet of both the property management and the realty brokerage operation has been tailored to the capabilities of the computer. This includes a massive, complex tenant accounting system.

"It is not unusual for upwards of $100,000 worth of tenant checks to arrive at our Akron headquarters on any single day around the turn of the month," Weaver noted. "Each payment has to be credited to the corresponding tenant record, and applied to the appropriate tenant account – rent, security deposit, utility charges and late charges. The income accruing to the property owner must be accurately distributed according to each individual owner's general ledger requirements. The day's receipts have to be balanced, then prepared for entry into our general ledger records.

"With our old manual system, this heavy a workload would have tied up our office staff for days," Weaver pointed out. "But, with the computer, we handle the job in only a little more than two hours. At the end of the day, the computer produces a full, detailed recap of the day's transactions, by property and by account – receipts, payments and deposits.

"The System/3 provides the necessary general ledger entries in punch card form. Within minutes, we can review the current status of any tenant account, the income and expense position of any owner account, or review the up-to-date profit and loss situation for any property."

To accomplish all this, Weaver, with the help of a professional programmer and data processing supervisor, has developed a comprehensive set of tenant master records and a set of computer control programs. Each tenant master file is created at the time a new tenant signs the lease agreement, and is updated to reflect all subsequent tenant transactions.

Identification Link

The master file record provides an identification link between the tenant and property owner. The first three digits of a seven-digit record control code identify the owner, and the last four digits identify the tenant. The file record includes the tenant's name and property address, the rental and security deposit, late charges, the lease expiration date, and individual gas, electric and water utility information and for retail tenants, gross sales percentages for calculation of overages due.

The Small Systems User

The record also accommodates the recent rent stabilization rulings of the Federal Government, in that it includes the base rents and the maximum allowable rents, as well as the current rental amount.

"The entire computer system is expressly designed to better serve our clients – the property owners – and to safeguard their interests," Weaver explained. "The outstanding contribution of the system is the management reporting which the computer provides to the owners. They not only get complete, reliable and meaningful information about their property, they receive it in a form that enables them to evaluate their real estate investment performance in overview, as well as in detail, on a current and cumulative basis."

The "Property Management Report," for example, gives the owner current month and year-to-date receipts and expense totals, the monthly proceeds and the balance forward.

Another computer-produced document sent to the owners each month is a profit and loss statement that derives from the property general ledger records, and also incorporates assets and liabilities.

Tenant accounting and owner reporting are the biggest applications but a third major function is land contract accounting. Weaver-Rosca currently has approximately 350 clients who purchase property on contract.

Mortgage transaction processing is also handled by the computer. It involves mortgages negotiated by Weaver-Rosca and the parent company Brunswick Realty, and for owner clients. The master file record provides the property address, mortgage amount, interest rate, monthly payment and deposit into escrow.

The system relates the mortgage to the bank loan number. The computer further calculates principal, interest and escrow payment amounts, writes the checks and, for owners, amortizes the mortgage.

Other functions handled by the system include accounts payable, receivables, payroll, including all tax reports and general ledger accounting, as well as financial reporting. At present, Weaver and her staff are also developing a critical path analysis program to help control budgeted versus actual costs on new construction projects.

Weaver-Rosca plans to upgrade its computer to a magnetic disk storage System/3 which will provide direct access to any master file record plus larger core storage for more advanced programs.

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Datapoint delivers at Executive Data

Executive Data Systems, Inc., Cedar Rapids, Iowa, is a national leader in supplying computer utility services to the health care field. Currently over 100 hospitals and health centers are subscribers to Executive Data's computing services for applications in general administration, patient accounting, medical diagnosis, laboratory analysis and many other critical areas. The great majority of Executive Data subscribers are now utilizing Datapoint 2200 systems and printers as on-site terminals for data entry, for data communications (to Executive Data computers in Cedar Rapids) and increasingly for on-site data processing.

Why Datapoint? "The Datapoint 2200 meets the needs of our hospital and health center clients more fully and more satisfactorily than any other computer system," notes Don Olson, Executive Data president. "Its full programmability and the availability of DATABUS, a high-level programming language, makes it easy to adapt the system to the varying data entry requirements of our clients. On the 2200's video screen we can display the precise format for data to be entered, which, combined with programmed error checks, virtually eliminates input errors. Since the 2200 is as easy to use as a typewriter, there's no need for special operator training as with a keypunch machine. During the day the transmission of data to our central computer occurs automatically, without the need for manual dialup. Similarly, needed management reports are sent out automatically from our central computer during the night to an unattended 2200 printer, ready for management to use the very next morning, when the information is really timely and useful."

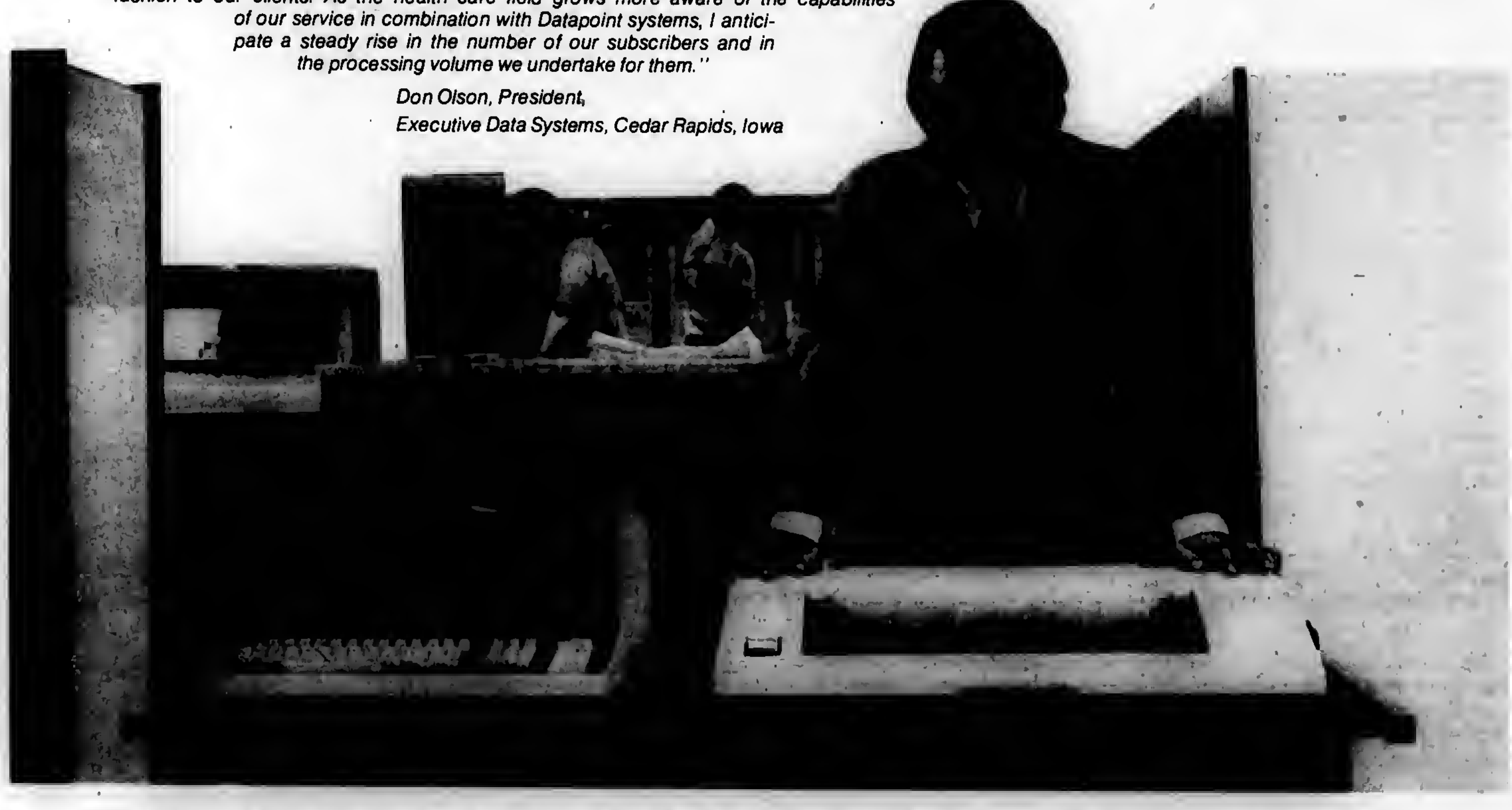
Every hospital and health center has varying needs for computer service, which can range from simple bookkeeping to sophisticated computerized analysis. Executive Data's approach is to provide these services on a modular basis. "Because the 2200 is a fully programmable general computer, it can handle much of the burden of editing and pre-processing of data," said Mr. Olson. "This relieves much of the overall processing load on our large central computer systems. Additionally, as hospital users grow more sophisticated and demand more and varied applications, we expect to see the Datapoint 2200 used more frequently as a supplemental independent processing unit."

The Datapoint 2200 and associated peripherals have delivered the goods for Executive Data Systems and its numerous hospital subscribers in a variety of applications in data entry, data communications and dispersed data processing. Prices on this unique system begin as low as $6,040. For information on how this capability can be put to work in your operation, contact the Datapoint sales office nearest you or write or call: Datapoint Corporation, 9725 Datapoint Drive, San Antonio, Texas 78284.

Datapoint

"The Datapoint 2200 has been a key factor in the continued growth of Executive Data and in our ability to provide the finest computing services in a modular and economic fashion to our clients. As the health care field grows more aware of the capabilities of our service in combination with Datapoint systems, I anticipate a steady rise in the number of our subscribers and in the processing volume we undertake for them."

Don Olson, President,
Executive Data Systems, Cedar Rapids, Iowa



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April 18, 1973

The Computer Caravan/73

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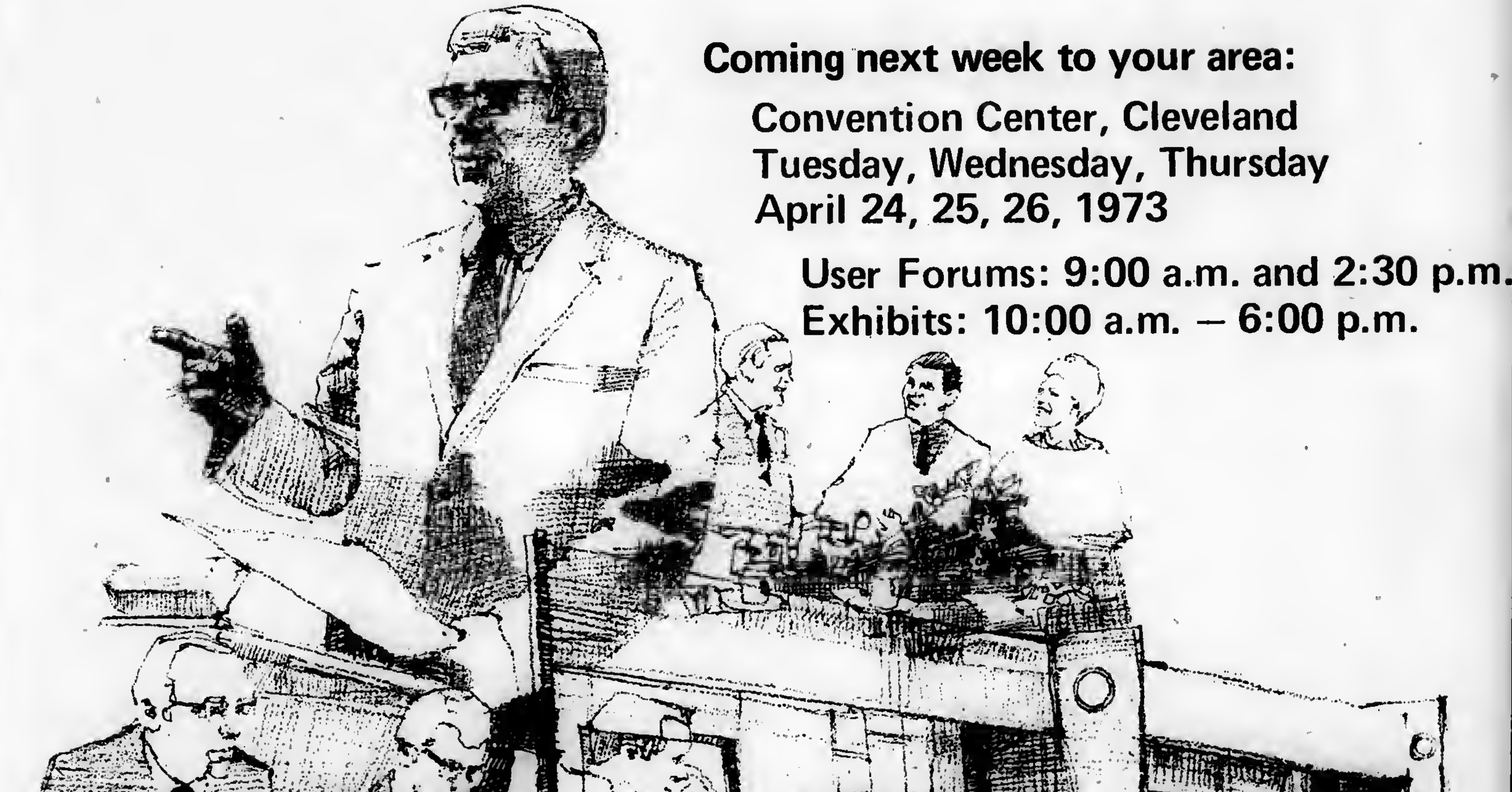

All Attendees Welcome At Afternoon Sessions

Day 1: Hoxie Hits New 'Commo' Lingo

Data Communications jargon is expanding rapidly as technological developments bring new facilities and devices to the markeplace, says consultant Gilbert H. "Gib" Hoxie.

However, he has found that certain often neglected management aspects of data communications planning usually tend to outweigh esoteric technical factors.

Hoxie, a manager in the Informaton Systems Division of Booz, Allen & Hamilton, Inc., addresses the topic of Data Communications Planning on the opening day of the Computer Caravan.

He believes systems planners intending to install or expand data communications applications would be wise to include a "wide range of management considerations" in their analysis.

Answers to the nine questions below may be "key to designing the right system," Hoxie adds.

1. What information systems do we have (need) and why?
2. Which applications require data communications?
3. How well do alternative data communications systems satisfy requirements?
4. What will be the true one-time and operational cost?
5. What will be the true one-time and operations benefits?
6. What will be the impact on users and work-flows?
7. Who are the vendors, and what are they selling?
9. What techniques are most effective in selecting and presenting the best design?

Hoxie attempts to answer these questions during a tutorial on Data Communications Planning, given at 2:30 P.M. on opening day of the Computer Caravan. The open, general session may be attended by people wearning any Computer Caravan badge, I.e. exhibitor, exhibitor-guest, exhibits-only, or Forum program for any day.

Although the presentation will last about an hour, it is anticipated that attendees will have questions for Hoxie.

Beware: Intangible Benefit

Hoxie does not believe in "intangible benefits" of systems, or at least not during the process of cost justification.

"If an analyst can't hang a number, or range of numbers on a 'benefit,' he has no business citing it even as particial justification for a system," he remarks.

"Intangible benefits," which he regards as one of the "major pitfalls for systems planners," only represent "snares and delusions for the individual who must select an alternative, and he is bound to come out on the wrong end of any ensuing conflict," according to Hoxie.

He thus advises that "80% to 90% of intangible benefits can be quantified and user commitments obtained. Those that can't be defined and sized, usually are excluded from the benefits analysis and if they appear in a report at all, are downplayed."

Hoxie's speech is an addition to the Caravan program, in that any Caravan attendee is eligible for admission; it actually sets the stage for the middle-day Forum program, which is devoted to management and operational considerations of data communications.

Last year, three "keynote" speakers toured the country with the Computer Caravan, but the time for these speeches has been given over for extended panel discussions and workshops, a direct result of feedback from the users who attended the 1972 Forum.

The workshops resume after lunch, concluding at 2:30 P.M. At this time, Forum and Exposition attendees may sit in on the open, general sessions on each day. Hoxie's tutorial is given on the first day, a Software Evaluation panel takes place on the middle day and a Small Systems panel is held on closing day.

Day 2: Panel Probes Software Sources

The Software Evaluation panel is one of three "open" sessions that take place during the afternoons of the Computer Caravan.

These sessions may be attended by people wearing any caravan badge, such as exhibitor, guest, exhibits only, etc.

The Sofwtare Evaluation panel is aimed at examining various sources for applications and utility software; paraphrased, it is a "make-or-buy" round-table discussion, and the audience will be invited to take part.

In general, panelists will follow the outline below. If time permits, questions of a broader nature will be entertained.

I. Evaluating the alternatives
- Where do you start
- The main criteria, how to weigh them
- When you have done enough looking?

II. Pricing, measuring techniques (this relates to first topic, but might be more specific as to cost/CPU time/volume of reports, etc.)

(Continued on S/Page 5)

Day 3: Small Systems Described by Users

Small businesses with computers and businesses with small computers are not necessarily identical, but they will be sharing the stage during our Small Systems panel, on the afternoon (2:30) of the final day.

This panel is designed to give a broad overview of the types of systems available, and the problems and opportunities presented by these computers.

In many instances, such systems are chosen by company presidents with little or no DP experience; in other cases, on-line systems may be operated by clerical personnel.

In all cases, it appears small computers are proliferating the business community at an unprecedented rate, and this panel session attempts to take a snapshot of local small-computer usage today.

Again, panelists will be following the outline below, and any questions of a broader nature will be taken, if time permits.

I. Planning
- Discovering the need (growth; new business;

(Continued on S/Page 5)

President's Message

The basic concept of the Computer Caravan is: a national computer conference that travels to you, the computer user.

The fact that the people staffing the exhibit booths are, for the most part, local sales representatives will be appreciated by all those who visit the exhibit. These representatives of DP suppliers will still be here, long after the Caravan has departed.

The idea of tailoring a national conference to the needs of local users is carried to a higher degree by some of the individual exhibitors, who have planned special seminars oriented towards their particular product or service.

Attendees at last year's Caravan said they liked this type of individualized presentation, and more exhibitors have responded by scheduling these seminars.

Whether your main interest is in hardware, software, or services, the leading companies in each sector of the EDP industry are found in our exhibit hall. Both their sales and their technical personnel are prepared for your probing questions on their products, many of which are being introduced on the Caravan, while others are already proven in the field.

Your comments on our program are welcome. Feel free to note your suggestions with *Computerworld* representatives on the exhibit floor, or in the *Computerworld* booth. We are here to serve you; please tell us how we may best accomplish that goal.

Patrick J McGovern

Patrick J. McGovern
President, Computerworld, Inc.

Many Titles Suit DP Conferences

Few generalities can be applied to the Computer Caravan, with one possible exception: computer conferences are many things to many people.

The 1973 edition of *Computerworld's* traveling show is the distillation of user and exhibitor recommendations after our 1972 debut; most people approved of the local concept, since it afforded them an opportunity to speak with users and DP suppliers from their own region.

This has remained unchanged.

Again, local and regional users comprise the panel discussions and will be leading workshops.

Again, local sales and technical representatives will be staffing the booths in the exhibit hall.

The Computer Caravan, then, is a management conference with a program geared to increasing the operational efficiency of computer centers.

It is a business exposition, with the latest in computer hardware, software and services on display.

It is a showroom for exhibitors,

(Continued on S/Page 6)

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If you'd like some idea of how far ahead we've jumped this time, read through the following long (but vitally important!) list of new features:

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☐ Special forms facility allows individual handling for each report calling for special forms.
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☐ Well organized and easy to read input parameter listing
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☐ Redefinition of output lines to allow greater output format flexibility.
☐ 8-character field names for improved data dictionary mnemonics.
☐ New "0" Parameter greatly simplifies certain calculations at total time related to values accumulated at input time.
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☐ Automatic expansion of compressed format data fields to any size desired by the user.
☐ Employs cataloguing feature eliminating need to define logical fields in report parameter cards.
☐ Processes a virtually unlimited number of strings through the data base.
☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
☐ Direct reads can be based on keys submitted by user and/or keys read from a non-RDMS file.
☐ Chaining across files through XREF entries handled automatically by the system.
☐ Handles single file record cross referencing techniques (e.g., Bill of Materials organization).
☐ Includes all features listed under CULPRIT sections.

TOTAL/CULPRIT

☐ Information available from the entire TOTAL record including root and linkage segments.
☐ Employs a cataloguing feature eliminating the need to define logical fields in report parameter cards.
☐ Processes a virtually unlimited number of strings through the data base. Each string may be several files long.
☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
☐ Direct reads can be based on keys submitted by users and/or keys read from a non-TOTAL file.
☐ Linking between files and reading of variable chains handled automatically by the system.
☐ Handles multiple linkages between a master and/or variable file (e.g., Bill of Materials organization).
☐ Access all types of files.
☐ Includes all features listed under CULPRIT section.

*Free Tickets:

pay $5 at the door . . . or . . . if you plan to attend the Cullinane seminar, drop us a note for free ones (while they last) plus an advance brochure on any system listed above. Cullinane seminars will be held from 4 to 5 p.m., second day of each session, immediately after software forum.

Cullinane Corporation
One Boston Place, Boston, Massachusetts 02108. Telephone (617) 742-8656.

Exhibitors Set Special Seminars

The following exhibitors will be sponsoring seminars in the various cities visited by the Caravan. Consult the table below for times and cities. Check with individual exhibitors for exact topics in each city and availability of space.

	Boston	Washington, D.C.	New York	Atlanta	Houston	Anaheim	San Francisco	Kansas City	Chicago	Cleveland
DAY 1										
2:30 p.m.										
Iomec	★	★	★	★	★	★	★	★	★	★
4:00 p.m.										
Sycor	★	★	★	★	★	★	★	★	★	★
DAY 2										
2:30 p.m.										
Iomec	★	★	★	★	★	★	★	★	★	★
Interdata	★	★	★	★	★	★	★			
ICC	★	★	★	★	★	★	★	★	★	★
Varian*		★	★	★		★				★
3:30 p.m.										
Tektronix			★	★				★	★	
Varian*		★	★	★		★		★		★
4:00 p.m.										
Cullinane	★	★	★	★	★	★	★	★	★	★
Infotron	★	★	★	★	★	★	★	★	★	★
4:30 p.m.										
Varian*	★									
DAY 3										
4:00 p.m.										
Western Union Data Services	★ (may run in all cities based on Boston interest)									
BCS				★						

*By invitation only.

Need Minicomputer application data ?

GET IT IN WRITING AT CINCINNATI MILACRON

When you visit the Cincinnati Milacron exhibit at the Computer Caravan, we won't just talk minicomputer capability . . . you'll get it in writing. Application specialists will be there to help you with your specific needs . . . they'll be able to tell you what's needed, how it will work and what it will provide. They'll be backed up by a minicomputer system that will provide component and unit pricing . . . in writing. If you want specific application information, you'll get it at Cincinnati Milacron . . . in writing. Process Controls Division, Cincinnati Milacron, Lebanon, Ohio 45036.

minicomputers
CINCINNATI MILACRON

Caravan Staff

From the several offices of the vast *Computerworld* organization comes the staff that has supported and is now conducting the Computer Caravan.

This staff is composed of former show people, current industry figures and sales experts, editorial people, and the all-important registration and office personnel.

The variety in their backgrounds is too detailed for presentation here, especially since all are full-time computer-conference specialists for late Winter and early Spring 1973.

The hundreds of hours of extra work, weeks and months of travel, and the valuable experience during all this hectic activity both this year and in 1972, are all reflected in a bigger Exposition and a more comprehensive Forum program for Computer Caravan/73.

Here are the people that are making it all possible. A special message from the Publisher and Caravan President is found on page 2. Special acknowledgement goes to Leslie Flanagan, who did all this photography work; not pictured is Bob Rankin, caravan manager, who was on the road during the entire time that this section of the Caravan Supplement was being "put to bed."

Neal Wilder
exhibit selas manager

Dottia Travis
exhibit selas administrator

Ed Bride
forum manager

John Meada
caravan activity coordinator

Leo Bowser
caravan meneger

Edward "Ted" Bloom
registretion director

Tamar Shapiro
asst. registration director

Freni Bleckler
careven secretery

Linde Collins
caraven secretery

Beverly Butters
caravan secretary

Day 2: Panel Probes Software Sources

(Continued from S/Page 2)

III. What-if (recovery techniques)

- How to recover, in various situations. What if the system does not respond to your normal procedures?
- Examining your sources of applications and utilities, in light of expected problems (cost/performance again)

(1) Cost of failures

(2) Expertise (how to retain or keep good software people or suppliers)

(3) What have your colleagues done?

IV. Next stept?

- Your growth, and how it could affect software selection
- Impact of hardware changes on software sources
- Stability of the source (manufacturer, software house, etc.)

1974 COMPUTER CARAVAN SCHEDULE

Atlanta	February 26-28, 1974
Houston	March 5-7, 1974
Anaheim	March 20-22, 1974
San Francisco	March 26-28, 1974
St. Louis	April 3-5, 1974
Chicago	April 9-11, 1974
Cincinnati	April 16-18, 1974
New York	April 23-25, 1974
Boston	April 30–May 2, 1974
Washington, D.C.	May 7-9, 1974

Day 3: Small Systems Described by Users

(Continued from S/Page 2)

costs, etc)

- Vendor proposals (how you evaluated them)
- Procurement

(1) Problems unique to small businesses

(2) Financial peculiarities (contract flexibility, etc)

II. Operation

- Most common problems vs. chief advantages

(1) Who solves what kinds of problems, why?

(2) As a class, how does the equipment work

- New Applications

(1) Who develops, maintains

(2) Upgrades to larger configuration *vs* additional small systems

- Optional items

(1) Independent peripherals and supplies

(2) Independent software

(3) Vendor *vs* in-house training.

III. Review

- "What could we have changed, to make it better?"
- How does a small business look back on a computer procurement?

The SYSTEMS 72 computer, that is. It's programmed to shoot craps with you in our booth at the Computer Caravan, and the stakes are pretty impressive.

Like, 10% OFF THE PURCHASE PRICE OF A SYSTEMS 72 if you can run your winnings up to $1,500. We start you off with $500 "credit."

Just to keep our 72 from getting bored, we'll be running FORTRAN, BASIC, and batch on it at the same time it's shooting craps. That's only typical of the power and versatility of the 72, the first small virtual-memory computer. It combines the advanced problem-solving capabilities of much larger computers with the ease of operation and economy of minicomputers.

The SYSTEMS 72 features:
☐ time-sharing ☐ virtual memory
☐ reentrant FORTRAN/BASIC
☐ multiprogramming ☐ all processors available to users console simultaneously.

So don't crap out. You've got plenty to gain for your company. And nothing to lose. Come on in and BEAT THE SYSTEMS.

If you can't make it to the show, write for our SYSTEMS 72 brochure,
SYSTEMS Engineering Laboratories,
6901 W. Sunrise Boulevard,
Fort Lauderdale, Florida 33313.

*Discount limited to one per company. Void where prohibited by law.

SYSTEMS
ENGINEERING LABORATORIES

Many Titles Suit DP Conferences

(Continued from S/Page 2)

who have invited people who they know might be interested in a certain facet of computer technology, or in certain products.

It is also a learning experience, not only in the regular Forum program, but also because of the special exhibitor seminars, where potential customers can learn about equipment capabilities and selection criteria.

So the Computer Caravan/73 is indeed many things to many people, but we don't have to stop there. Through your valuable feedback, either through Forum evaluation forms or face-to-face contact with us, we can plan the 1974 program to fill a broader spectrum of needs.

Exhibitor Listings

The following is an alphabetical listing of exhibitors in the 1973 Computer Caravan, and a brief description of the products and services to be displayed.

AMERICAN TELEPHONE & TELEGRAPH COMPANY
680 Fifth Avenue
New York, N.Y. 10019
Tel: (212) 393-2101

The visitor to the Computer Caravan/73 can see the highlights of the Bell System's approach to moving data. AT&T will feature the high-speed "dataphone 4800," first in a new family of data sets from the Bell System. The 4800 data set was designed for economical transmission at 4800 b.p.s over basic unconditioned private line facilities.

Also on display will be the Bell System's 85 A-1 Selective Calling System for polling applications. The system is a quiet, efficient way of information movement, generating management advice and systems reports in real time.

***

AMPEX COMPUTER PRODUCTS DIVISION
13031 W. Jefferson Blvd.
Marina del Rey, Calif. 90291
Tel: (213) 831-8933

Complete semiconductor, core, tape and disk system as plug-to-plug replacements for IBM 370 and 360 Computers, Univac 400 and 1100 computers and memories for DEC PDP-10 computers. Features will be the unique Ampex two-in-one TM-34 for 360 and 370 computers – two 3420 replacement tape drives in one cabinet that reduces space requirements by nearly 50%. The Ampex DS-330 disk subsystem, a plug-interchangeable replacement for either the 3330 or 3333.

Information will also be available on the complete line of Ampex mainframe memories for IBM 370/360, Univac, and DEC computers.

***

ANDERSON JACOBSON, INC.
1065 Morse Avenue
Sunnyvale, Calif. 94086
Tel: (408) 734-4030

Since its beginning in early 1967 as a manufacturer of one of the first acoustic data couplers, Anderson Jacobson, Inc. has continued to develop products for the data communications and computer terminals markets. At the present time the data communications products include a variety of 150 BAUD, 300 BAUD, 450 BAUD modems and acoustic couplers as well as a 1200 BAUD which is believed to be the only one of its kind in production today. These modems and couplers are available as stand alone units, as building blocks for a multiple modem system or as basic units for OEM applications.

The computer terminal line grew out of an early product wherein an acoustic coupler was designed to become an integral part of a teletype machine. This type of terminal with certain improvements and modifications is still in production today. In addition, an auto-answer version is the AJ841 which is based on a proprietary design that utilizes the heavy duty IBM Selectric mechanism as a printer. The third basic product of this line is a new model, the AJ630 which is a 30 character per second, non-impact printer terminal.

Anderson Jacobson maintains sales and service offices in principle cities throughout the country.

***

AUERBACH PUBLISHERS INC.
121 North Broad Street
Philadelphia, Pa. 19107
Tel: (215) 491-8212

AUERBACH Publishers is introducing its new DATA PROCESSING MANUAL during the Caravan with a special pre-publication subscription offer. This new service provides practical advice, techniques, checklists and other aids for helping DP managers solve their daily operating and managing problems. It comes in portfolio format for easy filing and reference. Also on display is the complete line of AUERBACH Computer Technology Reports, the encyclopedic standard reference for the EDP industry. These services provide all the facts, prices, performance data, configurations and technology background analysts need to make meaningful evaluations and selections of euqipment or services. Professional reference books in the fields of computer

Ampex gives you more than you asked for... again

Ampex' newest space saver...the 3420-compatible two-in-one tape subsystem for 360 and 370 computers

The biggest news since Ampex pioneered tape recording is the new two-in-one configuration for the Ampex TC-38/TM-34 tape subsystem. Now you can reduce the amount of space for tape drives and controllers in your DP center by nearly 50% . . . or double the number of drives without allocating more space. You can get two high performance 3420-compatible tape drives with data rates to 200 KB, in a single cabinet only a little larger than one individually mounted tape drive. It's such a logical idea, it's amazing no one thought of it before.

But space reduction is only the beginning. The auto-thread on the TM-34 now is equipped with an exclusive "halo of air" that vastly improves threading without the reel-surround cartridge. The tape will literally thread itself from any position. Furthermore, the TM-34 has an automatic reel latch that forever eliminates manually operated locking levers or buttons. And, of course, this drive has a radial interface for operation with either the Ampex TC-38 or the IBM 3803 controller.

Format configurations include any combination of 9-track, single or dual density, and 7-track with data rates from 60 to 200 KB.

If you want extra value with every peripheral product, call your Ampex Computer Specialist today. He can solve your space and budget problems with disk drives and memory enhancements, too.

AMPEX

AMPEX COMPUTER PRODUCTS DIVISION
13031 West Jefferson Boulevard
Marina dal Ray, Ca 90291, (213) 821-8933

People who really know computer tape know BASF Endura.

Airlines people. University professors. Insurance people. Engineers. International bankers. They're all buying BASF/Endura computer tape.

Frankly this new product has gained incredible acceptance.

We knew the world was ready for a tape that could meet future 3200/6400FCI expectations as well as today's…and Endura's success has proved we were right.

Of course everybody has their own reasons for buying Endura. Some like its durability. Others find it puts less wear and tear on their tape heads. Others are impressed with Endura's remarkably error-free performance — especially when they see the long term price savings.

All over the country, Endura's gaining acceptance with people who really *know* computer technology.

If you haven't already tried it, your BASF representative can give you some good reasons why you should. Talk to him. And get all the facts on our full line of magnetic media products.

BASF SYSTEMS
Division of BASF Wyandotte Corporation
Crosby Dr, Bedford, MA 01730.

BASF for people who really know.

science, data processing and management science are also on display and can be examined at your leisure.

***

BASF SYSTEMS
Crosby Drive
Bedford, Mass. 01730
Tel: (617) 271-4000

BASF Systems, the world's leading media supplier, will display its complete line of computer tapes, including the new BASF/endura, and the premium BASF/2000 A.D., as well as its full line of disk packs.

BASF's 2000 A.D. uses a new 'Hotter' oxide and a new thinner, harder coating for those applications requiring premium quality which exceeds industry standards.

BASF/endura offers computer users optimum prize/performance at low initial cost. Both tapes meet not only today's transport requirements, but future 3200 bpi – 6400 FCI expectations as well.

BASF disk packs are fully compatible with most major computer equipment.

On display will be the new 1236 (3336 compatible), the 1112 (200 tracks per inch 2316), the 'FLOPPY DISK,' and a full line of compatible disk packs.

***

BOEING COMPUTER SERVICES, INC.
P. O. Box 708
Dover, N.J. 07801
Tel: (201) 361-2121

BCS offers comprehensive support with product lines that include computer time, programming, consulting, training, data base services; applications that include general business and financial systems, scientific and engineering techniques, management and computer operating systems.

BCS operates from 24 sales offices located throughout the United States. Data Centers are maintained at Seattle, Philadelphia, Wichita, Huntsville and Washington, D.C. with over $100,000,000 worth of equipment on order to provide maximum computer flexibility.

***

CAMBRIDGE MEMORIES, INC.
969 Virginia Road
Concord, Mass. 01742
Tel: (617) 259-9880

Cambridge Memories, with headquarters in Concord, Mass. and plants in Newton, Mass. and Tijuana, Mexico is a full-line supplier of memory systems used as add-on or replacement main memories for IBM systems 360 Models 22, 30, 40, 50 and 65 as well as System 370 Models 155 and 165 computers and numerous minicomputers such as Digital Equipment's PDP-11 line and the Varian 620/i. It also manufacturers ferrite core, semi-conductor and moving magnetic domain (DOT) memory systems for use in computer processors, peripheral equipment and terminal devices.

CENTRONICS DATA COMPUTER CORPORATION
One Wall Street
Hudson, N.H. 03051
Tel: (603) 883-0111

The popular Centronics dot matrix serial impact printers feature speeds of 100 to 330 characters per second and 60 to 200 lines per minute. The recently introduced 80 column Model 306 printer, priced at $1,995, is one of the highlighted products. The low cost Centronics Model 401 CRT terminal, priced at $1,495, allows keyboard controlled data entry, editing and communications capabilities for system on-line and off-line operations. A wide variety of popular communications and computer interfaces are available to meet most system requirements.

***

CIG COMPUTER PRODUCTS, INC.
1351 Washington Blvd.
Stamford, Conn. 06902
Tel: (203) 359-2100

CIG Computer Products, Inc. markets and services computer products and systems throughout the world.

CIG 370 Package Leasing
- Flexibility
- Savings up to 60%
- Graduated growth with early terminal options CIG-Data Recall

Mark II Memory
- Four component design
- Failsafe reliability
- IBM 370 Memory (Virtual Storage)
- IBM 360 (all models)
- UNIVAC CIG I/O Channels
- 360/370 Block Multiplexer Channel
- 360/370 Selector Channels
- 360/370 Multiplexer Channel

CIG Disk Subsystems CIG Tape Subsystems CIG/EDOS (Extended Disk Operating System)

***

CINCINNATI MILACRON, PROCESS CONTROLS DIVISION
Lebanon, Ohio 45036
Tel: (513) 494-5486

Cincinnati Milacron, manufacturer of reliable general-purpose minicomputers, wants you to "get it in writing." Tell us your applications and we will produce a proposal within minutes.

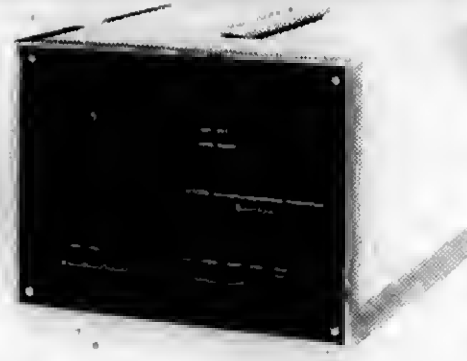
A CIP/2200 minicomputer based system displays all the relevant information on a CRT. You select the components needed, and the CIP minicomputer system automatically produces your proposal. See this unique system in operation and get full details on the economy and reliability of minicomputers from Cincinnati Milacron.

***

COMPUTER DEVICES, INC.
9 Ray Avenue
Burlington, Mass. 01803
Tel: (617) 273-1550

Computer Devices, Inc., a TechVan Corporate Partner, manufactures the TELETERM family of low-cost time-sharing terminals and printers.

TECHTRAN



#1 in reliable High Speed Cassette Communications Terminals!

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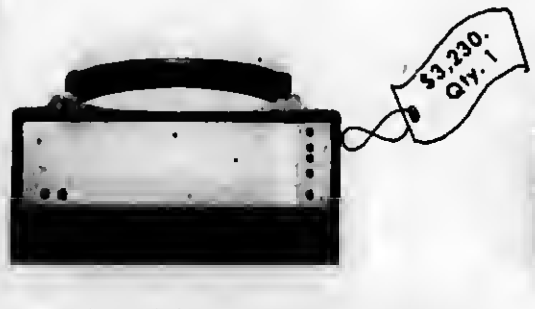
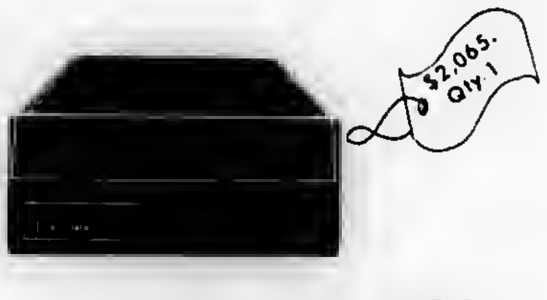
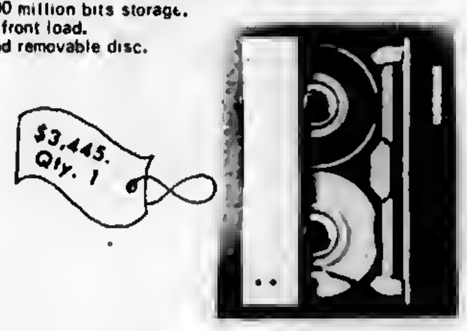
Peripheral Shopping Center



MOVING HEAD DISC
(Series DPX)
Up to 100 million bits storage.
Top and front load.
Fixed and removable disc.



FIXED HEAD DISC
(Series DX)
Up to 16 million bits storage.
Non-contact heads.
Plug-in storage module.



TAPE TRANSPORT
(Series 600)
25 through 75 ips in same package.
200, 556, 800, 1600 cpi and combinations.
Plug compatible with Pertec, Wang, Ampex.

SHOP ANYWHERE
BUT
BUY PER DATA

perdata

102 New South Road • Hicksville, N.Y. 11801 • (516) 938-2851 • TWX 510/221-1881

All TELETERMS are rugged and dependable, utilizing a thermal (non-impact) printing technique for printing. Weighing only 22 pounds and fitting under an airline seat, the CDI 1030 TELETERM is being shown at the Computer Caravan in three exciting useful, NEW models:

CDI 1030 APL – the first portable terminal for the APL user. Available in ASCII code or EBCD as a direct replacement for the popular IBM 2741 APL device.

CDI 1030/MULTICS – the first portable with a MULTICS keyboard.

CDI 1030/ACT – for a time-sharing network. Communicates with other 1030's, TTY or time-sharing computers directly.

***

COMPUTER TRANSCEIVER SYSTEM INC.
66 Midland Avenue
Paramus, N.J. 07652
Tel: (201) 261-2800

Manufacturers of EXECUPORT® high speed data terminals for remote data collection & Transmission. CTSI will demonstrate their portable, quiet 310 series; the new model 1200 with speeds to 120 CPS; the new model 625 Paper Tape Punch & Reader; and the new 420 magnetic tape memory unit for off-line collection/storage/transmission of data through cassette recording. The equipment is characterized by extreme reliability: MTBF = less than one service call per year.

***

CULLINANE CORPORATION
One Boston Place
Boston, Mass. 02108
Tel: (617) 742-8656

Cullinane Corporation will feature at The Computer Caravan its proprietary software products including those for use with data base management systems. These products are CULPRIT, IMS/CULPRIT, TOTAL/CULPRIT, RDMS/CULPRIT and user department versions including EDP-AUDITOR, PERSONNEL-EDP-REPORTER, MARKET-EDP-ANALYZER, PORTFOLIO-EDP-REPORTER and PAYOUT. In addition, a seminar on the EDP-AUDITOR/CULPRIT Systems will be held from 4 to 5 PM on the second day of each show. Participants in the seminars will be able to attend the Computer Caravan free of charge as guests of the Cullinane Corporation.

Those wishing additional information may contact the Cullinane Corporation at its booth at The Computer Caravan or calling (617) 742-8656.

***

DATA DISC, INC.
686 W. Maude Avenue
Sunnyvale, Calif. 94086
(408) 732-7330

Data Disc, Inc. will exhibit its ANAGRAPH Display System. IBM 360/370 users will see an operational system which not only offers IBM 2260 emulation but also provides truly versatile graphic display capability. OEM's will be able to see Data Disc products at work in an operating system.

ANAGRAPH provides up to 32 users with low cost TV terminals. Image storage and refresh is independent of the CPU. ANAGRAPH employs a minicomputer, TV terminals, keyboards, a Data Disc head per track disc memory, a Data Disc graphic display system and a Bright Industries IBM compatible magnetic tape drive to provide a cost effective system with grow power!

***

DATA GENERAL CORPORATION
Route 9
Southboro, Mass. 01772
Tel: (617) 485-9100

Minicomputers, peripherals, and software. (Full listing on Page S/16.)

DATAPRO RESEARCH CORP.
One Corporate Center
Route 38
Moorestown, N.J. 08057
Tel: (609) 234-4300

Datapro Research Corporation is displaying DATAPRO 70, the most widely used data processing reference service in the world. DATAPRO 70 is unique among reference services in that it provides monthly updated product reports on all important EDP hardware and software products – in one convenient three-volume set. DATAPRO 70 provides fast reports on new products to keep you up to date, plus in-depth product analyses to help you in planning EDP systems and selecting equipment. The DATAPRO 70 service also includes personalized consulting by telephone, and NEWSCOM, a monthly newsletter on significant product trends and developments.

DATA PRODUCTS CORPORATION
6219 DeSoto Avenue
Woodland Hills, Calif 91304
Tel: (213) 887-8000

LINE PRINTERS

– Medium to high speed impact printers: for OEM systems ranging from low cost minicomputers and terminals to high speed EDP systems.

– Satellite Printers: for economical off line printing. CORE MEMORY PRODUCTS.

– Memory Systems: a complete line for applications ranging from mainframe to bulk storage in commercial and military systems. Also, plug compatible replacement memories.

– Stacks: customized to your needs.

– Cores: sizes from 14- to 30-mil.
COMPUTERIZED DISTRIBUTION

If you have any questions about data communication...

Don't ask me!

Bring your questions to the Computer Caravan and ask these fellows in the ICC booth.

Matt Kenny
V P-Sales

Jon Blasdell
National Accts Sales Mgr

John Roush
Central Reg Accts Executive

Paul Copersmet
Sales Representative

Smiley Hinton
Central Reg Sales Mgr

Quentin Nesbitt
Sales Representative

Dave Daubenmire
Sales Representative

ICC

International Communications Corporation
7620 N.W. 36th Avenue, Miami, Florida 33147
Telephone 305 + 691-1220 305 + 836-4550
In Europe: RACAL-MILGO LIMITED Reading, Berks, England

a milgo company

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'MANAGEMENT SYSTEMS

– CODONS's: dedicated system that slashes distribution cost COMMUNICATIONS

– DataPak-Multiplexing Systems: for reducing data transmission costs.

– DETECT test set, for quickly locating network failures.

***

DECISION
5601 College Avenue
Oakland, Calif. 94618
Tel: (415) 654-8626

Decision will be showing three newly announced products and systems: the Data General NOVA compatible line of peripheral controllers, systems, a new real-time operating system, and innovative Optical Page Reader and DECISION's Optical Data Entry System.

The Model 3170 controller plugs into the NOVA line providing a minimum of 11.6 megabytes of storage from a Diablo, Caelus or Wangco 5440 top loading cartridge disk drive. Another featured peripheral is the Model 3180 phase encoded 1600 bpi tape drive controller.

A key product introduction is the DINOS family of NOVA operating systems. DINOS I, II and III are high performance, low-cost and more useful answers to Data General's RDOS.

Decision's Model OMR 6500 Optical Reader involves a new concept which scans a fixed page in contrast to the conventional approach of moving the page across the scanning device. The result is greater throughput with minimum opportunity for error. The OMR 6500 has many options, broad flexibility of input data forms and inherent design simplicity that maximizes ease of maintenance.

Decision's Optical Data Entry System evolves around the Model OMR 6500 and provides users with the first proven computer base Optical Data Entry System.

***

DELTA DATA SYSTEMS CORPORATION
Woodhaven Industrial Park
Cornwell Heights, Pa. 19020
Tel: (215) 639-9400

DELTA will exhibit a typical video display terminal system which includes a terminal with special function keyboard, a cassete recorder, and a line printer. The company will also show its DELTA 5000 video display terminal and Multi-Term programmable terminal multiplexer. These and other DELTA products offer unique features such as special character generators, upper/lower case, PAGING, built-in interfaces for computer/terminal compatibility, 3000-character memory, and others, all designed to solve difficult terminal system problems.

***

EASTMAN KODAK COMPANY
Business Systems Markets Division
343 State Street
Rochester, N.Y. 14650
Tel: (716) 724-4745

Eastman Kodak will show how KODAK KOM Microfilmers contribute to Computer Output Management. Various pieces of microfilm retrieval hardware, including the KODAK EKTALITE Reader, will be featured. Microfilm systems specialists will be available to discuss your computer output requirements and to show how computer output microfilm can provide added output flexibility to your DP shop.

***

ELECTRONIC MEMORIES & MAGNETICS
12621 Chardon
Hawthorne, Calif. 90250
Tel: (213) 644-9881

EMM MICROMEMORY Processor Storage Systems

Interfaces with System/360 and System/370 computers. Storage capacity: 16,384 to 3,145,728 bytes. Cycle time: 750 nanoseconds to 2.5 microseconds. Large card design for easy maintenance. Permits model and capacity changes in the field. Internal power module protects stored data in case of power failure.

CAELUS DISK MEDIA

CMCX DISK PACK for System/370.

CMIII DISK CARTRIDGE for System/3

CMI DISK CARTRIDGE for new low cost systems

PGI 844 UNIVERSAL CONTROLLER AND DISK SYSTEM

Interfaces with System/360 and System/370 computers. Handles intermixed track densities and variety of I/O devices. Controller MTBF of 10,000 hours. 10% as large as 2314 controller. Interchangeable plug-in cards simplify maintenance. Test mode option permits off-line media verification.

***

ENTREX, INC.
168 Middlesex Tpke.
Burlington, Mass. 01803
Tel: (617) 273-0480

ENTREX, INC. the leading manufacturer of Key-to-Disk data entry equipment including a preview of new, improved software. ENTREX will demonstrate the system's extensive editing capabilities and validity checks, including crossfooting and subtotaling.

A highlight of the ENTREX Exhibit is the introduction of the new System 280, a low cost key-to-disk

13 reasons why you should go to the Computer Caravan.

New high speed reader — first 1,000 cps reader at less than $1,000

New iodisc Series 3000 top loading disc drive — 200 tracks/inch using IBM type 5440 cartridge. 60 msec average access time and 96 million bit capacity. Light weight and small enough to easily fit 24 inch deep standard rack.

New Portable Numeric Data Entry System for inventory accounting, order entry, stock replenishment and financial transactions — completely self contained with magnetic cartridge data storage.

New punch/reader combination with speeds up to 70 cps punch and 400 cps read. Easy loading and chad removal with no need to slide unit out from panel.

New iodisc Series One includes fixed and removable disc for combination of inexpensive removable media system with mass storage add on capability.

New line printer — varied font sets and multi font buffer automatically adjust to speeds of 142, 202, 256 and 526 lines per minute. Highest quality printing on 6 part or more [illegible] forms.

New low cost reader — 150 cps asynchronous. Lensless optical system. Single moving part.

New reader/handler combination — field proven 2540 in one integrated unit with [illegible] controlled handler. [illegible] has been eliminated.

New plug-in Controller for low cost Series Ten magnetic tape transport [illegible]

[illegible]

New Series Three Controller card mounted [illegible]

[illegible]

New medium speed reader — [illegible] synchronous. Lensless optical system.

The new iomates. See them all in

Anaheim-Mar. 27-29. San Francisco-Apr. 3-5.
Kansas City-Apr. 11-13. Chicago-Apr. 17-19. Cleveland-Apr. 24-26.

Our systems are going to town.

It's time for another dynamic Caravan showing. This year, we're featuring a multi-terminal, on-line data entry system in a multi-task environment. The extremely flexible, 630 nsec, multi-bus V 73 is on your track. Commanding an order entry program running under our VORTEX operating executive with print-out in hard copy on our super-versatile STATOS 31® printer/plotter. And just about every bell and whistle of modern technology. A total systems capability that solves a broad range of complex systems applications problems. Faster. And with more efficiency and flexibility than anything else you'll see around.

V73 with VORTEX

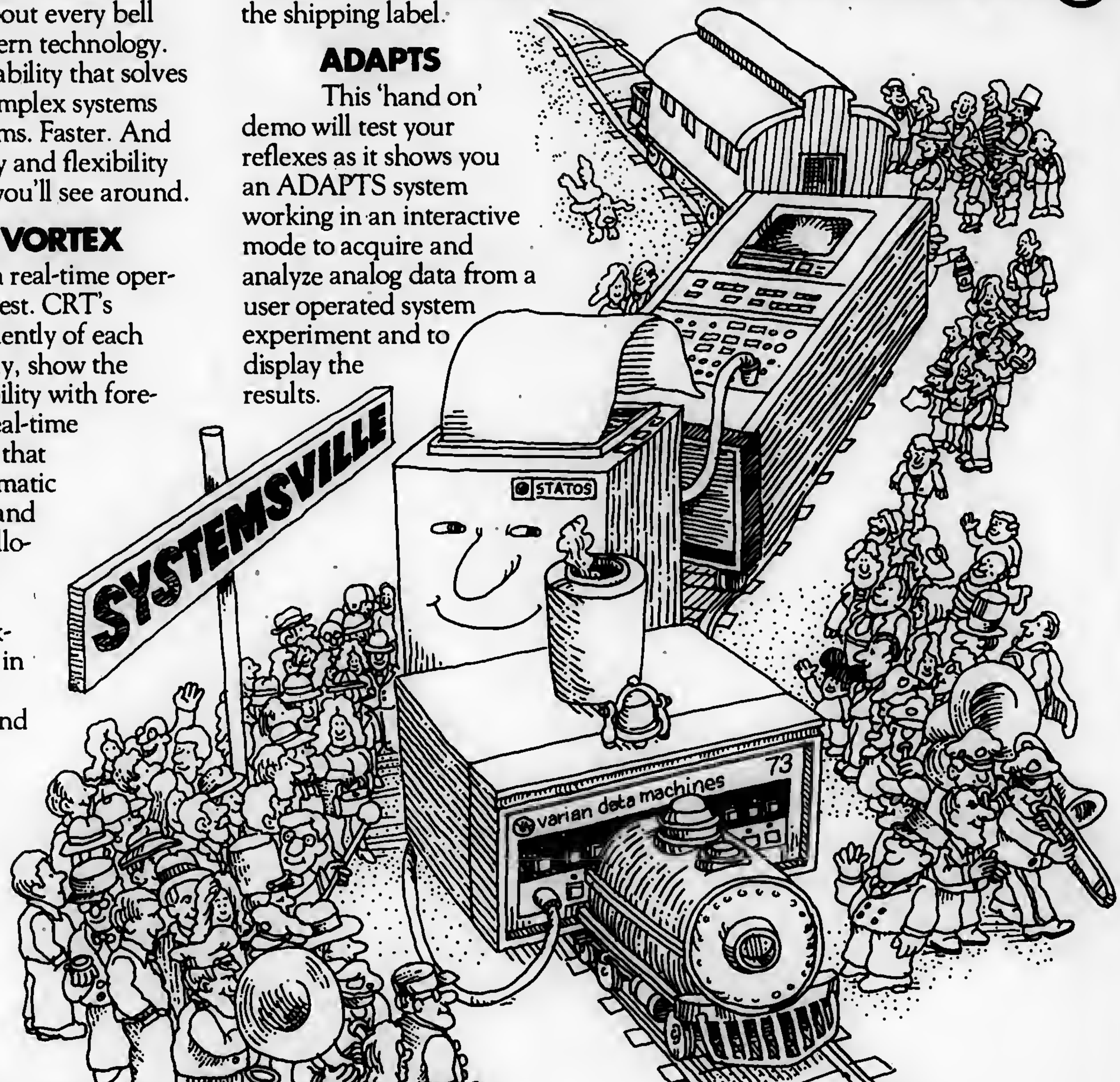
You'll view a real-time operating system at its best. CRT's operating independently of each other simultaneously, show the multi-tasking capability with foreground tasks in a real-time environment. Note that VORTEX has automatic checkpoint/restart and dynamic memory allocation for most efficient usage. After you've seen the flexibility of VORTEX in action and our new V73 doing its fast and powerful stuff, you'll wonder why it doesn't cost more. Especially when you consider its multiple path interfacing between processors and memories and I/O's.

STATOS

Here's where you'll get your hands on the results of your order entry program. You'll see the immediate output from two or more tasks—each of which outputs data direct to the STATOS 31. Fast. A capability of printing upper and lower case characters at up to 1,000 lines per minute. With definition that really pops right out at you. Without degrading the performance of the overall system. Let your imagination run wild. Enter any order you can think of in any quantity for up to ten different items. When you finish placing your order, you'll see an instant print-out on the STATOS 31 printer/plotter—complete even to the shipping label.

ADAPTS

This 'hand on' demo will test your reflexes as it shows you an ADAPTS system working in an interactive mode to acquire and analyze analog data from a user operated system experiment and to display the results.



Bells, lights and buzzers will test your reflexes and stimulate your thinking about our systems capabilities.

Get into our system. Go to town with us.

Varian Data Machines,
2722 Michelson Drive, Irvine,
California 92664 (714) 833-2400

varian data machines

system for the user of less than ten keypunches. System 280 offers most of the features of the larger System 480, plus a unique communications option.

***

GENERAL COMPUTER SYSTEMS, INC.
P.O. Box 6251
Dallas, Texas 75222
Tel: (214) 242-8411

The GCS 2100 multimedia data entry system provides Interactive Data Editing At Source (*IDEAS*®).

Featured with GCS 2100 will be turnaround document processing and work processing.

THREE YPES OF INPUT will be demonstrated: punched cards, the standard 029 keyboard for data entry, and the typewriter keyboard for word processing.

FOUR TYPES OF OUTPUT will also be operational: magnetic tape, teletype, sixty line per minute supervisor station, & high speed printer for letter writing.

The GCS 2100 with 29 million characters of data storage, provides CRT formatting with GCS's unique *PROMPTING*® for both data entry and word processing.

. . . the data editing company with *IDEAS*®.

***

HAZELTINE CORPORATION
Pulaski Road
Greenlawn, N.Y. 11740
Tel: (516) 549-8800

Hazeltine Corporation, Greelawn, New York, will exhibit the Hazeltine 2000 teletype compatible video display terminal, dual magnetic tape cassette unit and hard copy printer. The Hazeltine 2000 is used either as a stand alone remote terminal which can operate at variable speeds up to 9600 BPS, or as an off-line data entry device in conjunction with the magnetic tape cassette unit. Several editing features as well as dual intensity video for protected format display provide a powerful system for data preparation, entry and retrieval.

***

HEWLETT-PACKARD COMPANY
11000 Wolfe Road
Cupertino, Calif. 95014
Tel: (408) 257-7000

Hewlett-Packard's display includes the remarkable new HP-80 shirt-pocket calculator. Brother to the very successful, engineering-oriented HP-35 calculator, the HP-80 is designed to serve the needs of the business and financial community.

A demonstration of low-cost batch processing with HP's thoroughly modern mini is one of the features of the 2120 DOS-M system, while multiprogramming capability is documented in a variety of commercial, scientific and engineering appliations.

OEM product displays include the micro-programmable HP 2100 minicomputer, HP-7900 moving-head discs and 7970 digital magnetic tape units.

***

INCOTERM CORPORATION
6 Strathmore Road
Natick, Mass. 01760
Tel: (617) 655-6100

INCOTERM Corporation is displaying its new low-cost SPD 900 series Remote Batch Terminals. The series 900 offers compatibility with IBM 2780 and 3780, Univac 1004, CDC User 200, 360/20 HASP and ICL 7020.

The key element of the series 900 is the famous INCOTERM 10/20 Stored Program Display and electronic keyboard. Three models offer a choice of line printers from 200 to 400 lines per minute and card readers from 150 to 300 cards per minute.

***

INFOREX, INC.
21 North Avenue
Burlington, Mass. 01803
Tel: (617) 272-6470

INFOREX will exhibit its 1302 Intelligent Key Entry System and highlight its new KeyScan and In-Line Data Entry Systems. The 1302 Intelligent Key Entry System features all keypunch, key-verify, and key-to-tape functions as standard, plus many new key-to-disc capabilities in a system with proven performance and reliability. KeyScan, for the processing of turnaround documents and check remittances, offers a unique combination of OCR, Automatic Check Processing and operator keyboard intervention within an integrated system designed to reduce the number of steps and personnel, thereby lowering the cost per document processed. The new In-Line Data Entry System is designed to meet the users' specific data preparation needs by offering a wide array of editing checks assuring immediate error detection and correction. These range from simple table look-ups to field, record, document and group integrity tests.

***

INFOTRON SYSTEMS CORPORATION
7300 N. Crescent Blvd.
Pennsauken, N.J. 08110
Tel: (609) 665-3864

Infotron Systems Corporation will exhibit their latest time division multiplexer (TDM) and front end equipments, the Timeline 240 and Timeline 450.

The Timeline 240, an ultra reliable TDM, accomodates all available terminal types, codes and speeds – both asynchronous and synchronous – from 37.5 to 4800

If you write application software, we can match it with systems.

Why stop at selling or leasing software systems to end users? Now you can offer them complete minicomputer package systems.

This way they'll be able to get everything they need from you. And you'll be able to get everything you need from us.

Wider choice of peripherals We offer a full line of peripherals to go with our SUE and MAC minicomputers: IBM compatible 5440 disks, CRT/keyboards, printers from 100 cps to 600 lpm, magnetic tapes, cassettes, punched card devices and paper tapes. Anything your customer needs. And when his needs change, so can the system. Easily. Even by factors of 2 or 3.

Complete software tools To make your programming burden lighter we offer a full set of software tools: Fortran, assemblers, utilities, RTOS, sort/merge, DOS and RPG/SUE. That last item is 98% compatible with RPG II by the way.

And we're the only company we know of that unconditionally warrants all our software for a full year.

Maintenance too We'll handle any and all problems your customers might have, promptly and expertly, anywhere. (We recently solved a problem in Bangkok, for instance.) And we'll do it by contract or on call, either way you want it.

We also offer training classes in maintenance as well as in programming.

Add it up So what you'll have is a more salable package to offer an end user. Everything he'll ever want or need in a minicomputer system, right down to the enclosures. (Which we'll put your name on, if you wish.)

Everything ready and working from the minute it's wheeled in his door.

YOUR NAME

And you'll be dealing with an established, reputable company. One that will be there when you need us.

Let's talk. Call the number below, collect, or write us at 6201 E. Randolph Street, Los Angeles, California 90040.

213/722-6810

Lockheed Electronic
Data Products Division

Call us.

Boston 861-1880 • New York metro (201) 947-8107 • Philadelphia 825-2880
Washington (703) 525-3600 • Atlanta 266-0730 • Detroit 577-5037 • Chicago 833-4600
Dallas 231-6163 • Houston 682-2617 • San Francisco (408) 257-3357

baud. Features include critical component redundancy, full system diagnostics, automatic baud rate detection, dynamic overspeed protection.

The Timeline 450 Port Selector extends a computer's traffic handling capability. Front end ports are assigned to communications channels on a hynamic rather than dedicated basis, allowing fewer ports to service more lines. Maximum capacity is 254 lines by 124 ports.

***

INTERDATA, INC.
2 Crescent Place
Oceanport, N.J. 07757
Tel: (201) 229-4040

Interdata will display several members of its New Series of minicomputers. This upward compatible family of processors covers the complete range of the price/performance spectrum. Members of the family include: the Models 70, 74 and 80 for general purpose use and the Models 50 and 55 for Data Communications. Interdata will also display its full range of software Operating Systems: a Real Time Telecommunications Operating System, a Real Time Operating System, a Basic Operating System and a Disc Operating System. Each afternoon during the show, Interdata will present a meaningful seminar on either "Microprogramming," "Data Communications," or "Operating Systems Software."

***

INTERNATIONAL COMMUNICATIONS CORPORATION
A Milgo Company
7620 N.W. 36th Avenue
Miami, Fla. 33147
Tel: (305) 691-1220

ICC/MILGO will display a complete line of data communication products, featuring high-speed modems for data transmission over dial-up phone lines or leased data lines. Modems from ICC operate at data rates from 2400 bits-per-second to 9600 bits-per-second. The ICC display will also include data communication test equipment and accessories. Experienced personnel will be in attendance for consultation.

***

IOMEC INC.
Route 9
Southboro, Mass. 01772
Tel: (617) 481-2500

IOMEC, one of the largest independent OEM suppliers of minicomputer peripherals and data entry terminal equipment announces 13 new product additions at the 1973 Computer Caravan.

The new products include:

– Five brand new paper tape products – featuring the first 1000 cps reader for less than $1000 and the 70 cps punch/400 cps reader combination.

– An entirely new series of disc drives including new mass storage (36 megabits) add-on dsic memory for the Series One "floppy" disc system.

– Plus Model 200 multi-font buffer line printer; varied packages of the IOTAPE Series Three minicartridge deck and the Series Ten large tape transports.

– One of the most advanced portable data entry equipment systems in the market today. The system uses micro-logic circuits to provide an extensive range of features at the lowest price.

***

ITT DATA EQUIPMENT & SYSTEMS DIVISION
East Union Avenue
East Rutherford, N.J. 07073
Tel: (201) 935-3900

The ITT 3501 Asciscope is a low-cost, TTY compatible CRT display terminal complete with keyboard, acoustic coupler, integral modem, buffer, and printer interface – no extra costs. The Asciscope can communicate terminal-to-computer or terminal-to-terminal. It features interfaces for a Data Access Arrangement when using its integral 300 bps modem, for external modems of 1200 or 2400 bits per second, and for printers operating up to 120 characters per second. The Asciscope leases for $65.00 a month, including maintenance. Nationwide installation and service by ITT includes on-the-spot exchange if a leased unit should ever require service.

***

LOCKHEED ELECTRONICS COMPANY, INC.
Data Products Division
6201 E. Randolph St.
Los Angeles, Calif. 90040
Tel: (213) 722-6810

The SUE minicomputer data processing system for small business applications will be demonstrated by the Data Products Division. System flexibility provides for memory expansion to 64K bytes, up to four 5440 type disk drives, high performance printers, magnetic tape, and card equipment. Comparable to IBM System 3/model 6, the CRT oriented SUE system is of particular interest to application software organizations who wish to market a turnkey total package for small business applications. Manufacturer supplied software includes RPG II, a disk operating system, and sort/merge, as well as assemblers and utilities.

Also displayed are memory modules of the MM-365, a replacement memory for the IBM 360 model 65 and up.

***

Penril is not the largest manufacturer of high speed modems in the world.

But we will be.

Penril
Data Communications, Inc.
5520 Randolph Road
Rockville, Maryland 20852
301/881-8151

Regional offices:
Atlanta, Boston, Chicago, Houston, Los Angeles and New York

Penril's 4800B-1 modem pictured above has been selected by the U.S. Internal Revenue Service for use in its nationwide data communications network.

MODULAR COMPUTER SYSTEMS, INC.
1650 West McNab Road
Ft. Lauderdale, Fla. 33309
Tel: (305) 974-1380

The MODCOMP MAX III real-time multiprogramming operating system will be demonstrated. Foreground tasks will be initiated and executed. Assemblies and FORTRAN compilations will be performed as background operations. A MODCOMP II/25 computer with 32K words of 16-bit, 800 nanosecond memory will be used for the demonstrations. System peripherals will consist of disc, card reader, two CRT's, paper tape reader, and keyboard/printer. Analog, digital and communications interfaces will also be displayed.

While at the MODCOMP booth, guests may register to win a MODCOMP II computer with 16K words of memory. This computer will be awarded at the end of the Caravan's ten-city tour.

***

PARADYNE CORPORATION
8550 Ulmerton Road
Largo, Fla.
Tel: (301) 654-0033

Paradyne Corporation will display: The BISYNC-48 super modem featuring the highest throughput available on dial-up lines – plus, guaranteed error-free transmission; our 4800 bps, automatically-equalized M-48 modem with really usable self-test features; the BISYNC Analyzer – the unique test instrument that provides immediate fault isolation in BSC communications links; and the revolutionary remote I/O and computing systems that eliminates conventional communications hardware, terminals, modems and software – Paradyne's astonishing PIX.

Sales and Services offices in Largo, Florida (headquarters); and San Francisco; Los Angeles; Atlanta; Chicago; Boston; Detroit; St. Louis; New York City; and San Antonio.

***

PENRIL DATA COMMUNICATIONS, INC.
5520 Randolph Road
Rockville, Md. 20852
Tel: (301) 881-8151

A complete line of data modems operating from 300 bps to 4800 bps for leased line and DDD data transmission. End user, OEM and custom designed configurations will be displayed. Also, specially designed telephone line test and analyzing equipment will be demonstrated.

PER DATA CORPORATION
102 New South Road
Hicksville, N.Y. 11801
Tel: (516) 938-2851

Digital Tape Transport –

7 or 9 track; read after right or read only, 25 to 75 IPS. 200, 556, 800 & 1600 CPI densities. IBM compatible. Fixed head disk drive fast head per track random access storage. Storage capacities up to 1 million 16 bit words. Average access time - 8.5 ms. Non-contact head loading.

Moving Head Disk Drive – Front load or top load. Storage capacity up to 100 million bits at density of 200 track. Access time – 38 ms.

Controllers & Formatters – for tape transport, moving head disk, fixed head disk and printer. Fully self contained including power supply and cabling.

***

PRIME COMPUTER, INC.
17 Strathmore Road
Natick, Mass. 01760
Tel: (617) 655-6999

The Computer Caravan is PRIME Computer's first major public demonstration of its recently announced PRIME 200 small computer. Featuring a unique (software first) design – all systems software was completely specified before the computer's hardware was designed – the system will be used to demonstrate an extremely powerful disc operating system. PRIME's DOS-200 features extensive file management resources, batch processing system, numerous disc file access discipline, and file system common to all PRIME software.

***

SANDERS DATA SYSTEMS
Daniel Webster Highway
Nashua, N.H. 03068
Tel: (603) 885-4211

Sanders to feature intelligent terminal system with disk during Caravan.

Sanders Data Systems, Inc. will exhibit and demonstrate both their 804 stand alone and 810 cluster display terminal systems using standard software packages for order processing, billing, inventory control, data entry, remote job entry, and other business applications during the Computer Caravan.

The 810 system features a disk memory which can provide up to 5 million bytes of storage, while the 804 system interfaces a tape cassette transport for applications needing smaller storage capabilities. Both systems will be seen in operation with 32 character per second and 200 line per minute printers, and a card reader.

***

SIERRA RESEARCH CORPORATION
47 Middlesex Tpke.
Burlington, Mass. 01803
Tel: (617) 273-0900

Vermont Research

Bits or Bytes for minimum Bucks

Whether it is disc or drum – whether it is head per track or moving head – whether it is digital interface or complete memory system, you should call us at Vermont Research to review your requirements for rotating memories.

Head Per Track
Drums
Series 3000

VRC Model	Million Bits	OEM Quan Price
3002-32	2	$ 3150
3002-64	4	$ 3500
3002-128	8	$ 4620
3016-128	8	$ 4865
3016-256	16	$ 8365
3016-384	24	$11165
3016-512	32	$13265

Moving Head
Disks
Series 5000

VRC Model	Mega Bytes	OEM Quan Price
5016	40	$ 5400
5018	62	$ 6300

Vermont Research Corporation
Precision Park
North Springfield
Vermont 05150
Telephone: 802-886-2256
Telex: 710-363-6533

VRC Inc.
5261 West Imperial Hwy
Los Angeles
California 90045
Telephone: 213-641-7100

Vermont Research Limited
Cleeve Road
Leatherhead
Surrey
Tel: Leatherhead 74758
Telex: 23280

It's time your computer got its hands dirty. Sierra Research Data Systems Division will demonstrate the capabilities of the SDA-770 Data Collection System to collect, inquire, retrieve and display manufacturing data. Typical inventory, material flow and labor distribution control programs will be demonstrated with the Sierra Operating System and FDC (Factory Data Collection) programs. Remote data collection will be demonstrated twice daily via on-line communications between a real-time SDA-701 Remote Terminal and SDA-710 Attendance Station at the Computer Caravan and a Sierra SDA-770 Central Controller at our plant in Boston, Massachusetts.

***

SYCOR, INC.
100 Phoenix Drive
Ann Arbor, Mich. 48104
Tel' (313) 971-0900

Sycor will exhibit its popular Model 340 Intelligent Communications Terminal in two configurations – branch office order entry and remote job entry. The branch office terminal will demonstrate Sycor's unique dual communications feature – low speed (110-300 baud) asynchronous communications compatible with major time sharing systems and high speed (1200-4800 baud) binary synchronous communications. The remote job entry configuration features a 200 lpm printer, a 250 cpm card reader, and is compatible with computers operating under HASP or ASP control. Both configurations are user programmable with Sycor's T.A.L. (Terminal Applications Language).

***

SYSTEMS ENGINEERING LABORATORIES, INC.
6901 West Sunrise Blvd.
Ft. Lauderdale, Fla. 33313
Tel: (305) 587-2900, ext. 544

Systems Engineering Laboratories will display the power and versatility of their SYSTEMS 72 computer. It will be running FORTRAN, BASIC and Batch at the same time it is shooting craps with booth visitors.

- SYSTEMS 72, the first small, virtual-memory computer, combines the advanced problem-solving capabilities of much larger computers with the easy operation and economy of minicomputers.

It features: time-sharing - virtual memory - reentrant FORTRAN/BASIC - multiprogramming - all processors available to users console simultaneously.

- SYSTEMS will also show a film on EDITS (Engineering Documentation Interactive Terminal System), a new system for faster, more economical preparation of engineering drawings.

***

TALLY CORPORATION
8301 South 180th Street
Kent, Washington 98031
Tel: (206) 251-5500

Tally Corporation will feature the Datascribe – the total data entry, communication print out system plus the new Tally line printer – the most cost effective choice for intermediate speed printing applications.

The Datascribe Communicator with its unique data compression feature eliminates transmittal of redundant information which reduces telephone line time up to two-thirds. Transmission speeds range from 80 to 420 records-minute depending on the modem used and the amount of data compression available.

Data on magnetic tape can be printed at up to 200 lines per minute on the new Tally printer. The patterned CROSS-POINT® printing technique results in unpresidented reliability and consistent high quality multiple copy at low cost per page.

TECHTRAN INDUSTRIES, INC.
580 Jefferson Road
Rochester, N.Y. 14623
Tel: (716) 271-7953

Cassette Communications Terminals, EIA RS232 and TTY Compatible featuring single and dual decks, switch selectable speeds to 2400 baud, High Speed Search, FULL Remote Control, Data Edit, Switch Selectable On-line/Off-line operation; models for both ASCII and IBM 2741 operations.

***

TEKTRONIX, INC.
P. O. Box 500
Beaverton, Ore. 97005
Tel: (503) 644-0161

Tektronix shows new APL graphic terminal.

The 4013, Tektronix's new APL terminal will be shown at the Computer Caravan. The company will also show the 4912 Digital Cassette Tape Unit and 4610 Hard Copy Unit. APL provides an extremely flexible language for computer graphics. Tektronix has implemented a group of functions to exploit the advantages of APL as a programming language for graphics.

The 4013 is a member of the 4010 family of computer display terminals. Pricing and delivery information is available at the booth.

***

TELETYPE CORPORATION
5555 Touhy Avenue
Skokie, Ill. 60076
Tel: (312) 982-3134

Teletype Corporation is exhibiting their model 38 wide platen terminal

When you visit
the MODCOMP exhibit, you can register to win a MODCOMP II computer with 16K words of 800 nanosecond memory. Contest rules and entry blanks are available at the MODCOMP booth.

While visiting us, you will see a MODCOMP II system with disc, CRT's and other peripherals operating under our MAX III Real-Time Executive. Real-time tasks will be scheduled, initiated and executed while FORTRAN compilations and assemblies are performed at a checkpointable, lower priority level in the background.

Come see a *real* real-time executive in action at the MODCOMP booth!

Meet the MODCOMP Computer Family

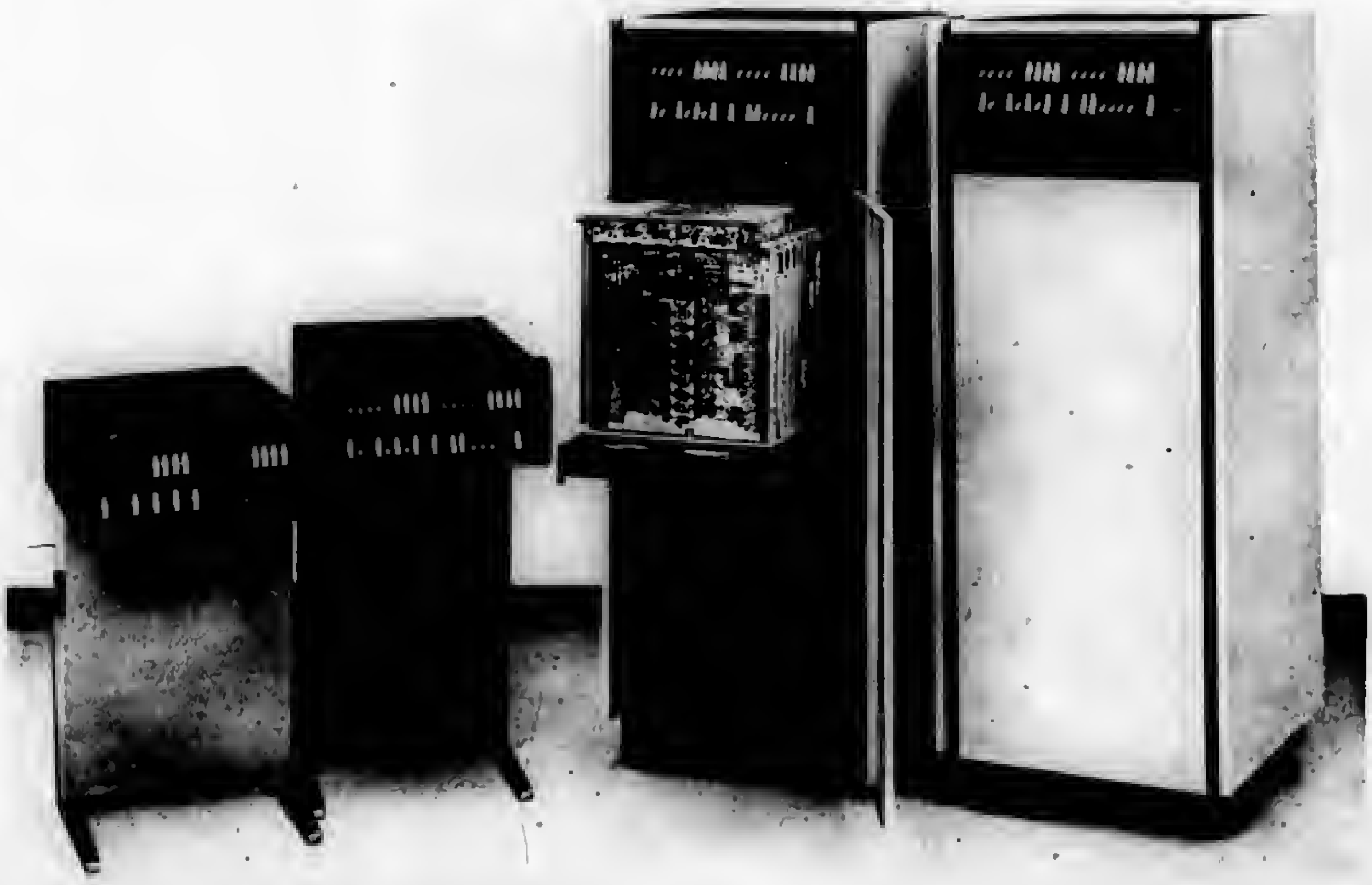
at the Caravan

See one...
Run one...
Buy one...

WIN ONE!

modular computer systems

1650 W. McNab Road
Fort Lauderdale, Florida 33309
Phone (305) 974-1380



and the Teletype® 4210 magnetic tape data terminal featuring the automatic rewind and local print-out option. When combined as a remote-computing terminal arrangement, you transmit and receive on-line at speeds up to 240 characters per second, and then print out data at lower local speeds, all on an unattended basis. The model 38 terminal prints a full 132 character line at 10 characters per inch in upper and lower case, and accepts standard 14-7/8" fan-fold paper. Total price for both terminals is less than $4,000.

***

TEXAS INSTRUMENTS INC.
P. O. Box 1444
Houston, Texas 77001
Tel: (713) 494-5115, Ext. 2165

"Silent 700*" Electronic Data Terminals and minicomputers will be demonstrated and displayed by TI personnel. The new, low-cost "Silent 700" ASR teletypewriter with twin magnetic tape cassettes will be demonstrated, as will the popular Model 725 Portable Data Terminal. Two 16-bit minicomputers will be on display; the Model 960A "Bit-Pusher*" computer, and the Model 980A high-performance general purpose computer. Both computers have fast semiconductor memory and many standard and built-in features for more cost-effective computer applications.

*Trademarks of Texas Instruments Inc.

***

VARIAN DATA MACHINES
2722 Michelson Drive
Irvine, Calif. 92664
Tel: (714) 833-2400

Varian Data Machines demonstrates broad systems capability along with some new products. ADAPTS, Varian's laboratory automation system built around Extended BASIC, will be demonstrated on a 620/L-100 computer. Also on display are VDM's new V73 medium-scale computer and the STATOS 31 electrostatic printer/plotter. These items along with other peripherals, are tied together in one system under control of the VORTEX real-time operating system software. Both laboratory and business-oriented applications will be demonstrated.

***

VERMONT RESEARCH CORPORATION
Precision Park
S. Springfield, Vt. 05150
Tel: (802) 886-2256

The Model 5016 Disk Memory provides 40 megabytes of data storage on one fixed disk, and one removable disk in a top loading 5440 type cartridge (with a 3336 type disk). Technology breakthroughs in proprietary track following and magnetic head design allow conservative track densities of 666 tracks per inch with equally conservative track bit densities of 4100 bits per inch nominal. Access time for this advanced moving head disk is 28 msec average, 60 msec maximum. 3600 RPM operation provides a low 8.33 msec average rotational latency and a fast 6.9 megabit serial data rate. The slide and mounted unit includes an integral DC power supply in its 10 3/8 inches of 19-inch RETMA rack. Also available with the micro-programmed, error-correcting Model 8100 "Intelligent" controller which can serve up to eight disk units.

The Model 3002 Drum Memory is the newest of VRC's dependable head-per-track drums. Data capacity is 9 megabits on 128 tracks. Reliable TBM data recording at 2200 bits per inch allows 4096 16-bit words per track formatted in 128 sectors. 3600 RPM operation gives you true 8.7 average access. A dust-tight enclosure and an automatic head actuation mechanism continue the proven VRC reliability. Mounting slides, DC power systems and distinctive front panel are standard. So is the single connector TTL interface. Available with either the Model 3100 sector-buffered controller or the Model 3400 two-word buffer controller. The Model 3008 is a big brother with up to four times the data capacity.

***

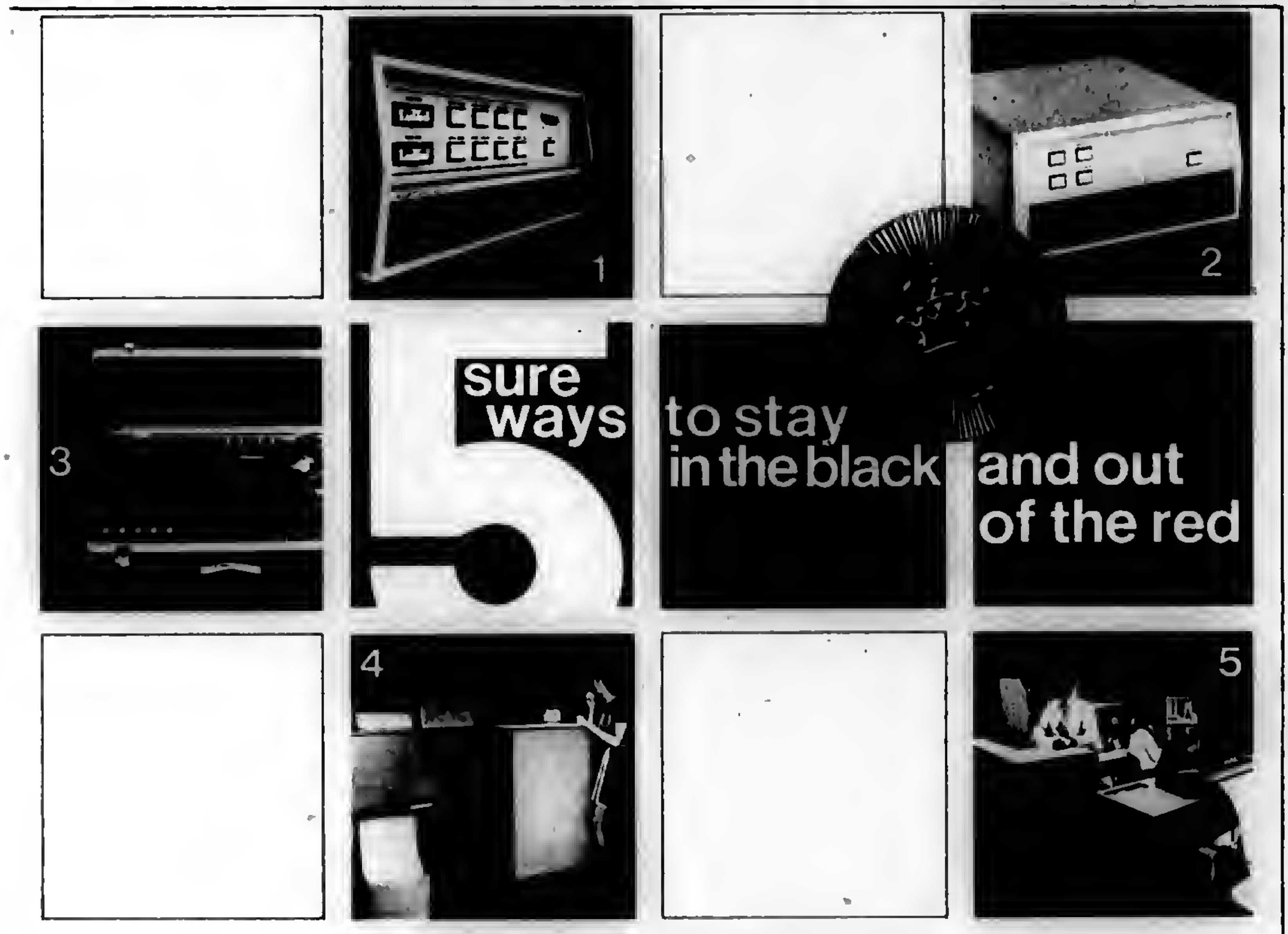
WESTERN UNION DATA SERVICES COMPANY
16 McKee Drive
Mahwah, N.J. 07430
Tel: (201) 529-1170

Western Union Data Services Company will show side by side the 30 character-per-second EDT 300 AST Teleprinter with its paper tape buffer and its EDT 300 Magnetic Send-Receive, a terminal with integrated magnetic tape buffering capability for remote batch and time-share applications.

***

DATA GENERAL CORP.
Route 9
Southboro, Mass. 01772
Tel: (617) 485-9100

Data General Corporation, the number two minicomputer manufacturer in the world, will display its minicomputers, peripherals, and software. A system built around a powerful Nova 800 Jumbo will demonstrate a Real-Time Disc Operating System, Timesharing BASIC, and the new Fortran 5 on a variety of terminal devices. Data General's minicomputers are used for all types of applications, including computation, communications and control/instrumentation.



See how Paradyne can help turn your data communications links into assets instead of liabilities. You can't afford to miss seeing these five proven time and money savers when Computer Caravan '73 comes to your city!

1. The BISYNC-48 super modem featuring the highest throughput available on dial-up lines – plus, guaranteed error-free transmission.
2. Our 4800 bps, automatically equalized M-48 modem with really useable self-test features.
3. The BISYNC Analyzer – the unique test instrument that provides immediate fault isolation in BSC communications links.
4. Our revolutionary remote I/O and computing system that eliminates conventional communications hardware, terminals, modems, and software – Paradyne's astonishing PIX.
5. Service that keeps your links up and running.

Discover for yourself how Paradyne products and service maximize performance and reliability of your data links within a cost/benefit context that makes good business sense.

It's your move now!
Just in case you happen to miss us at the Caravan, contact your local Paradyne office for complete details:

Paradyne Corporation
29350 Southfield Road
Suite 122
Southfield, Mich. 48076
313/559-5360

paradyne

Paradyne Corporation 8550 Ulmerton Road Largo, Florida 33540 813/536-4771

New OEM Products

(While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users.

Further, while much of this equipment is not presently available as such to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.)

CPU Contained in Package

NORTHRIDGE, Calif. – A CPU, contained in a 2-in. package which can be used as a central processor, front-end processor or as a satellite system, is available from Teledyne Systems Co.

Contained in the package are 2K 16-bit words of memory which can be expanded in packaged increments of 4K up to 65K. The unit has a 47 instruction repertoire and a 10 μsec Add execution speed..

The units require no maintenance, Teledyne claimed. If a malfunction does occur (mean time between failures is said to be 25 years) the firm will replace the unit.

Teledyne will provide the operating software in ROM or RAM form. Although the firm has not set an exact price for the units, it will range from $500 to $1,000 in quantities of 100, including the operating system. The company will also incorporate the units into a complete system with costs depending on the configuration.

Teledyne is at 19601 Nordhoff St., 91324.

D/A Converters Have Bit Choice

PHOENIX – The PDAC Series of D/A converters from Phoenix Data, Inc. are modular plug-in units that provide a choice of 12 through 16 binary bits.

All models are available with unipolar or bipolar outputs and consist of an internal precision reference voltage generator, analog switches, precision register network, control logic; output amplifier/driver, and a parallel input holding register on the "R" model.

Prices range from $175 to $575 from 3384 W. Osborn Road, 85017.

Printer for POS Terminals

CHICAGO – A dot matrix impact printing device for point-of-sale systems and small adding machine-size terminals is available from Victor Comptometer Corp.

The IPM 130 prints 110 char./sec in 5x7 or 9x7 fonts. The unit has a capacity of 34 char./line, 6 line/in.

Price of the printing device is $275 with quantity discounts from 3900 N. Rockwell St., 60618.

Tape Reader Handles 300 Char./Sec

HACKENSACK, N.J. – A 300 char./sec paper tape reader is available from Data Peripheral Inc.

The 8-channel Model 4300F reader features a LED "opto-hybrid" system capable of driving 10 unit loads of DTL-TTL logic.

Unit price is $580 and in 100 unit lots it costs $464 from 15 Porter St., 07601.

CRT Has Range of Speeds

LOS ANGELES – The Executive Informer from Car-Mel Electronics, Inc., is a computer CRT display and keyboard unit which operates at speeds ranging from 110 to 9,600 char./sec.

The display contains 16 lines, with 32 char./line, using the full 64-character Ascii upper-case set on a 6-in screen.

Unit price is $2,050, dropping to $1,200 in 100 lots from 5794 Venice Blvd., 90019.

Converter for Data Acquisition

LANSDALE, Pa. – The Model IAD-1308 A/D Converter System from Inter-Computer Electronics, Inc. is designed for applications in data acquisitions systems.

With a 1 nsec aperture time, the unit converts analog signals to an 8-bit digital word at rates up to 1.5MHz.

Univac Printer Has Swing-Out Carriage, Removable Cartridge

BLUE BELL, Pa. – Univac has introduced a printer system for its 1100 Series and 9700 CPUs that has an easily-removable print cartridge.

Called the 0770. the printer is available in three speeds of 800-, 1,400-, or 2,000 line/min. The printer includes a swing-out print carriage that houses the removable cartridge.

The characters (up to 384) are contained on a metal band. Seventeen standard cartridges are available with fonts that include Ascii, OCR-A, OCR-B and others.

Each character set band contains a machine-readable cartridge code number that allows the program to verify that the proper font is installed on the printer.

The top cover of the machine is raised under program control whenever an out-of-forms, or similar condition requiring operator intervention, occurs. The printer handles 132 print positions but a special feature allows up to 160 positions for two-up or three-up printing.

Univac 0770 Series printers feature removable print cartridge.

The 800 line/min model costs $43,370; the 1,400 line/min unit is priced at $51,875; and the 2,000 line/min model is $73,455. Corresponding rental rates are $1,225/mo; $1,525/mo; and $2,120/mo. Print cartridges cost $400 or $20/mo.

First deliveries for the 1106, 1108 and 1110 are scheduled for September. The printer will be available on the 9700 in the fourth quarter of this year.

Unit Photographs 40,000 Page/Day

VAN NUYS, Calif. – Documate II, an automatic microfilming system capable of photographing 30,000 to 40,000 pages a day, is available from Terminal Data Corp.

Able to copy one or both sides of a document, the $50,000 Documate II offers standard and special 82.5mm or 105mm microfiche and 16mm, 35mm or 70mm multi-imaging or linear formats.

Page sizes from 8.5 in. by 11 in. to 11 in. by 17 in. can be automatically intermixed, and documents are automatically transported, positioned and restacked via a high-speed belt and vacuum hold-down system, which gives resolution-reduction ratios from 16X to 48X.

Operators may hand-feed or stack-feed documents, while automatic exposure control allows various colored stock to be intermixed and photographed without operator-intervention, the firm said.

The firm is at 16130 Stagg St., 91406.

Want more tape-storage capacity with your present canisters and library?
Here's our angle.

Four degrees.

That's Tiltshelf's angle of incline. Tiltshelf stores tapes in tandem, two deep, and our little 4° forward angle allows the second tape in each slot to roll quickly into a Ready position when the front tape is pulled.

But the angle is just a sidelight; the big story is two-deep tandem storage. Because of that, Tiltshelf can almost double your tape-storage capacity by using one storage shelf where you presently use two. That turns exactly 50% of your present, useless aisle space into working, profitable storage space. Thereby increasing your storage-density, which speeds up filing and retrieval, which lowers your retrieval costs.

Another bonus: your most-frequently-used tapes naturally wind up at the front of each slot, further increasing your efficiency. And, perhaps the biggest bonus–you don't have to change canisters when switching to Tiltshelf.

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We'll show you some more interesting angles.

TAB
PRODUCTS CO.

Armonk Tells DPG:

'$10 Billion Not Enough'

(Continued from Page 1)

the expense cut was to amount to 5%. The Corporate staffs had cut themselves by 10%. The smaller divisions, such as Office Products Division, were cut small amounts, returning $5.9 million improved profit ability.

Two Goliaths

The real cuts were reserved for what Armonk called the "two Goliaths of IBM" – World Trade and DPG. World Trade's cut in expenses was to be $55 million. It made it obediently.

Analysis

DPG was asked by Corporate to cut costs and expenses by $100 million – as much as all the rest combined.

Frank Cary prepared a plan to make the cuts, but argued against it. He recommended another plan which only cut DPG expenses by some $48.7 million. This still involved serious cutbacks. Research on the new computers was to be cut.

(A memo commented that expenditure in this area would not be particularly productive.) The impact of the new policy of unbundling on staffs was argued. And a 600-man cut on the already approved 1969 figures was enforced – just to lessen the risk of entering 1970 with a too high going rate of expense.

But it all seemed worth it. DPG was saved having to cut a further $51 million, while handling 12% more business.

$10 Billion Profit Promised

During all this short-term fighting, a second battle was raging between DPG and Corporate in Armonk. The subject of this battle was the long-range plan for IBM for the years 1968-1974/5.

As prepared by DPG and sent to Armonk for review, the plan would have impressed most corporations (and some countries).

DPG trade volume over the eight years was to increase from the 1969 expectations of $3.5 billion to almost double that, $6.5 billion annually.

Moreover, this was not going to be potentially embarrassing income, like the purchase income of 1968 had been. The plan showed that over 80% of the income in 1974 was to be pure rental income, with the purchase income down to a hard core of 12% (Figure 1).

The DPG divisional planners could reasonably hope to have their plan approved – incorporating as it did a strong growth, and a continued buildup of the IBM inventory in hardware ownership to around $26 billion to $30 billion, of which much would have been written off during the period.

To Armonk, however, the plan did not look to be the triumph that DPG could have expected. The opinions of Corporate Finance on the plan were sent down in May 1969, together with analyses.

Finance, in its breakdowns, did not follow the DPG consideration of purchase/rental. Indeed, the financial analyses saw profits declining as the years went by, rather than shooting to the heavens in the way DPG had presented them.

In the previous eight years, the DPG profit had been 29.6% of its gross – whereas under the DPG plan it would be only 26.5%.

Finance did not think that this percentage decline was consistent with its objective of "normal balanced growth," and therefore disagreed with the DPG plan. It wanted changes to bring the profit picture back into line.

In effect, Armonk was asking DPG for another $1 billion worth of profit over the period.

The Armonk arguments were quite simple to understand. The Armonk memos showed the DPG expenses that were being incurred over the years for field engineering and for marketing.

Although being careful accountants, the

(Continued on Page 25)

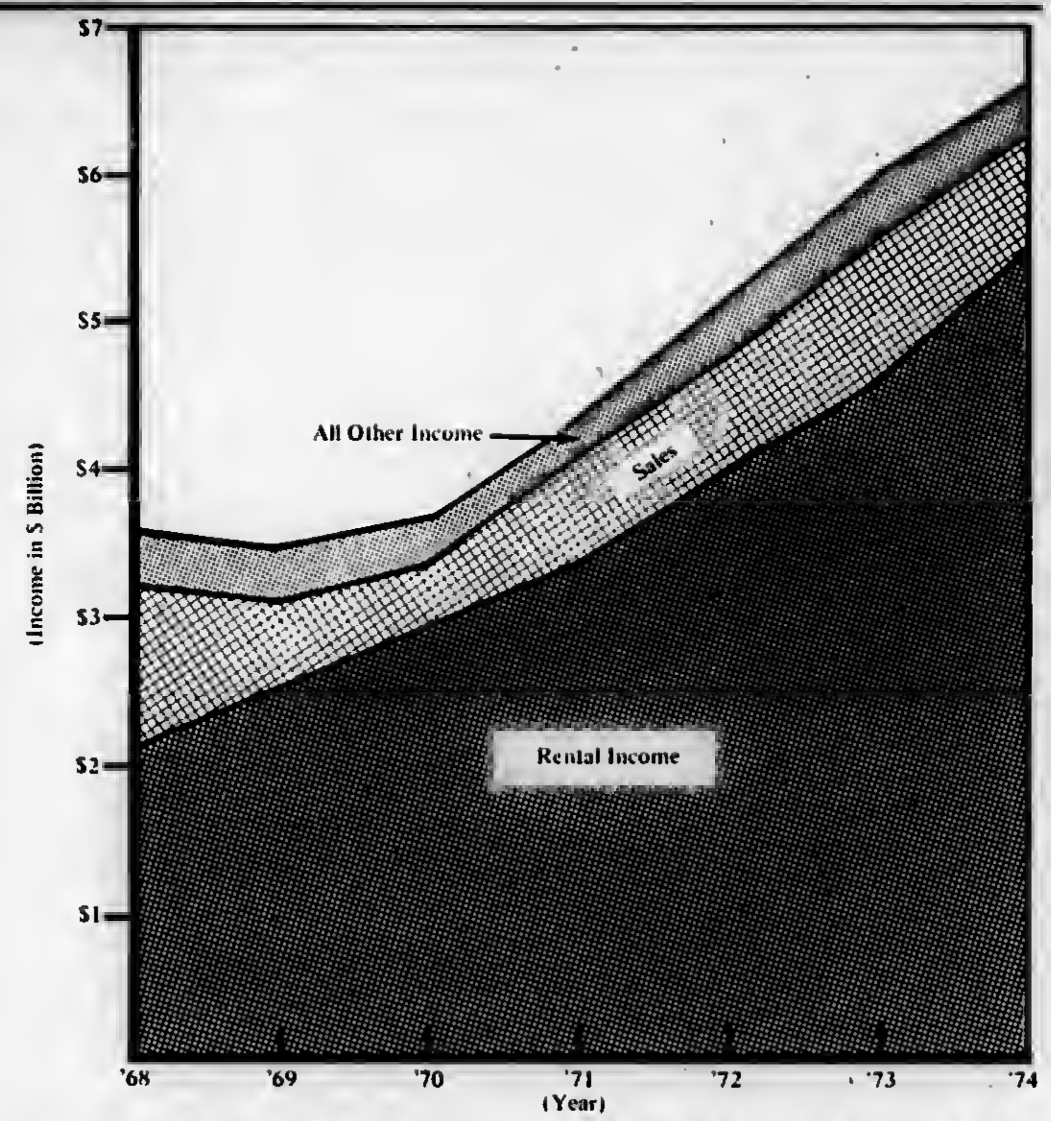

Figure 1. Data processing revenues forecast under the long-range plan, for the period 1968-1974. The forecast shows the annual forecast revenue increasing smoothly after 1969 from $4 billion to $6.5 billion. Because of the importance then being placed upon equipment sales as opposed to rentals, the plan breaks down the revenues into three separate categories – rental revenue, equipment sales revenue and other revenue coming into the DPG. Rental revenue, always the greatest in absolute amount, was forecast to rise during the period to over 80% in 1974. *(Source: IBM's DPG strategic plan submitted in 1969 from the Greyhound Plaintiff Exhibit 326)*

Is it our 20-year guarantee that makes Epoch 4 so good?

20
GRAHAM MAGNETICS INCORPORATED
Epoch 4 Permanent Computer Tape
20

WARRANTY

Graham Magnetics warrants that its Epoch 4 magnetic computer tape shall be free of any manufacturing defect, under the normal use and service for which it was designed for a period of

TWENTY YEARS

from date of shipment from Graham, Texas. Graham Magnetics further warrants that its Epoch 4 magnetic tape conforms to and meets or exceeds the magnetic and electrical specifications for the standard reference provided by the computer manufacturer.

Graham Magnetics' obligation pursuant to this warranty shall be as follows:

(1) DEFECTIVE TAPE. A defective magnetic tape is one (other than damaged tape) which does not meet the Graham Magnetics specification in effect on the date of original sale.

(2) DAMAGED TAPE. There will be no replacement of tape damaged due to either (a) improper handling by user personnel, (b) machine damage, or (c) User nonconformance with humidity, temperature or other storage and operating standards set forth in the Graham Magnetics specifications.

In the event that the User determines that a manufacturing defect exists during this warranty period, he shall report to Graham Magnetics the nature of the manufacturing defect. Graham Magnetics will investigate and if necessary retest such tape promptly. If it is determined by Graham Magnetics that a manufacturing defect exists, Graham Magnetics will replace the tape, tape for tape, on an exchange basis and assume transportation charges (both ways) necessitated by such replacement.

If Graham Magnetics determines that the tape has no manufacturing defect or has been damaged by the User, or his equipment, the tape will be returned to the User and the User will assume the transportation charges (both ways).

The remedies for breach of warranty, set forth herein, are the sole and exclusive remedies of the User, and in no event shall Graham Magnetics be liable to the User for damages of any kind other than specified herein. The warranty expressed herein is in lieu of all other warranties, expressed or implied, and no other affirmation of fact or promise made by word or action shall constitute a warranty. This warranty shall terminate with respect to each reel of Epoch 4 tape twenty years and one day from date of shipment from Graham, Texas.

GRAHAM MAGNETICS INCORPORATED
Graham, Texas 76046 WATS Phone 800-433-2701

Armonk Not Satisfied With DPG $10 Billion Profit, Wanted More

(Continued from Page 24)

finance people worked them out for each of the years from 1968 through 1975; when drawn on a graph, the variations (being less than 2%) practically vanished (Figure 2). This showed no growth pattern to Armonk. The expense ratio did not come down. The profit percentage did not go up. Where was "normal growth"?

Analysis

This then was the scenario as the 370s were being prepared.

IBM had been severely embarrassed by the unexpected 1968 $500 million purchasing of computer systems. It had considered – but rejected – the concept of turning the firm into a computer manufacturer as an outright policy. Now it was demanding $1 billion in additional profit from DPG, over and above the $10 billion that DPG had promised.

At the same time Corporate was restraining DPG from obtaining the desired profits by means of selling more than a small fraction of the company's computer production.

Moreover, Armonk was practically directing the division as to one Armonk-approved way of containing the purchase. Corporate and divisional group discussions were replete with references to multipliers, effective multipliers, maintenance, sales/rental mixes.

Yet although the term "multiplier" was being used freely, it failed to take into account one of the implications noted by Corporate Finance.

To understand just what was overlooked in the IBM discussions, we have to further develop our knowledge of the multiplier, as used in 1969.

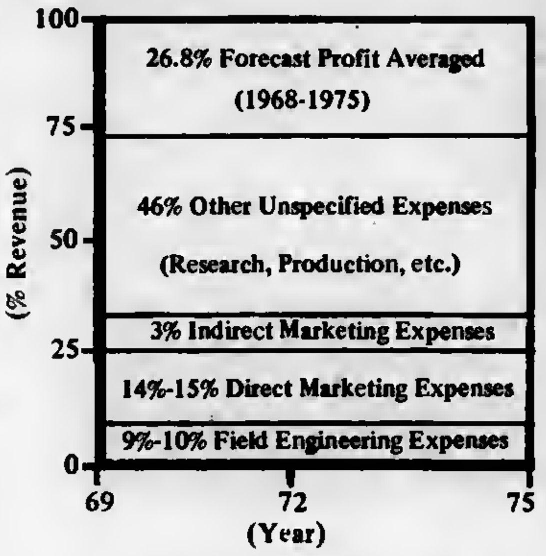

Figure 2. Forecast Expenses of Data Processing Group (1968-1975). While the DPG revenue figures were shown as growing sharply, the Corporate Financial Department was worried about the reduction in the profit margin during the 1968-1974 period. Profits under the DPG long-range plan were estimated at over $10 billion, but this was $1 billion lower than was necessary to maintian the 19.5% of revenue figures at the 1960-1967 figures. Corporate Finance therefore analyzed the expenditures. Based on this analysis it then asked for profits to be increased, presumably back to 29.5% of revenue or better. It also suggested that the field engineering figures were too low in view of the higher maintenance costs being planned during the period.

Source: Corporate Finance review of DPG 1969-1975 Goals, dated May 1, 1969, Greyhound Plaintiff Exhibit 167

When your data transmission goes down, you don't want excuses.

You want that fault fixed. Fast.

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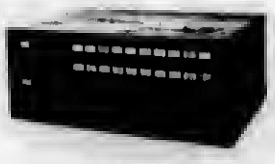

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...But IBM Didn't See the Reality

1969: Adjusted Multipliers, Higher Maintenance Cost

By Alan Taylor
Special to Computerworld

In its simplest form the "multiplier" is the number of months' rent, which is selected as the purchase price. Thus if a system rents for $1,000/mo and is sold for $40,000, then the new multiplier is 40. If the selling price is $50,000, then the multiplier is 50.

The primary difference between the raw and adjusted multiplier is simply that the latter considers both maintenance charges (at retail rates) and the 90-day maintenance credit which purchased machines receive.

What Difference?

The effective difference between the raw and adjusted multiplier depended upon the size of the maintenance charge. If the $1,000/mo piece of equipment had a maintenance charge of $100/mo (or 10%), the *net* rental of $900/mo was used in calculating the rental rather than the gross rental of $1,000, which was used in the raw multiplier.

So a $40,000 price tag would then represent a 44-month multiplier rather than a 40-month multiplier.

Analysis

The adjusted multiplier and raw multiplier in 1969 then became the keystones of much corporate planning, particularly concerning the containment of the undesired purchasing of IBM equipment.

The keystone to the containment planning was the theory that the name "maintenance" did not refer to *IBM's cost* of maintenance, but to the *charge IBM arbitrarily made* for maintaining the computers it sold. Thus maintenance could be regarded as a type of user-license income, which would accrue to IBM even from the systems that belonged to other people.

NS Systems

The 1969-1975 operating plan, which called for the replacement of 360s with the "NS" systems (later to be called the System 370s), said the "NS" systems would have "much higher maintenance prices" (which would produce a decline in the rate of selling equipment).

By January 17, 1968, Ted Papes, director of group finance for DPG, gave a "Financial State of the Union" message saying that the trend for purchasing IBM computers was the most serious problem facing IBM in the 1970s, and argued, "The (projected) maintenance price increase seems to me to be absolutely essential and thoroughly justified."

Already there was discussion as to whether the first maintenance price increase should be drastic or simply nominal. Papes' view was that if it were impractical to have an immediate thorough maintenance price increase, then IBM should immediately set plans for two additional annual increases to correct fully the highly vulnerable cost to price condition. "Realistic multipliers on all new product announcements are a must," he said.

However, he did not state what the justification was that he believed in. Years later, the marketing force would still be looking for a rationalization of what it referred to as the "vast discrepancies" between the 360 and 370 multipliers.

Problem With Multiplier

That is was the multiplier that worried Papes, rather than the profitability of the maintenance operation, seems clear from his secondary consideration of the matter.

In discussing the price announcements that were already out (those of the 360, 65 and 75), Papes argued for a purchase price increase – thus effectively increasing the multiplier. Then he continued, "If we cannot have purchase price increase, then I believe that a rental price reduction may be in order."

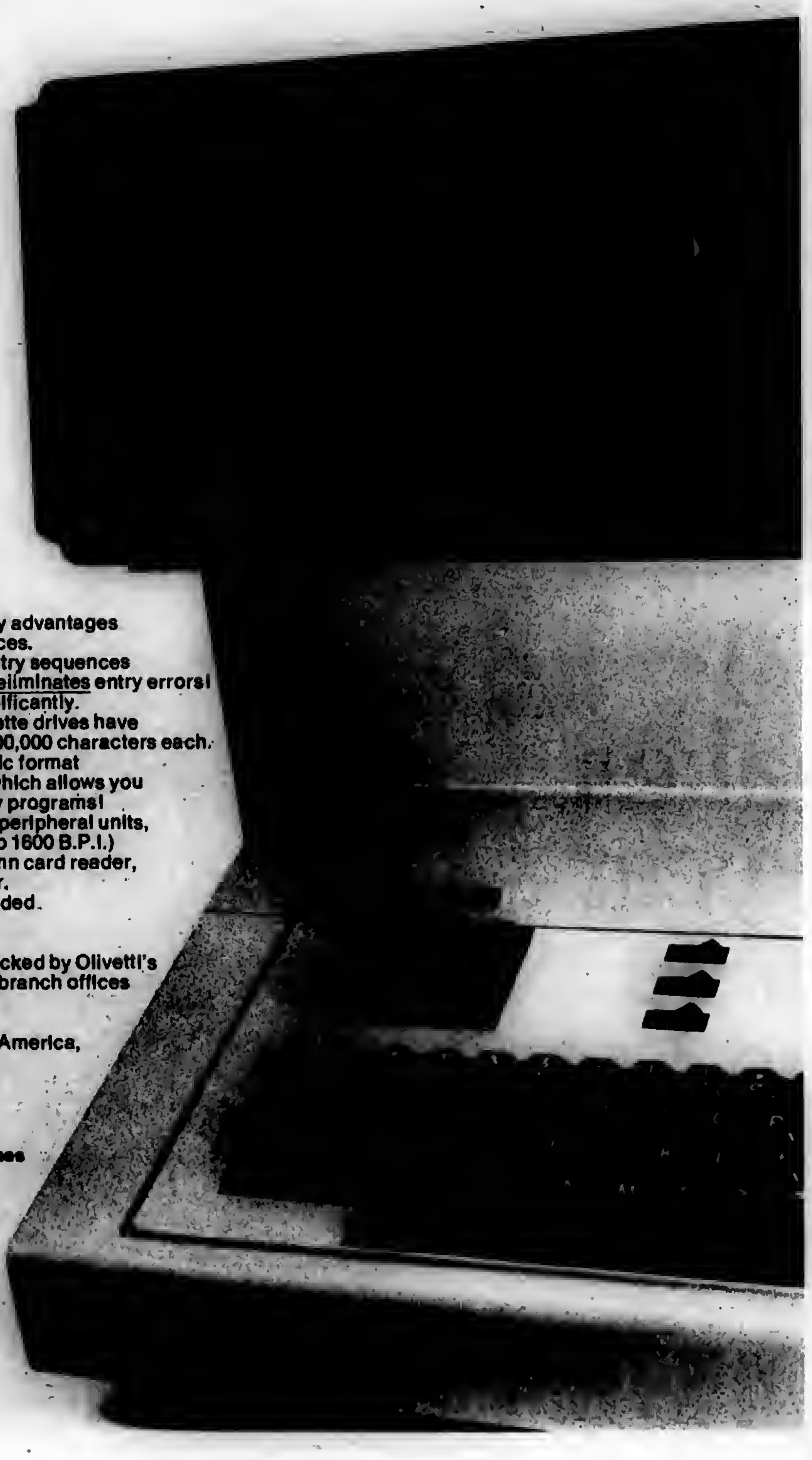
He also argued that IBM needed to modify sharply, or perhaps eliminate, the purchase option – whereby people who had been using a computer on rental could obtain it at a somewhat reduced price – although this had already been severely cut back on the 360s in an unsuccessful attempt to stop significant purchases.

The sizes of the proposed changes in the multiplier that were discussed were also a topical matter. An adjusted figure of 56.3 was the average NS multiplier used in 1969 planning, compared to 43.4 for a 360/65.

The method of increasing the affected multiplier had been to increase both the maintenance cost and the raw multiplier – that is, the number of months' rental that made up a purchase price.

A key "straw in the wind" that was ignored was in the review of the DPG long-range plan by Corporate Finance. This review noted that the field engineering cost seemed to be too low, compared with the cost of maintenance charges planned for the NS systems.

(Continued on Page 28)



Why? Because it has so many advantages
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Its programmed control of entry sequences
and error detection virtually eliminates entry errors!
It increases productivity significantly.
Its two read-after-write cassette drives have
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Its software includes the basic format
control program, plus TPS, which allows you
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It offers a complete range of peripheral units,
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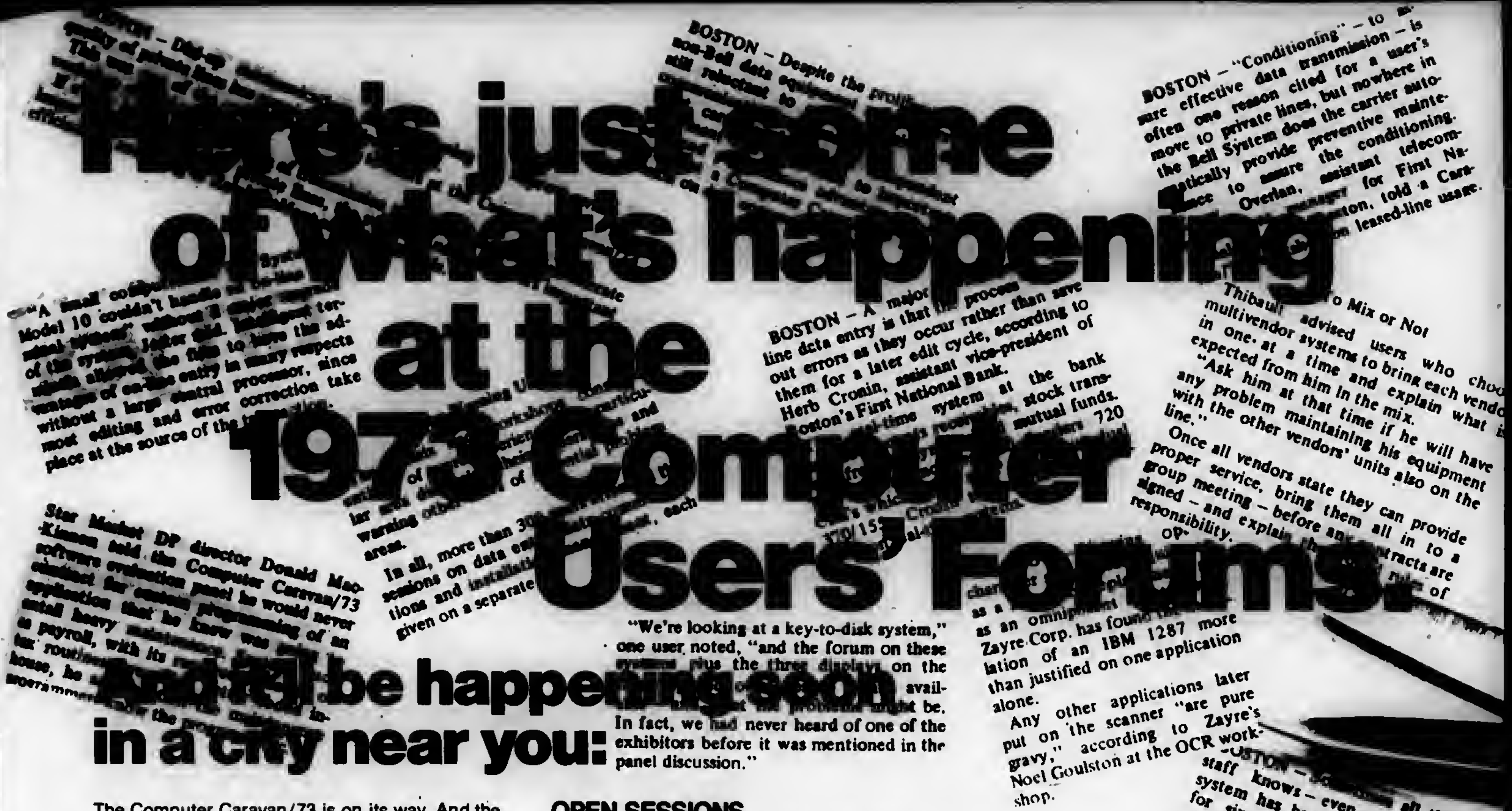

BOSTON – "Conditioning" – to assure effective data transmission – is often one reason cited for a user's move to private lines, but nowhere in the Bell System does the carrier automatically provide preventive maintenance to assure the conditioning. ... Overlan, assistant telecom- ... manager for First Na- ... ton, told a Cara- ... on leased-line usage.

"A small computer ... Model 10 couldn't handle ... without a ... intelligent terminal ... of the system ... allowed the firm to have the advantage of on-line entry in many respects without a large central processor, since most editing and error correction take place at the source of the transaction.

BOSTON – A major ... process ... line data entry is that ... out errors as they occur rather than save them for a later edit cycle, according to Herb Cronin, assistant vice-president of Boston's First National Bank. ... system at the bank ... stock transfers ... mutual funds.

Thibault advised users who choose multivendor systems to bring each vendor in one at a time and explain what is expected from him in the mix. "Ask him at that time if he will have any problem maintaining his equipment with the other vendors' units also on the line."

Once all vendors state they can provide proper service, bring them all in to a group meeting – before any contracts are signed – and explain ... responsibility.

Star Market DP director Donald MacKinnon told the Computer Caravan/73 software evaluation panel he would never ... application that he knew was going to entail heavy maintenance, such as payroll ...

In all, more than 30 ... sessions on data ... tions and installation ... given on a separate ...

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the ... avail- ... the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

... as an omnipotent ... Zayre Corp. has found the ... lation of an IBM 1287 more than justified on one application alone.

Any other applications later put on the scanner "are pure gravy," according to Zayre's Noel Goulston at the OCR workshop.

... staff knows – even after a package system has been considered operational for six months – is that "it seems to work," according to Paul Ladd, programming manager for Worcester (Mass.) County National Bank (WCNB). It may be as much as a year after the initial use of a system before the user knows enough to see where and how he might like to modify the program logic.

Here's just some of what's happening at the 1973 Computer Users' Forums.

And it'll be happening soon in a city near you:

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 – Data Entry – Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 – Communications – Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 – Installation Management – Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

PANELISTS

Next stop: Cleveland. And here are some of the panelists who will be there: Gaylord Smith, Nationwide Insurance; Joe Cordrey, C.M. Sales; Leon W. Blount, Bobbie Brooks Inc.; William R. Young and Allen Vendeland, Standard Oil Co. of Ohio; Paul Patram, Carlon Products.

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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(This information is necessary to provide a better forum for you.)

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03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:____________________

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____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

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☐ Day 3 – Installation Management – 9 am-2:30 pm

NOTE: Afternoon Sessions are open to all – free of charge.

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☐ One Day – $25.00 ☐ Two Days – $50.00
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All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

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370 Policy, Facts Conflict

IBM Risking a Major Fall

By Alan Taylor

Special to Computerworld

Analysis

In 1968 IBM realized it had two choices. It could either be content with being the largest computer manufacturer in the world, or else it could try to "deemphasize" the purchase of its systems in every possible way – much as it traditionally had done through the years. This way the idea was to grow, but still to retain ownership of 85% of all the 370 computers marketed in the U.S.

Rental, a prime company goal, had already led to the suing of the corporation under antitrust laws in 1956, and subsequently to its consent agreement to stop the no-sales practice. Thereafter IBM permitted, but tried to discourage, the buying of equipment.

Precarious Mix

The first IBM attempt to mix rental and purchase had allowed substantial rental credits to the "first user" of equipment. This had ended disastrously (from the corporation's point of view) when IBM discovered in 1964 that leasing companies were still able to purchase used equipment, rent it out at lower prices and get their money back in four years. At this time the industry rental income was $1 billion and on the way up.

IBM thought that this situation was corrected in 1965 with the much more restricted purchase credit figures allowed on 360s. By 1966 this policy was found to allow the purchase of new equipment (instead of used equipment) just by using the same length of time as IBM would estimate that the equipment would remain in use after purchase, as a basis of leasing company accounting. In 1966 IBM pushed the new problem aside – concerned over the risk of losing good will, already hurt by hardware programming slippages.

(Continued on Page 29)

Plaintiff's Exhibits No.	Date	Brief Description
593	Nov. 2, 1962	Branch Management Letter #213
644	May 24, 1965	Management Review Committee Minutes
646	Nov. 22, 1965	Management Review Committee Minutes
645	Dec. 21, 1965	Management Review Committee Minutes
662	Aug. 17, 1966	Management Review Committee Minutes
664	Sept. 6, 1967	Management Review Committee Minutes
124	Sept. 11, 1967	1967 Equipment Sales (Papes-Cary)
97	Sept. 21, 1967	Purchase Considerations (Papes-Cary)
650	Nov. 29, 1967	Management Review Committee Minutes
111	Jan. 17, 1968	Financial State of the Union
666	Jan. 25, 1968	Management Review Committee Minutes
123	April 1, 1968	Purchase Multiplier (O'Keefe-Papes)
328	July 3, 1968	1968-1974 Strategic Plan
144	Sept. 18, 1968	Financial Results (Watson-Opel)
118	Dec. 11, 1968	Progress Report to MRC
267	May 1, 1969	DPG 1969-1975 Goals (Rizzo)
319	March 5, 1970	DPG Strategic Plan 1968-74
244	May 27, 1970	DPD Monthly Highlight Report
94	June 5, 1970	NS Announcement

The above data, among others, was used during the preparation of the accompanying articles. The documents, open to the public, are included in the Appendix of the Brief of Plaintiff-Appellant, Greyhound Computer Corp. vs IBM, U.S. Court of Appeals Ninth Circuit No. 72-2553.

1969 IBM Decisions Open to Question

(Continued from Page 26)

No one considered how a higher price for maintenance could be justified at a time when maintenance costs were going down. IBM was swimming against the tides of technology but did not realize it.

Years later, when depositions were to be taken from IBM Corporate officers in conjunction with a lawsuit, Thomas J. Watson Jr. was to say he could not recall any case where the advances in technology had increased maintenance costs.

Yet in 1969 the corporation was being urged that its stability and growth made arbitrary maintenance price increases essential. The data was there – but IBM did not see the reality behind the data.

The important assumption was that IBM customers would automatically take IBM maintenance. Therefore, by letting the purchase price drop, but keeping the maintenance price up, other income could continue to flow into IBM from the equipment that now belonged to someone else.

However, the maintenance prices being charged and planned were known, not only within IBM, but also on Wall Street. It became quite possible for engineers who knew how to maintain IBM systems to obtain financial backing.

With the rumors of the increased maintenance prices for the new IBM announcements, the hackers were happy at this extra insurance that the maintenance firms would grow. The growth of independent maintenance firms was indeed implicit in the IBM decisions, but does not appear to have been taken into account anywhere in IBM decisions.

IBM, therefore, contributed, through the voluntary increase in maintenance prices, to providing a substantial competitive maintenance force to support non-IBM owned equipment, thus further strengthening the forces opposed to the IBM "rent-only" philosophy.

Later these companies were to be available to help peripheral manufacturers plan add-ons, interfaces and troubleshooting methods, and contributed materially to the boom in peripherals manufacturers in the 1970s.

The rise of the maintenance firms also created an ability of non-IBMers to comment knowledgeably on IBM maintenance practices.

Currently it may be too soon to say definitely whether the 370 maintenance price increase really contributed, as designed, to the future stability of IBM, or whether it in fact created a new, and uniquely skilled, competitive operation. If so, it followed history, just as the 1965 mistakes had created a "new computer" leasing operation.

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Every day more and more NCR Century computers are serving more firms everywhere. The computer users shown here represent today's progressive management so what they say about their systems can be important to you.

You'll learn these NCR customers have one thing in common: their NCR Century systems are providing them with the information they need to successfully manage their businesses.

Whatever your business, there's an NCR Century System that will provide better results and more benefits for your operation, too.

For complete information on the NCR Century system that's right for your business, call your local NCR man. Or write NCR, Dayton, Ohio 45479.

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Frank Loria, Corporate EDP Manager
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"We needed a central information file to remain competitive. The NCR Century had it. And NCR knew how to make it work."
Ken Walker, Executive V.P. and Cashier
1st National Bank of Lake Forest
Lake Forest, Illinois

"Our NCR Century computer gives our job shop the most complete production control system I've ever seen in any shop!"
Charles Phillips, Vice President
Lockwood Manufacturing Company
Cincinnati, Ohio

"Our quarterly reports used to take two full days. Now they're out in three hours. The difference? Our NCR Century."
Bob Schrader, President
Evanston Federal Savings & Loan
Evanston, Illinois

"The best thing about our NCR Century? The way it eliminates guesswork. I get the receivables and sales information I need to make decisions . . . the right ones."
Larry Davidson, Vice President
Davidson and Leventhal
New Britain, Connecticut

"When we decided to computerize we knew we had to pick one company and stick with them. We chose NCR."
David D. Hart, Vice President
Maryland State Savings & Loan Association
Hyattsville, Maryland

"Keeping customers waiting means bad press for any savings and loan. It's a problem our NCR Century eliminated. Twice."
Dick Pokorny, General Manager
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"We have greater financial control over municipal services than ever before. And the reason is our NCR Century."
Thomas G. Zeldell,
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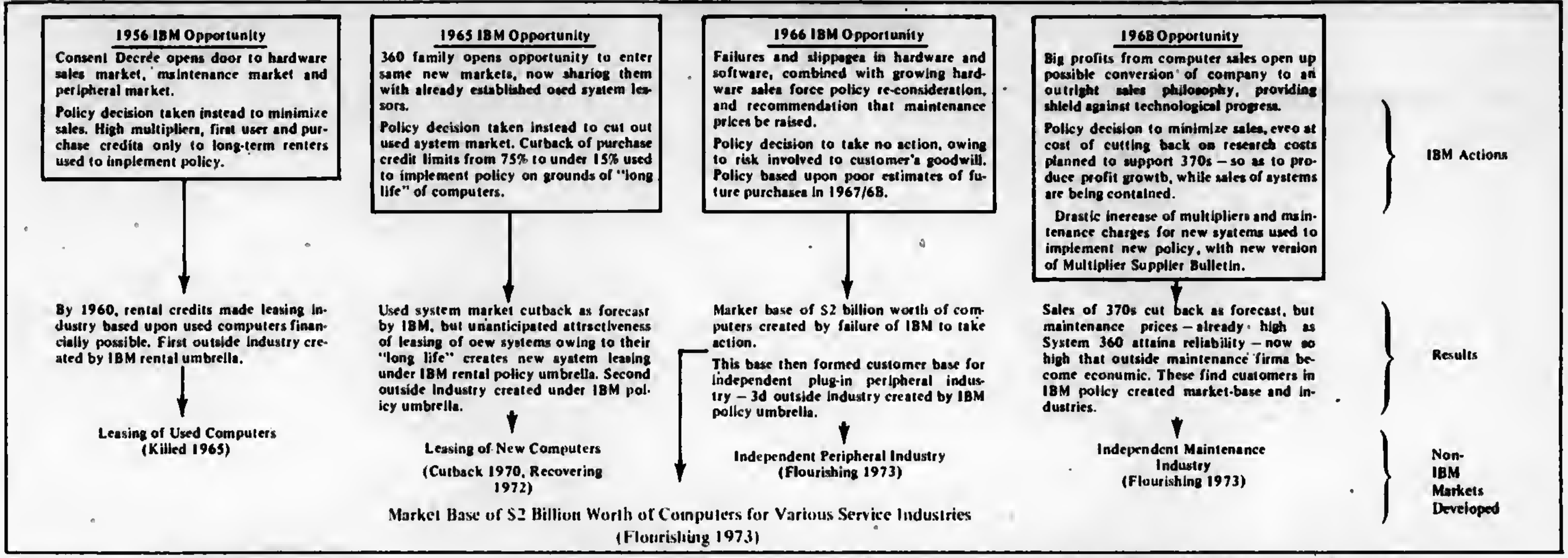


1956 IBM Opportunity

Consent Decree opens door to hardware sales market, maintenance market and peripheral market.

Policy decision taken instead to minimize sales. High multipliers, first user and purchase credits only to long-term renters used to implement policy.

By 1960, rental credits made leasing industry based upon used computers financially possible. First outside industry created by IBM rental umbrella.

Leasing of Used Computers
(Killed 1965)

1965 IBM Opportunity

360 family opens opportunity to enter same new markets, now sharing them with already established used system lessors.

Policy decision taken instead to cut out used system market. Cutback of purchase credit limits from 75% to under 15% used to implement policy on grounds of "long life" of computers.

Used system market cutback as forecast by IBM, but unanticipated attractiveness of leasing of new systems owing to their "long life" creates new system leasing under IBM rental policy umbrella. Second outside industry created under IBM policy umbrella.

Leasing of New Computers
(Cutback 1970, Recovering 1972)

1966 IBM Opportunity

Failures and slippages in hardware and software, combined with growing hardware sales force policy re-consideration, and recommendation that maintenance prices be raised.

Policy decision to take no action, owing to risk involved to customer's goodwill. Policy based upon poor estimates of future purchases in 1967/68.

Market base of $2 billion worth of computers created by failure of IBM to take action.

This base then formed customer base for independent plug-in peripheral industry – 3d outside industry created by IBM policy umbrella.

Independent Peripheral Industry
(Flourishing 1973)

Market Base of $2 Billion Worth of Computers for Various Service Industries
(Flourishing 1973)

1968 Opportunity

Big profits from computer sales open up possible conversion of company to an outright sales philosophy, providing shield against technological progress.

Policy decision to minimize sales, even at cost of cutting back on research costs planned to support 370s – so as to produce profit growth, while sales of systems are being contained.

Drastic increase of multipliers and maintenance charges for new systems used to implement new policy, with new version of Multiplier Supplier Bulletin.

Sales of 370s cut back as forecast, but maintenance prices – already high as System 360 attains reliability – now so high that outside maintenance firms become economic. These find customers in IBM policy created market-base and industries.

Independent Maintenance Industry
(Flourishing 1973)

Net Result: 4 New Industries

Net Result 1973: IBM policy through 1956-1972 has directly assisted in the creation of four separate industries (used computer leasing, new computer leasing, independent computer maintenance and independent peripheral industries) with non-IBM firms receiving all ground-floor opportunities. In addition a solid $2 billion market base has been acquired by the industries.

"Our NCR Century gives us so many capabilities it's like having two computers for the price of one!"

Sam Muldres, President
Western Massachusetts Computer Center
Holyoke, Massachusetts

"Benchmark tests proved the NCR Century could handle our inventory requirements faster and for less cost than other computer systems."

James L. Meagher, President
Stratton & Terstegge, Inc.
Louisville, Kentucky

"Now we measure every activity by its contribution to profit. Key to our success is the NCR Century computer system."

C. J. Sumner, Manager of Data Processing
Continental Steel Corp., Kokomo, Indiana

"With the NCR Century computer, off-the-shelf software is economical and practical, and conversion is quick. Our return on investment began in less than a month."

Harold Canada, Vice President
Hafers', Inc., Salt Lake City, Utah

"Our NCR Century computer prints prices and invoices for same-day shipment. That's great customer service. And we've increased turnover with less staff and inventory."

Robert R. Buchanan, President
Northwestern Drug Co., Minneapolis, Minn.

"I was impressed most by the add-on features of the NCR Century, since we are looking for a 100% growth factor in the next 5 to 10 years."

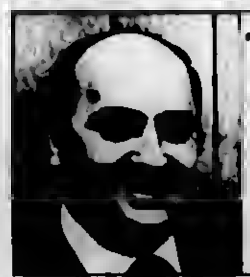
Max Diebernett, Comptroller
University of Tampa, Tampa, Florida

"Our NCR Century Computer helped us increase our annual sales $5,000,000 and decrease our inventory $170,000."

John Caputo, President
Garden Fresh Markets, Clarksburg, W. Va.

"The fact that the NCR Century 100 computer system could grow along with my retail operation sold me on NCR."

Yale T. Dolginow, Exec. Vice President
Dolgin's, Inc., No. Kansas City, Missouri



"We compared the main manufacturers of computers and picked NCR primarily because of our past experience with the service they've given us on other equipment in our bank."

Wendell H. Coneway, V.P. of Data Processing
Commercial Bank at Daytona Beach
Daytona Beach, Florida

"Town government and citizens of every community are demanding far more accountability from the people who run the schools. Our NCR Century enables us to meet this demand."

Paul R. McDevitt, School Business Administrator
Darien Board of Education, Darien, Connecticut

"To match our NCR Century's performance with another computer system would have cost us twice as much."

Roy J. Bernard, Director of the Computing Center
Southeastern Louisiana University

"We chose the NCR Century because the product for the price was better than anyone else had to offer."

Dan Seyfarth, Data Processing Manager
McHenry Hospital, McHenry, Illinois

"Our NCR Century System has meant new life for this office. Our patient accounts are now always current, accurate and under control."

R. B. Watson, Comptroller/Treasurer
ST. Joseph's Hospital, Asheville, North Carolina

"The greatest advantage from our NCR Century system? I'd say customer service. We can respond to our customers' needs much better than we could before."

Walter F. Urban, Jr., Treasurer
Union Federal Savings & Loan, Pittsfield, Mass.

"With our NCR Century C.I.F. System all data on each customer is in one place for account analysis and creative marketing. Our growth depends on this."

Bert Lance, President
Calhoun First National Bank, Calhoun, Georgia

"Our NCR 280 Terminals brought our stores in Texas two days closer to us."

Archie W. Crittenden
Director of Merchandise Information
Dillard's, Little Rock, Arkansas

370 Support Pricing Shows IBM Possibly Risking a Major Fall

(Continued from Page 28)

By 1967, two years after the new policy had been promulgated, leasing company purchases were acknowledged to be the corporation's biggest problem for the financial planners of IBM. And by now the industry rental income was $2 billion.

In 1970, following Thomas J. Watson Jr.'s repeated acceptance of the concept that IBM had once again to choose between remaining essentially rental, or really just a manufacturer, the IBM planners had selected the maintenance pricing and multipliers as the available IBM-controlled elements which they felt would increase the company's ability to grow, and obtain $10 billion profit from DPG alone – while still retaining ownership of 80% of IBM-made equipment in use in the U.S.

In a memo Watson recognized the crossroads, but noted that the corporation should fight against the purchases, rather than learn to live with them.

Factually the maintenance prices were increased on the 370s. Then, another apparently unanticipated event occurred just as it did in 1960 and 1966.

This time IBM had not foreseen the resulting rise of the outside engineering capability, both to perform computer maintenance, and also to engineer products compatible with IBM equipment, even making mainframes.

The new IBM maintenance policy was in direct conflict with the technical facts of the situation. If, in fact, IBM's "planned growth" structure options had been reduced to the one artificially keeping maintenance costs high, when technology was making it possible to bring maintenance costs down, then one conclusion can be drawn: far from saving the corporation's growth, the 1969 decision risked the corporation's stability.

The fact is that the internal IBM 1969 decision to raise 370 maintenance prices appears to have oversimplified the situation just as much as the 1965 decision (which later allowed the leasing companies to put up their purchase of 360s), and as much as the 1956 decision (which later allowed leasing companies to start their procurement of used 1400 and 7000 computers).

If the only way in which IBM can preserve what it calls a normal growth pattern is (as the planners of 1969 seem to indicate) to rely upon drastic increases in maintenance prices at a time when technology is permitting maintenance price reductions, then the corporation is risking a major fall.

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Data Base Handling, Artistry Highlight NCC Special Program

NEW YORK – In addition to the extensive range of sessions under the Methods and Applications and Science and Technology programs at the National Computer Conference here June 4-8, a special program has been planned to offer more variety to NCC attendees.

Societies/ User Groups

Under the direction of Dr. Charles F. Freiman, manager of systems development for IBM Research, Yorktown, N.Y., the program includes a one-day program on the computer arts, and a special day and a half seminar on managing the impact of generalized data bases.

Five sessions treat such topics as computer technology as a public resource, venture capital for the computer industry, and outlook and prospects for marketing abroad, which is organized by the Department of Commerce.

There will also be a session on career development for computer professionals and one on the economic future of the DP industry, which is organized by the editors of *Business Week*.

Early Deadline May 15

MONTVALE, N.J. – Prospective attendees of the National Computer Conference in New York City June 4-9 are urged to mail their reservations by May 15 to the sponsor, the American Federation of Information Processing Societies (Afips).

Those submitting their registrations before this date will be mailed all badges, program booklets and other registration material. Applications received after May 15 will be processed for pickup at the registration desk at the N.Y. Hilton, Afips said.

In addition, members of constituent societies registering in advance receive a $10 reduction.

Afips is at 210 Summit Ave., 07645 and the toll free telephone number is 800-631-7070.

The special seminar on managing the impact of generalized data bases will be held Thursday and Friday, June 7-8, and is being organized by the Special Interest Groups on File Description and Translation (Sigfidet) and Business Data Processing (SIGBDP) of the Association for Computing Machinery.

Presentations will review experiences and problems of companies which have installed generalized data bases and will offer a suggested plan for achieving maximum gain through such systems, conference organizers said.

Registration for the seminar, which includes a copy of the proceedings and a separate Thursday luncheon, is $40.

The Thursday luncheon will feature an address by Edward N. Cole, president and chief operating officer of General Motors Corp.

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DPMA '73 Looks at 'New Dimensions in Management'

CHICAGO – "New Dimensions in Information Management" is the theme of the 1973 International Data Processing Conference and Business Exposition at the Conrad Hilton Hotel here June 26-29.

Twenty-four seminars, emphasizing developments in problem-solving trends and techniques, will be featured from Wednesday afternoon through Friday morning.

Full registration includes a selection of six seminars from the categories of DP management, computer center management, peripherals, systems and software, operations and data file management.

In the DP management sector, seminars cover topics such as data administration as the nerve center of a company computer activity; motivating the data processor; and long-range systems planning.

Topics in the computer center management center are: protect or perish; operations; the mini in both large and small businesses; and "some systems shouldn't use chained file techniques!"

The peripherals area features sessions on data entry, optical scanning, computer output to microfilm and data communications.

Societies/ User Groups

Seminars on time-sharing applications; impact of virtual memory on design and installation; applications using retrieval packages and case studies of on-line order entry systems comprise the systems and software sector.

In the operations area, attendees may hear discussions on the response time problem of a real-time system; remote-batch processing; policies and practices for aiding computer conversions; and recovery and restart in a real-time system.

Data file management is treated in seminars on data base concepts and creation; planning and organizing a data base system – a case study; file operations and structures; and use of shared data files.

William L. Lindholm, vice-chairman of the board of AT&T, will deliver the keynote speech Wednesday morning on "Data Management – Prospects and Perplexities."

Particular emphasis will be placed on whether the management sciences have kept pace, or can, with technological developments in the data communications field.

Application-oriented one-day workshops, held Tuesday, offer attendees an in-depth look at areas ranging from banking, insurance, manufacturing, medical/hospitel, governmental applications, to system development.

The workshops are included as part of the conference registration, which is $135 for DPMA members and $175 for others.

Student fees are $15 for members of DPMA-sponsored DP student organizations in colleges and $25 for others.

On Monday and Tuesday, attendees may tour the facilities of the United Air Lines Reservation Center, First National Bank of Chicago, *Chicago Tribune*, Kitchens of Sara Lee, Teletype Corp. and Bell Laboratories.

The exposition area, which will feature special software exhibit rooms, will be open June 26-28, from 10 to 6 and until 8 p.m. on the 27th.

The DPMA is at 505 Busse Hwy., Park Ridge, Ill. 60068.

Test Systems Topic Of April Seminar

FRANKLIN LAKES, N.J. – A User Seminar on Automatic Test Systems sponsored by Instrumentation Engineering, Inc. will be held April 30 at the Marriot Motor Inn, Saddle Brook, N.J.

Formal presentations will cover a wide range of topics including the economics of automatic testing and high-frequency logic testing.

Invitations are being extended to users of all types of computer-controlled test systems. Requests for invitations can be made from Kathleen McMillan, Instrumentation Engineering, 769 Susquehanna Ave.

There are a lot of good hard reasons behind this kind of growth.

Two years ago we entered the 360/370 compatible memory market. Today we're number three — maybe two by the time you read this. Our customer references include more than 200 installations in 44 cities. Well over 25 million bytes. The numbers increase almost daily.

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Stability: As a major company committed to the memory market, we're going to be around tomorrow and a lot more tomorrows to come.

But the biggest reason for our growth has been *satisfied customers*. Satisfied on cost as well as *performance*.

If you're interested in a 360 or 370 compatible main frame memory; and experience, technology, reliability, stability, cost and performance are important to you, call our nearest office.

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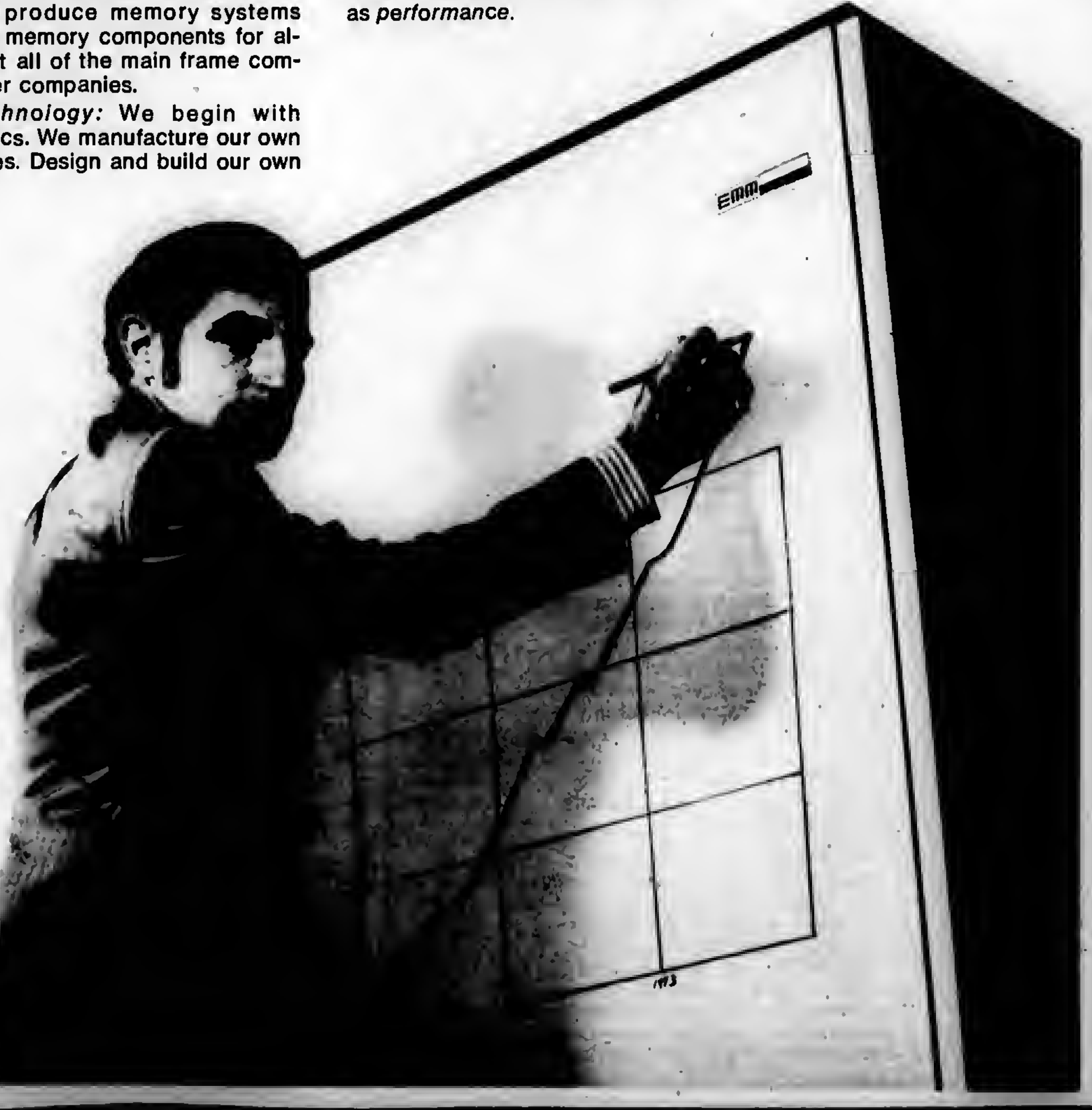

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THE FIRST COMPUTER NEWSWEEKLY FOR... JAPAN

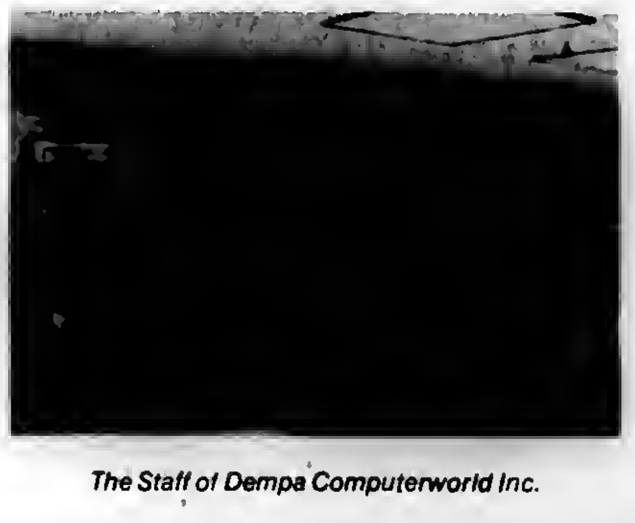
"Shukan Computer" means "Computer Weekly" in English. In Japan, it means a whole new way to communicate with the world's most rapidly growing computer market.

As a joint venture of Computerworld, Inc., and Dempa Publications, Inc., *Shukan Computer* will provide the only newsweekly for the Japanese computer community. Like its sister, *Computerworld, Shukan Computer* will cover the latest developments in all aspects of the computer industry; including hardware, software, services, application techniques and industry trends.

Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld*'s editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.



The Staff of Dempa Computerworld Inc.

Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld*'s President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, end services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.

Don't you always celebrate a birth with a cigar?

Shukan Computer hopes for best of both.

As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempe Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"

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CI Notes

Data Recall, Plessey Sign

CW West Coast Bureau

LOS ANGELES – Data Recall Corp. El Segundo, a manufacturer of computer memory systems, has signed a marketing agreement with Plessey Co.

Plessey will serve as Data Recall's OEM marketing agent for the U.S. and Europe through its offices at Santa Ana, Calif., and Geneva, Switzerland.

Data Recall's end-user marketing agent is Computer Industries Group, Stamford, Conn. Its territory is the U.S., Canada and Europe.

Data Recall makes memories for data acquisition, telecommunications and general-purpose computers.

New Firm to Aid Paradyne

LARGO, Fla. – U.S. Leasing International and the St. Paul Companies have agreed to provide Paradyne Corp. with financing for leases of up to $7.5 million over the next three years.

Under the agreement, the two firms have formed a jointly owned company which will purchase Paradyne equipment as it is placed with the company's users under lease or rental contracts.

Potter Must Pay MAI by Aug. 31

NEW YORK – Arbitrators have disallowed an attempt by Potter Instrument Corp. to terminate its $2.1 million settlement agreement with Management Assistance Corp.

Under this recent decision, Potter must pay MAI $1.1 million of the remaining $1.9 million by Aug. 31, according to MAI. The original amount agreed on was to compensate MAI for releasing its exclusive marketing rights for some Potter equipment and for claims against Potter for damages.

. . . On the Rebound

SAN DIEGO – Digital Scientific Corp. has been awarded over $300,000 in a counterclaim against the Bryant/Ex-Cell-O Corp. An arbitration panel ruled that the disk drives supplied by Digital Scientific performed as required under the contract.

Supershorts

Telex Computer Products, Inc. has delivered its first 6410 Tape subsystem to Europe and is now in production. The 6410/6411 is a plug-to-plug replacement for the IBM 3410/3411 on IBM Systems 370 and 360.

– – –

GRI Computer Corp., OEM mini maker, has cut most of its marketing staff in a move expected to mark a closer tie with Focus Systems, a system house on which it has a purchase option. The Focus IV system is built around a GRI 99 mini, and is sold through distributors.

State of the Industry – Part II, Foreign

Overseas Shipments Show Steady Rise

By E. Drake Lundell Jr.
Of the CW Staff

MONTVALE, N.J. – "The overseas market has become an increasingly important source of demand for U.S. manufacturers," several researchers agreed at a recent conference sponsored by the American Federation of Information Processing Societies (Afips).

The group, which tried to get a handle on the present size of the computer market and future growth areas in the industry, estimated that 45% of all 1971 shipments by U.S. mainframe makers went to markets outside the U.S.

In total this amounted to overseas shipments of around $3.3 billion in that year, the Afips report on the meeting said.

"Furthermore, overseas shipments have increased steadily as a proportion of total shipments during recent years," the group noted, and therefore "profits derived from this source have become very important."

The study indicated the total revenue from overseas for U.S. manufacturers was around $4 billion or 27% of their total revenues.

Overseas shipment of general-purpose computer systems was estimated at having a value of $3.3 billion in 1971, and this is expected to almost double to around $6.4 billion by 1976, the industry prognosticators agreed.

The U.S. shipments of minicomputers and dedicated application computers in 1971 had a value of $60 million, the report stated, and this is expected to grow dramatically to between $800 million and $900 million by 1976.

On the balance of trade front, the Afips report noted that "in 1971 computer industry reports totaled $1.3 billion while corresponding imports were only $119 million.

"Thus, exports of computing equipment contribute in a very significant way to the U.S. balance of trade," the report noted.

At the same time, however, Afips noted that almost 60% of the shipments made by U.S. manufacturers are manufactured in plants overseas and so are not counted in the exports figure.

The worldwide revenues of U.S. firms in the general-purpose computer systems category were placed at $8.6 billion and the Afips report estimated that their revenues will be between $14 billion and $18 billion by the end of 1976 worldwide.

In the minicomputer and dedicated application computer area, the group placed worldwide 1971 revenues at $310 million and estimated this would reach between $750 million and $900 million by 1976.

Total worldwide revenues for independent plug-compatible peripherals makers were set at $320 million in 1971 and the consensus was that this would grow to between $500 million and $700 million by 1976.

Worldwide leasing revenues were placed at $670 million in 1971, and this category of revenues is expected to jump to between $900 million and $1.6 billion in the same five-year period.

In the services area, worldwide batch revenues of U.S. firms are expected to grow only slightly by 1976 from the $1.1 billion registered in 1971. At the same time, on-line worldwide revenues are expected to increase from $590 million to between $1.4 billion and $2 billion.

In the 1967-1971 period, the report showed that both exports and imports of computer equipment posted steady growth, but that the export growth rate far outstripped that of the imports.

In 1967, exports amounted to $475 million while imports were $20 million, the report said, giving exports a net value of $455 million. In 1971, it showed that exports were valued at $1.3 billion while imports were $119 million for net exports of $1.1 billion.

Overall, the report noted that the U.S. supplied 77% of the installed computer base worldwide by value and 73% of the base by number. European firms accounted for 10% of the installed base by value and 12% by number, while Japan supplied 9% of the base by value and 11% of the installed computers by number.

Commerce Figures Show Exports From U.S. in 1973 Off to Fast Start

CW Washington Bureau

WASHINGTON, D.C. – For the first two months of this year U.S. exports of computer equipment are running over 10% ahead of last year's pace, according to recent statistics from the U.S. Commerce Department.

Computer equipment valued at $121.8 million was shipped during the month of February, the study showed, bringing the total for the year-to-date up to $235.2 million.

Last year the February total was only $104 million and the total for the first two months was $209.9 million in exports of computer equipment, Commerce said.

The best market for U.S. equipment was Western Europe as a whole, the study indicated, taking computer equipment made in the U.S. valued at $124.6 million.

A closer look showed that the original members of the European Economic Community (of which West Germany and France are the major markets for U.S. equipment) took U.S. exports valued at $77.5 million.

UK Contribution

The UK imported equipment valued at $28.7 million from U.S. suppliers, which brought the total for the new Common Market to $109.6 million of the imports that went to Western Europe.

Next in the rankings was Canada, which received equipment with a total value of $41.8 million from the U.S. during the first two months of 1973, followed by Japan which imported equipment with a total value of $24.3 million in the same period.

Latin American countries accounted for exports of $15.3 million with most of those exports going to members of the Latin American Free Trade Association ($14.7 million).

Asian countries took equipment valued at $13.5 million, the report said, while Australia and Oceania took equipment worth $9.4 million and African countries imported $3.2 million worth of computer equipment from U.S. plants.

Lessors Urged to Put Cash Into Terminals

SAN DIEGO – Lessors should seriously consider shifting their cash into terminals and terminal-oriented systems, according to Lowell D. Amdahl, president of Compata, Inc.

"There will be a tenfold increase in communications terminals by 1980 which will place great demands upon capital for the communications and computer industries," he observed at a recent chapter meeting here of the Association for Computing Machinery.

"Leasing companies haven't caught on to this area like I think they should with cash being returned to these companies. It seems to me that the industry is going to need capital, both in the communications side of it and for the smaller companies, especially those that want to take the plunge with their own terminals," he said.

"There is a need on both sides," he continued, "and I guess I'm trying to encourage the recognition of the need and what I would think would be the availability of funds."

"With drying up of mainframe profit potential, the lessors can find a rich field of future growth in this segment of the industry."

Amdahl suggested that prime markets for terminal leasing exist with smaller firms in the areas of retail and transportation, which did not have a tradition of large capital outlays for technological equipment.

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'Born of Revolution'

Minis Expected to Change Lifestyles More Than Maxis

By E. Drake Lundell Jr.
Of the CW Staff

GAITHERSBURG, Md. – The impact of the minicomputer "will be far greater – on our lifestyles and workstyles – than anything ever produced by the first three generations of computer mainframes," according to George Vosatka, president of Varian Data Machines.

The minicomputer was not just an evolutionary product of the computer age, he said, but rather "a revolution born of revolution."

Speaking at a symposium on "Minicomputer Trends and Applications," sponsored by the IEEE and the National Bureau of Standards here recently, he claimed that "far from settling down, mini-ism is just beginning to take hold."

End-User Emphasis

There are several trends in the industry at the present time, he noted, including a new emphasis on end-user support among the more traditionally OEM-oriented mini makers and a full spectrum of I/O systems and mass storage devices for minis.

But more importantly for the future, he indicated, is "the explosive, overlapping developments in new mini hardware, software, peripherals and applications."

These overlapping developments, he said, are the "driving force of the mini revolution."

First, he noted, minicomputers could take advantage of changes in technology more quickly than their larger counterparts, because they had a shorter development cycle time, sometimes only six months compared with the three-year development for larger systems.

The second phase of the minicomputer revolution is in software and Vosatka noted that in this area "we're just getting up a head of steam."

But at the same time, he continued, minis now come available with a wide range of software not in existence a few short years ago.

In addition, he added that developments in the area of virtual memory "may be a bigger boon to minis than maxis because of the mini-word-size limitation," and he indicated that specialized software for specific applications areas is also under way.

In the third area contributing to the mini revolution – peripheral equipment – Vosatka stated there was both good news and bad news.

First, he said, the "mini peripherals are alive and well." But he felt that most of the peripherals are just borrowed from the mainframe world at large and that they have often not been developed in conjunction with the mini mainframe design.

"I think the next great challenge in our industry is to develop peripherals which match the mini mainframe in three parameters: price, performance and reliability," he said, predicting that day would bring "a quantum leap in mini systems performance."

But even with all of these developments, the design and implementation of applications will be the "acid test of the mini's revolutionary status," Vosatka said.

The minicomputer has pioneered applications in two areas, he claimed, including communications processes and in applications where large systems were too costly – such as point-of-sale automation and in some cases in the medical field.

However, he noted, the real mini revolution comes because the mini "shows the uncanny ability to stimulate cost effectiveness in concert with other resources."

Nowhere, he said, "is this more apparent than in the mini's effect on large computers."

Today, he said, the minis are helping the super-computers become the "super-producers" that was predicted for them in the past, because they are applied in ways to make the large machine more efficient by allowing it to communicate with a larger number of users than in the past.

Users Discovering In-House Monitoring

CW Washington Bureau

MCLEAN, Va. – The market for measurement and test equipment to evaluate computer system performance has definitely blossomed and will flower even more over the next few years as measurement firms move toward the marriage of measurement equipment and dynamic scheduling devices.

At least that is the outlook predicted by Thomas E. Stone, president of Tesdata Systems Corp., manufacturer of the SUM and X-Ray measurement tools here.

Stone indicated that user interest in measurement tools is five times higher this year than last year and that the increased interest will cause the overall measurement market to double this year with even greater growth predicted for next year.

In 1972, he said, software measurement and monitoring packages accounted for about 33% of the revenues in the industry, but, he said, this percentage would drop dramatically to around only 20% this year as more and more users turn to the hardware devices for their measurement functions.

The reason, he said, is that software tools add to the monitored computer system some overhead that is not added by the hardware tools.

Also, he said, hardware monitors have dropped in price to a point where they are competitive with the software devices.

By 1975, Stone predicted the overall market for measurement equipment would be at least $25 million.

At that point the market might be getting to a critical stage where the mainframe makers might respond to the market by incorporating measurement devices or packages into the mainframes instead of having them just as auxiliary equipment, he said.

However, Stone noted, the market still has a lot of growth in it for the five or six years before the computer manufacturers decide to respond, and there will always be a place for independents "who can do the job better."

Independents will still have a lot of business in helping users find problem areas in their operating systems and in other areas that are probably not covered by monitoring or test equipment built into mainframe systems, he said.

In addition, he forecast real breakthroughs in the area of combining monitoring and scheduling functions that would allow users to dynamically alter their scheduling routines as their workloads changed or varied during production hours.

At present, Stone said, the major users of monitoring and measurement equipment are large users with complex shops, but he indicated the existence of newer low-priced units would bring measurement equipment within the range of smaller users.

With the new equipment that will be developed by the manufacturers in the business, he said, a small installation could have a basic system in-house and send out tapes of system performance to manufacturers for an in-depth analysis of its problem areas and the areas to check closely with the in-house smaller monitors.

At present, Stone said a DP center installing a monitoring or measurement device should be able to improve its running time on an average of between 15% to 20% at the first pass with the unit.

And since job streams and configurations change relatively rapidly in the business, he said, an on-going monitoring program would enable the user to keep inefficiencies from creeping into the system unexpectedly.

Expansions

The Spectron Corporation, a specialty supplier of data communications testing and control equipment, has moved to larger facilities at Church Road and Roland Ave., Turnpike Industrial Park, Moorestown, N.J.

Tal-Star Computer Systems, Inc. has established a full-service Western Regional Office in Los Angeles.

Advanced Memory Systems, Inc. is leasing a new building to expand its facilities to 140,000 sq ft.

Wang Laboratories' PHI Computer Services Division opened a branch data center at 395 Totten Pond Road, Waltham, Mass.

Diablo Systems, Inc. has opened two district offices in Marlton, N.J., and Dayton, Ohio.

Datamark, Inc., producer of data processing labels, is moving to a 30,000 sq ft facility at 2020 Enterprise Parkway, Twinsburg, Ohio.

The RCA Service Co. plans to establish a sales, service and warehouse base in Burlington, Mass., to support its Teletype leasing and servicing activities.

Aspen Systems Corp., a Pittsburgh-based information company, has opened a Rockville, Md., facility to serve users of its health care information services and full-text information retrieval systems.

ECRM, Inc., manufacturer of computer-based OCR data-input systems for automated typesetting operations, has moved into 50,000 sq ft quarters at 205 Burlington Road, Bedford, Mass.

Federal Display Market May Drop

NEW YORK – The total government display console market will reach its peak of around $733 million in 1973 and then decline to about $657 million by 1977, according to a study by Frost & Sullivan, a market research firm here.

Plummeting the most sharply will be the military aircraft segment, which is expected to drop from its $300.9 million in fiscal '73 to $247 million in '77.

Groundbased and shipbased portions, currently about $377 million, will decline at a lesser rate, to $349 million in the same period.

However, the Nasa Space Shuttle and Skylab programs will see increased buying of display hardware into 1977, growing from $21.8 million in 1973 to $30 million.

The FAA buying will initially increase, from a current $33 million to $49 million by 1975 through the purchase of Arts II and III displays, and the automating of 20 ARTCC systems. However, this segment is expected to decline to $30.6 million by 1977, the report said.

Saab Moves Eastward

STOCKHOLM – Saab is pursuing the DP market in the Eastern bloc through agreements with Videoton, a Hungarian firm, that provide for joint development of equipment and information exchange.

One of the first products under the agreement is expected to be a jointly developed minicomputer, based on Saab architecture, according to *EDP Europa Report*.

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From Basie to Bits

DP Like Music to This Executive's Ear

NEW YORK – Many people have entered the computing field through various doors, directly or indirectly. But Eddie Jones, with a major in music and 10 years as a bass player in Count Basie's band, has to have one of the more unusual backgrounds for the president of a service bureau and facilities management firm.

"Music is a discipline and I brought the sense of discipline instilled by music to the art of the computer," he observed. False notes in either medium expose amateurishness and inefficiency that can inflict disastrous results on form, harmony and the perfection sought in both, he said.

"The computer is a tough disciplinarian, and there are no 'almosts' in either music or computer work. You hit right on or you miss completely," he added.

In the years with Basie, he played dates all over the U.S. and Europe, and appeared with the band at a command performance for Queen Elizabeth in London in 1954. In 1960 he played at the Inaugural Ball for the late President Kennedy. His final performance with Basie came at the Seattle World's Fair in 1962.

Turning Point

Long years of standing for long hours during hectic road tours with Basie began to afflict Jones in both the legs and the sense of security, he said.

In 1962, he parlayed his music degree into a nine-year career with IBM, starting out as an assistant engineer and working up to assistant engineering manager.

After the IBM stint, he worked for a time for CTE Computersa, a Ling-Temco-Vought Division, and in 1970 joined Apex Computer Services as a vice-president. He became head of the firm last June.

The sudden onset of computerization and the vast changes brought about in business and government by the speed of both the change and the computer process itself, have left the field in a fluid and still unformed state, he believes.

There is much underutilization and inefficient use of computers by many firms today, Jones asserted. The field, he said, needs "the sense of exactness and thoroughness" that marks the professional in music.

He sees as his chief goal with Apex the achievement of "optimum productivity" with the computer, using it as any other management tool rather than as some mysterious and glamorous adjunct to prosaic daily business functions.

Used Computer Exchange to Publish Current Buying, Selling Prices

BEACHWOOD, Ohio – A new service, "oriented toward developing the retail level for buyers and sellers" of used computers, has been announced by the American Computer Exchange, Inc.

Through planned publication of all transactions that have occurred within the first two months of the service, users can see what the various machines sold for, exclusive of "middleman charges," explained Larry Donat, vice-president.

Currently in the used computer market, he said, information on the buying and selling prices of equipment is rather closely held, because dealers are "trying to buy low and sell high," he said.

"With published prices, dealers and brokers will have to work within a 5% range if they want to compete," he predicted.

"The sellers will be selling a little bit higher, and the buyers buying a little bit lower, so the stabilization will take place somewhere between wholesale and what is now retail," he said.

The exchange provides, through direct mail and advertising, listings of machinery for sale. After ascertaining serious buyers, it puts buyer and seller in contact with each other and also offers the parties "a one-stop service charge," according to Donet.

The exchange charges 5% of the sale price from the seller, and offers the parties suggested contracts for negotiating the transaction, arrangements for transportation and refurbishing, site planning and installation.

Orders & Installations

The Jet Propulsion Laboratory, Pasadena, Calif., has ordered two Xerox Sigma 5 systems. One system will be used for on-line processing of information received from unmanned spacecraft and the other will handle software development and serve as a backup system.

Chicago Bridge & Iron Co. has installed an IBM 370/165 to aid in engineering and design problems.

Ford Motor Co. has ordered a Burroughs B6700 to be used as the central computer in Ford's Supply On-Line Management Information System.

Westvaco Corp. has ordered a Measurex paper machine control system for its Covington, Va., mill. The system regulates the weight and moisture content of coated bleached board.

Philip Morris Inc. has ordered a Xerox Sigma 8 to be used by 30 of the company's scientific laboratories for chemical and physical research. The new machine will replace a Sigma 5.

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Romania to Spend $200 Million on 5-Year DP Plan

By Bohdan O. Szuprowicz

Special to Computerworld

The Central Committee of the Romanian Communist Party has finalized specific plans for introduction of automation and management information systems for the 1970s and approved the expenditure of over $200 million during the current 1971-1975 Five Year Plan.

By 1975, Romania expects to have 80 computation centers in operation serving at least 400 corporations and individual industrial associations all drawing upon the resources of a central national application programs library.

During the second half of the 1970s (1976-1980) Romania expects to develop sufficient regional computation centers to provide one for each of the 38 administrative regions in the country. In that period the country will also introduce data communications systems and complete an integrated national information processing network.

In addition, starting in 1974 all projects for new enterprises will have to incorporate into their own data processing systems the capability to interface with the national network.

Streamlining Inventory

Present plans include streamlining the Romanian computer inventory by concentrating on three basic equipment sources. These include intensified domestic production of Felix C256 computers which are licensed Romanian versions of the French CII Iris 50 machines; purchases of Riad computer systems from other Comecon countries; and from the West, primarily IBM equipment.

There are presently about 60 computers installed in Romania including 11 CII Iris 50 and Felix C256 machines. There are also several IBM 360/30 and 40 models in use and a few ICL 1900 series as well as older British Elliott 803 machines.

Siemens, NCR, Japanese Neac as well as Soviet and East European computers are also in use.

By cutting down on the number of equipment suppliers, Romania hopes to avoid the problems experienced in earlier years by Hungary and Czechoslovakia where at one time only about 60 computers were installed by 27 different suppliers, creating significant training, software, maintenance and operational problems.

Romania expects to have a total of at least 100 computers installed and in operation by 1975 of which about 50 will be Felix C256 machines manufactured locally.

Although the first four Felix C256s were built in 1971, Romania must have experienced either production or operational problems, because no more than 7 are expected to be operational by mid-1973.

Yet the country plans to increase the production of the Felix computers to as many as 50/yr in 1975, presumably with the objective of exporting some machines.

The Felix systems are used with magnetic tape units with recording speeds of 12- to 60 kbyte/sec and disk drives of 6M byte capacity. Line printers in use are in the 800 line/min category.

A relatively large percentage of the computer installations in Romania today are operated at universities and colleges which also serve as service bureaus for local industries. There are nine regional computation centers in Romania today accessible to any user and the number of such centers will increase to 17 by year-end.

One of the first and most valuable applications of management information systems in Romania were programs controlling the allocation of building materials in the construction industry and forecasting of demand for future years.

Educating Future DPers

The Department of Economic Cybernetics of the Academy of Economic Sciences in Bucharest plays a special role in the education and training of future computer users in Romania. Students undergo a five-year program leading toward specialization in computer sciences. During that time they are required to complete 10 computer application programs but are given only eight computer runs per program due to limited machine time.

By 1975 Romania hopes to have 20,000 programmers, analysts and operators trained and another 8,000 trained as service and maintenance personnel.

GE on Display in Moscow

MOSCOW – GE has been displaying the capabilities of its worldwide data processing network to audiences here at the Electronmash/73 show. It is believed to be the first demonstration of U.S. time-sharing here.

"A special dial-up telephone link from Moscow to London will allow us to interact with the GE supercenter in Ohio" for the demonstration, according to Dr. James Castle, GE marketing manager.

Metal for Modems

At the Eastern Division of GTE Sylvania, a tape-controlled machining center fabricates metal parts for data modems used by the U.S. military in a worldwide communications satellite system.

Executive Corner

- R.O. Grant Jr. has been elected president of Computer-ecords Inc., a Columbia, S.C., service bureau. Grant, formerly an executive vice-president, has been with the firm since 1970.
- William J. Texido has been named president of Itel Investment Management Corp. Texido was previously vice-president, finance and administration, for Itel's Data Products Group.
- John J. Donovan, associate professor of electrical engineering at MIT, has been elected to the board of directors of Softech, Inc.
- Robert J. Brown, senior vice-president, and Dermott Noonan, vice-president, finance administration, have been elected to the board of directors of Potter Instrument Co.
- John P. Howland, president and chief executive officer of Westpoint Pepperell, has been elected a director of Pitney Bowes; Fred T. Allen, president and chief executive officer of Pitney Bowes, is the new chairman of the executive committee.
- A. Marshall Cheney, vice-president, marketing, has been elected to the board of directors of Brandon Applied Systems, Inc., and Ury Beary has been elected secretary-treasurer of the corporation.
- Paul L. Kartzke, retired president and chief executive officer of Shell Canada Ltd., has been named to Cubic Corp.'s board of directors.
- Richard A. Willey, national sales manager of Computer Communications, Inc., has been named a vice-president.
- J.P. Ray has been elected chairman of the executive committee of the board of directors of Datapoint Corp. Harold E. O'Kelley will succeed him as president.
- Noel E. Porter has been elected to the board of directors of Hewlett-Packard Co.
- Barry M. Harder has been elected chairman of the board of Entrex, Inc. David Barber becomes president and chief executive officer.
- Leon J. Satero has been elected president of American Data Preparation Corp.
- Frank Ilcin has been named president of Chi Corp.
- Fred W. Richter Jr. has been named vice-president of Datamatics Management Services, Inc.
- John P. Courtney has been appointed vice-president, marketing, for Computer Task Group, Inc.
- Ralph L. Phillips, an international public affairs advisor for Mobil Oil Corp., was elected a director of DPF, Inc. and Michael J. Creedon was named executive vice-president, marketing.
- George H. Geick has been appointed a vice-president of Sperry Rand Corp. and will head a new corporate office in Washington, D.C. Harry A. Steinberg will succeed Geick as executive vice-president, worldwide marketing and services.
- John W. Brackett, an original founder of Softech, Inc., has been named vice-president, software production, for the firm.

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Data 100 Has Profitable Fourth Quarter

MINNEAPOLIS, Minn. – Data 100 Corp., remote batch equipment maker, has announced a profitable fourth quarter, with earnings of $211,000 or 7 cents a share, despite some additional accounting changes.

President Edward D. Orenstein said he expects "to report continuing increases in profitability from this point on.

"Earnings estimates of 60 to 80 cents a share in 1973, before extraordinary income from tax-loss carryforwards of an equal amount, appear to be reasonable," he added.

In the year, however, the firm showed a loss of almost $6 million or $2.94 a share, which includes a special charge of $701,000 from a cumulative effect on years prior to 1972 of a change in accounting principle.

In 1971, Data 100 lost $1.4 million in the quarter and had a restated loss of $5 million or $4.22 a share in the year.

Revenues rose sharply, up to $6.6 million from $1.4 million from the quarter a year ago and included $3.1 million of sales to Randolph Computer Corp. For the year, total revenue climbed to $13.1 million from $3.9 million.

Increased sales to end users are currently offsetting the effects of the new accounting principles, according to Orenstein.

Depreciation of terminals on lease to customers in 1973 will be over a five-year term instead of the seven-year period used previously.

The useful life of such equipment manufactured in 1970 and 1971 is seven years, and six years for equipment made in 1972.

In 1972, the firm reported the "if sold" value of equipment shipped was $31.5 million, and it expects this figure to reach $50 million in 1973.

A three-year sales agreement with Randolph accounted for as outright sales, will add between $10- and $14 million in revenues in 1973, the firm said.

Annual rental revenue totaled more than $5 million in 1972, and is expected to climb to about $14 million by the end of this year, the company said.

The firm also said it expects about 10% of 1973 revenue to come from sales to end users.

Tally Cuts Losses Despite Costs For New 2000 Line Printer Unit

KENT, Wash. – Despite "substantial development and start-up costs associated with the engineering, marketing and production" of Tally Corp.'s new Series 2000 line printer, the firm managed to reduce its losses for 1972 compared with those of 1971.

Revenues for the year rose 24% to $12.3 million from almost $10 million last year, while losses were cut to $1.4 million compared with $1.8 million in 1971.

President James E. Navarre reported customer commitment to date of $3.3 million for the Series 2000 printer.

Shipments of paper tape products increased in 1972, he said, and new applications, such as in the graphic arts and numerical control areas, should result in some further expansion of this business.

In addition, European sales volume should increase, he said.

Nickels & Dimes

Lencor, formerly Computer Financial, has obtained a $2.5 million line of credit with First National City Bank of New York and FNCB (International-LA), and has sold $1.2 million in 8% convertible debentures. Proceeds will be used to expand two subsidiaries, CFI Memories and American Security Products.

$$$

Advanced Computer Techniques reported record nine-month and third-quarter sales and earnings. Nine month earnings totaled $86,500 on $2.7 million revenues.

$$$

Broadening the base: DPF's new subsidiary, DPF Commercial, is entering the general equipment leasing business.

$$$

The sale last November by Victor Comptometer Corp. of its unprofitable computer division resulted in a special charge of $1.9 million. But the firm still earned $3.3 million for the year ended Dec. 31, compared with $1.8 million a year ago.

$$$

Memorex this year will experience residual values for the first time, the firm said, on disk packs placed in 1968-69 and depreciated in four years. The amount will not become material until 1975 and beyond, the firm said.

Also this year, the majority of capital requirements will be provided by internal cash flow – another first, according to Memorex.

Data General Ups 6-Month Earnings

SOUTHBORO, Mass. – Data General Corp. showed increased revenues and earnings compared with year-ago figures in the second quarter and six months ended March 17.

Sales in the quarter rose to $11.2 million from $6.3 million a year ago, while earnings climbed to $1.4 million or 17 cents a share compared with $786,000 or 10 cents a share in the same 1972 period.

Six-month earnings nearly doubled over those a year ago, reaching $2.6 million or 32 cents a share from $1.4 million or 17 cents a share as restated.

Revenues for the half-year also climbed, to almost $21 million, compared with $11.6 million in the year-ago period.

Acquisitions

Automatic Data Processing, Inc. has acquired National Inventory Control Systems of Portland, Ore., on a pooling-of-interests basis for approximately 170,000 shares of ADP stock.

The proposed merger of Metridata Computing, Inc. with Rapidata, Inc. has been terminated by mutual consent.

Two DP service firms, Datatel, Inc., of Washington, D.C., and Data Technology Corp. of Baltimore, Md., have merged. The new corporation will retain the name Datatel.

Smyth Business Systems, Inc., a Canton, Ohio-based cash register sales and service firm, has acquired Atlanta Computer Services.

Apeco Corp., the parent company of Cascade Data, Inc., and Van Dyk Research Corp., a Whippany, N.J.-based copier-duplicator maker, have agreed in principle to a merger with an indicated value of more than $45 million.

Tymshare, Inc. has acquired Megasystems, Inc., of Philadelphia, Pa., for $207,500 in cash.

Tymshare has also agreed in principle to acquire Allen-Babcock Computing, Inc. of Los Angeles.

Cummins-Chicago Corp. and Allison Coupon Co., Inc. have merged to become Cummins-Allison Corp. The new firm has moved headquarters from Chicago to Glenview, Ill.

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SOFTWARE & EOP SERVICES

EXCH		1972-73 RANGE (1)	CLOSE APR 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	AOVANCEO COMP TECH	1- 3	1 1/2	+ 1/4	+20.0
A	APPLIEO OATA RES.	3- 7	2 7/8	- 1/8	-4.1
O	APPLIEO LOGIC	1- 4	2 1/8	0	0.0
N	AUTOMATIC OATA PROC	65- 99	72	+2 T/8	+4.1
O	8RANOON APPLIEO SYST	1- 2	5/8	0	0.0
O	COMPUTER OIHENSIONS	3- 14	2 1/2	- 1/2	-16.6
O	COMPUTER OYNAMICS	1- 4	3/4	0	0.0
O	COMPUTER NETWORK	2- 7	1 3/4	0	0.0
N	COHPUTER SCIENCES	3- 10	3 1/4	- 3/8	-10.3
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	2- 8	2 1/2	- 1/4	-9.0
O	COMPUTER USAGE	5- 14	5 3/4	0	0.0
O	COMRESS	1- 3	1/2	- 1/8	-20.0
O	COMSHARE	5- 10	6	0	0.0
N	COROURA CORP	6- 28	8 7/8	+2 1/2	+39.2
O	OATATA8	3- 9	2 1/2	- 1/4	-9.0
O	EOP RESOURCES	1- 8	1 1/2	0	0.0
A	ELECT COMP PROG	1- 5	1 7/8	+ 3/4	+66.6
N	ELECTRONIC OATA SYS.	42- 65	44 1/8	+1 3/8	+3.2
O	INFORMATICS	3- 11	3 5/8	+ 1/8	+3.5
O	I.O.A. OATA CORP	1- 3	7/8	+ 1/8	+16.6
O	KEANE ASSOCIATES	4- 7	3 1/4	0	0.0
O	KEYOATA CORP	7- 13	T 7/8	+ 7/8	+12.5
O	LOGICON	4- 9	4 5/8	0	0.0
A	MANAGEMENT OATA	2- 10	2 1/2	0	0.0
O	NATIONAL CSS INC	8- 41	28 1/4	+7 1/4	+34.5
O	NATIONAL INFO SRVCS	1- 5	1 1/4	- 3/8	-23.0
P	ON LINE SYSTEHS INC	5- 19	15 3/8	+ 1/2	+3.3
N	PLANNING RESEARCH	3- 17	3 5/8	+ 1/8	+3.5
O	PROGRAMMING METHOOS	20- 25	22 1/4	- 1/4	-1.1
O	PROGRAHMING & SYS	1- 2	1	+ 1/4	+33.3
O	RAPIOATA INC	5- 2T	17	+4	+30.7
O	SCIENTIFIC COMPUTERS	1- 4	1 1/4	+ 1/8	+11.1
O	SIMPLICITY COMPUTER	1- 5	2	+ 1/8	+6.6
O	T8S COMPUTER CENTERS	3- 6	2 7/8	0	0.0
O	TCC INC	1- 3	1/2	0	0.0
O	TYHSHARE INC	7- 12	7 1/2	- 1/8	-1.6
O	UNITEO OATA CENTER	5- 8	5	0	0.0
N	UNIVERSITY COMPUTING	T- 26	8 5/8	- 3/4	-8.0
A	URS SYSTEHS	5- 10	5 1/8	- 1/4	-4.6

PERIPHERALS & SUBSYSTEMS

EXCH		1972-73 RANGE (1)	CLOSE APR 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	AOORESSOGRAPH-MULT	20- 49	19 T/8	- 1/8	-0.6
O	AOVANCEO HEHORY SYS	12- 23	15 1/8	+1	+7.0
N	AMPEX CORP	5- 15	5	0	0.0
O	ANOERSON JACO8SON	4- 8	5 1/2	0	0.0
O	8EEHIVE HEOICAL ELEC	1- 10	10	+1 1/4	+14.2
A	8OLT,8ERANEK & NEW	5- 21	9	+ 1/8	+1.4
N	8UNKER-RAMO	6- 14	6 3/8	+ 1/4	+4.0
A	CALCOMP	9- 25	10 3/4	+ 1/4	+2.3
O	CAM8RIOGE HEHORIES	9- 15	10 1/2	- 1/4	-2.3
O	CENTRONICS DATA COMP	6- 28	19 3/4	+ 1/2	+2.5
O	COOEX CORP	6- 25	12 1/2	0	0.0
O	COGNITRONICS	1- 5	1 5/8	0	0.0
O	COMPUTER COMMUN.	1- T	2	- 1/4	-11.1
A	COMPUTER EQUIPMENT	2- 4	2 1/4	- 1/8	-5.2
O	COHPUTER HACHINERY	7- 13	8 T/8	0	0.0
O	COHPUTER TRANSCEIVER	2- 9	2 1/4	- 3/8	-14.2
A	COMPUTEST	3- 9	4 T/8	+ 3/8	+8.3
N	CONRAC CORP	23- 39	23 3/4	+ 3/4	+3.2
A	OATA PROOUCTS CORP	3- 7	3 1/8	+ 1/8	+4.1
O	OATA RECOGNITION	1- 5	2 1/2	0	0.0
O	OATA TECHNOLOGY	2- 5	3 1/8	+ 1/8	+4.1
O	OI/AN CONTROLS	3- 8	2 3/4	0	0.0
N	ELECTRONIC H & M	3- 8	3 5/8	0	0.0
O	FA8RI-TEK	2- 5	3 1/8	- 1/8	-3.8
O	GENERAL COHPUTER SYS	6- 16	7	0	0.0
N	GENERAL ELECTRIC	59- T4	64 1/4	+2 5/8	+4.2
N	HAZELTINE CORP	7- 13	7 1/2	+ 3/8	+5.2
O	INFOREX INC	14- 36	13 5/8	0	0.0
O	INFORMATION OISPLAYS	1- 5	7/8	+ 1/8	+16.6
O	INFORHATION INTL INC	8- 25	11 1/2	- 1/4	-2.1
A	LUNOY ELECTRONICS	5- 14	5 3/8	- 7/8	-14.0
O	MANAGEHENT ASSIST	1- 1	3/8	0	0.0
A	HILGO ELECTRONICS	15- 44	19 3/4	-1 1/4	-5.9
N	HOHAWK OATA SCI	6- 27	6 1/8	- 1/4	-3.9
O	OOEC COMPUTER SYST.	3- 12	3 3/4	0	0.0
O	OPTICAL SCANNING	2- 16	5	- 1/4	-4.7
O	PERTEC CORP	5- 17	5 1/4	- 3/8	-6.6
O	PHOTON	3- 15	3 3/4	(SUSPENOEO)	
A	POTTER INSTRUMENT	5- 21	5 3/8	+ 1/8	+2.3
O	PRECISION INST.	2- 13	2 1/2	- 1/4	-9.0
O	RECOGNITION EQUIP	5- 15	4 3/4	0	0.0
N	SANOERS ASSOCIATES	10- 21	10 1/2	+1	+10.5
O	SCAN OATA	2- 13	2 3/8	0	0.0
O	STORAGE TECHNOLOGY	17- 39	22	+1 1/4	+6.0
O	SYCOR INC	7- 12	12 1/4	+2	+19.5
O	TALLY CORP.	3- 15	3 1/4	-2 5/8	-44.6
N	TEKTRONIX INC	34- 64	39 3/8	+3 1/8	+8.6
N	TELEX	4- 15	4	+ 1/8	+3.2
O	WILTEK INC	10- 26	13	+1	+8.3

SUPPLIES & ACCESSORIES

EXCH		1972-73 RANGE (1)	CLOSE APR 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	8ALTIMORE 8US FORHS	5- 9	7 1/2	+ 1/2	+7.1
A	8ARRY WRIGHT	9- 14	9 1/8	+ 3/8	+4.2
A	OATA OOCUHENTS	1T- 26	19 3/8	+ 5/8	+3.3
O	OUPLEX PROOUCTS INC	8- 16	8 1/2	+ 1/4	+3.0
N	ENNIS 8US. FORHS	6- 10	6	+ 1/8	+2.1
O	GRAHAM HAGNETICS	15- 27	15	+ 1/2	+3.4
O	GRAPHIC CONTROLS	10- 15	9 7/8	- 3/8	-3.6
N	3M COMPANY	T6- 88	84 3/8	+3 1/8	+3.8
O	MOORE CORP LTO	42- 59	59	+ 5/8	+1.0
N	NASHUA CORP	48- 62	4T 1/2	- 1/2	-1.0
O	REYNOLOS & REYNOLO	3T- 77	48 3/8	+2 T/8	+6.3
O	STANOARO REGISTER	14- 20	18 1/4	+ 3/4	+4.2
O	TA8 PROOUCTS CO	14- 23	14	0	0.0
N	UARCO	19- 28	19 3/8	+ 1/2	+2.6
A	WA8ASH MAGNETICS	6- 11	6 1/2	+ 1/4	+4.0
N	WALLACE 8US FORMS	21- 26	21 1/2	- 1/2	-2.2

COMPUTER SYSTEMS

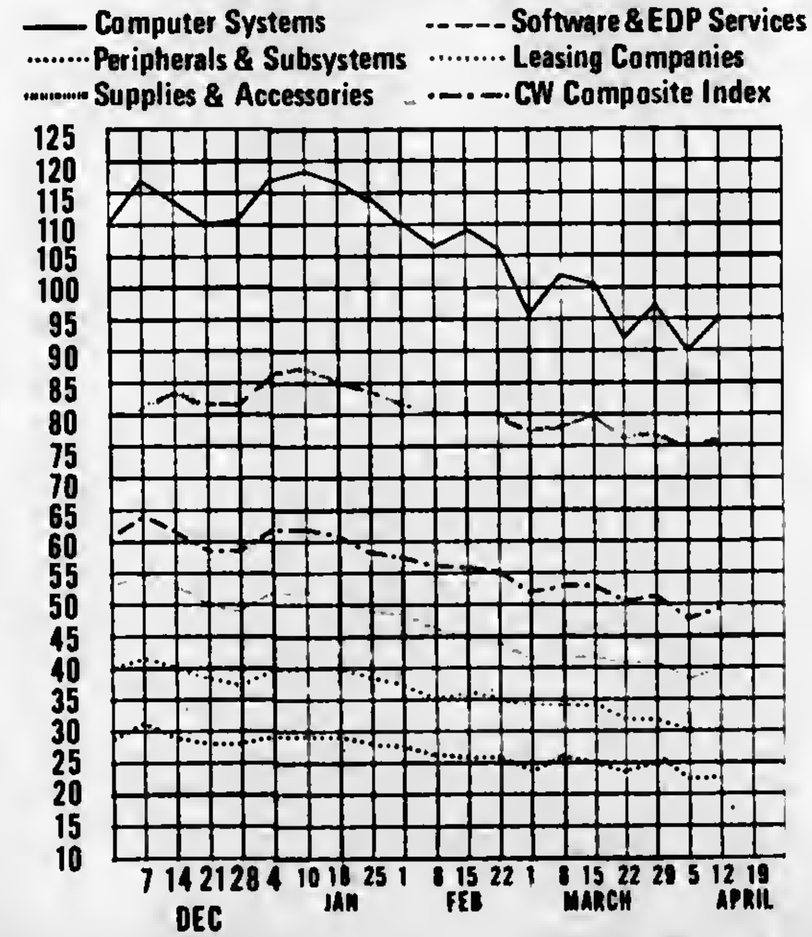
EXCH		1972-73 RANGE (1)	CLOSE APR 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	8URROUGHS CORP	147-244	234 5/8	+13	+5.8
N	COLLINS RAOIO	14- 2T	21 1/2	- 1/2	-2.2
N	CONTROL OATA CORP	42- T8	50 1/4	+6	+13.5
O	OATA GENERAL CORP	36-131	43	+5 3/4	+15.4
O	OIGITAL COMP CONTROL	3- 25	3 3/8	+ 1/4	+8.0
N	OIGITAL EQUIPMENT	72-105	84	+3 1/4	+4.0
N	ELECTRONIC ASSOC.	6- 13	6 1/2	0	0.0
A	ELECTRONIC ENGINEER.	6- 14	10 3/4	+1 1/2	+16.2
N	FOX8ORO	23- 41	2T 3/8	+1 3/4	+6.8
O	GENERAL AUTOMATION	13- 55	34 1/2	+5	+16.9
O	GR1 COMPUTER CORP	1- 5	1 3/8	+ 1/4	+22.2
N	HEWLETT-PACKARO CO	46- 94	84 1/2	+3 1/8	+3.8
N	HONEYWELL INC	106-1T0	117 1/8	+2 1/8	+1.8
N	I8M	333-451	432 1/4	+9 3/8	+2.2
O	INTEROATA INC	7- 16	11	+2 1/2	+29.4
N	MEMOREX	7- 38	6 1/2	- 5/8	-8.T
O	MICROOATA CORP	5- 10	6 3/4	- 1/2	-6.8
N	NCR	27- 38	31 1/2	+2 5/8	+9.0
N	RAYTHEON CO	27- 47	30 3/4	+1 T/8	+6.4
N	SPERRY RANO	30- 50	40	- 3/4	-1.8
A	SYSTEMS ENG. LA8S	4- 16	4 1/4	- 1/2	-10.5
N	VARIAN ASSOCIATES	14- 22	14	+ 1/2	+3.T
N	WANG LA8S.	18- 61	20	+1 1/8	+5.9
N	XEROX CORP	121-172	153 3/8	+5 3/4	+3.8

LEASING COMPANIES

EXCH		1972-73 RANGE (1)	CLOSE APR 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	8OOTHE COMPUTER	2- 18	2 3/8	- 1/8	-5.0
O	8RESNAHAN COMP.	1- 3	1 1/8	0	0.0
O	COMOISCO INC	3- 18	11 1/4	- 7/8	-7.2
O	COMHERCE GROUP CORP	3- 11	3 1/4	- 7/8	-21.2
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4	0	0.0
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	OPF INC	5- 13	6	- 1/8	-2.0
M	OATRONIC RENTAL	2- 4	2	0	0.0
A	OCL INC	2- 10	1 5/8	- 1/8	-7.1
A	OEAR8ORN-STORH	15- 26	17 3/8	+1 3/4	+11.1
A	OPA, INC.	5- 8	5 1/8	- T/8	-14.5
A	GRANITE HGT	3- 11	3 1/2	- 1/4	-6.6
A	GREYHOUNO COHPUTER	4- 11	4 5/8	+ 1/2	+12.1
A	ITEL	T- 12	T 3/8	0	0.0
N	LEASCO CORP	9- 24	9 3/4	-1 1/8	-10.3
O	LEASPAC CORP	6- 15	7 3/8	+ 1/8	+1.T
O	LECTRO HGT INC	1- 4	1 1/8	0	0.0
A	ROCKWOOO COHPUTER	2- 7	1 T/8	+ 1/4	+15.3
O	SYSTEHS CAPITAL	3- 20	8 1/4	+1 3/8	+20.0
N	U.S. LEASING	19- 35	25 5/8	+1 1/8	+4.5

EXCH: N=NEW YORK EXCHANGE; A=AHERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-8ALT-WASH
O-T-C PRICES ARE 8IO PRICES AS OF 3 P.M. OR LAST 8IO
(1) TO NEAREST OOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

AUTEX
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.14	$.10
Revenua	1,293,864	946,153
Tax Cred	14,000	18,000
Earnings	106,144	54,333

COMPUTER INVESTORS GROUP
Nine Months Ended Dec. 31

	1972	e1971
Shr Ernd	$.38	$.73
Revenue	11,806,610	9,703,509
Spec Cred	.....	b28,960
Earnings	748,543	1,508,924

a-Restated. b-Gain on repurchese of e portion of the company's debentures at less then principal amount.

COMPUTER INSTRUMENTS
Year Ended Dec. 31

	a1972	1971
Shr Ernd	$.11	.....
Revenue	4,515,596	$3,642,094
Spec Cred	b76,900	.....
Earnings	173,774	(387,956)

a-Preliminary. b-Tax-loss carryforward.

COMPUTER USAGE
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.13	$.05
Revenue	609,049	783,612
Tex Cred	50,612	19,000
Earnings	108,828	44,524

ALGOREX OATA
Six Months Ended Dec. 31

	1972	19T1
Shr Ernd	$.02	.....
Revenue	675,999	$404,288
Earnings	40,708	(167,296)

GRAPHIC SCIENCES
Three Months Ended Dec. 31

	a1972	1971
Shr Ernd	$.08	$.04
Revenue	2,802,000	2,174,000
bSpec Cred	71,000	61,000
Earnings	253,000	121,000
6 Mo Shr	$.21	$.06
Revenue	5,810,000	4,226,000
bSpec Cred	260,000	95,000
Earnings	653,000	186,000

a-Includes 100% of the operetions of a subsidiary previously 80%-owned by the company. The remaining 20% interest was purchesed during the first quarter of fiscal 1972. b-In 1972, represents tex-loss cerryforwerd and in the six months recovery of previously written-off invastment; in 1971, tax-loss carryforward.

LEASCO
Year Endad Dec. 31

	1972	1971
Shr Ernd	$2.52	$1.93
Revenue	653,802,000	600,628,000
Earnings	40,981,000	31,038,000
3 Mo Shr	.52	.63
Revenue	169,534,000	155,402,000
Earnings	8,571,000	10,164,000

ANDERSON JACOBSON
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.04	$.01
Revenue	1,461,030	1,113,054
Earnings	99,590	34,239
9 Mo Shr	.10	.04
Revenue	3,964,105	3,129,505
eSpec Cred	36,694	.....
Earnings	262,284	110,300

a-Gain on sale of land.

SCANTLIN ELECTRONICS
Year Ended Dec. 31

	1972	1971
Shr Ernd	.....	$.65
Revenue	$8,906,000	6,650,000
Spec Cred	357,000	3,315,000
Earnings	(2,956,000)	1,373,000

TYMSHARE
Year Endad Dec. 31

	1972	1971
Shr Ernd	$.32	$.13
Revenue	15,774,526	12,519,859
Tex Crad	428,000	162,000
Earnings	936,414	365,275

COMPUSAMP
Year Ended Dec. 31

	1972	1971
Shr Ernd	.....	$.13
Revenue	$6,529,687	2,492,569
Spec Cred	.....	59,000
Earnings	(73,902)	118,070

SCAN-DATA
Year Endad Oec. 31

	1972	e1971
Revenue	$4,800,000	$3,125,840
Spec Chg	d695,000	.....
Loss	1,300,000	994,555

a-Restated. d-Loss from deferred marketing expenses, depreciation of obsoleta systam, tarmination of leases previously accounted for as sales, and releasing agreements.

STORAGE TECHNOLOGY
Year Ended Dec. 29

	1972	1971
Shr Ernd	$1.14	.....
Revenua	26,311,000	$3,664,000
Tax Cred	1,378,000	.....
Earnings	3,722,000	(4,085,000)
3 Mo Shr	.51	.....
Revenue	9,129,000	1,937,000
Tax Cred	533,000	.....
Earnings	1,752,000	(231,000)

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Weekly Newspaper

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NEWSPAPER

NEWS IN BRIEF

DP Cited for Drop In Welfare Rolls

NEW YORK – The welfare rolls declined here by 17,292 cases in February and officials credited the record-breaking drop to tighter management and computerization.

It was the fifth consecutive month in which the number of people on the welfare rolls dropped and resulted in a savings to the city of $777, 213 over the previous month, officials said. Computerization of the city's $1.2 billion income maintenance program, scheduled to be completed in July, has helped reduce agency errors and eliminate duplications, officials explained.

When the program is completed, welfare workers will have instantaneous data on clients and their eligibility.

Inmate Programmers Save State Almost $750,000

NORFOLK, Mass. – The Norfolk Computer Programming Group (NCPG), a group of inmate programmers at Norfolk Prison here, has saved the State of Massachusetts almost $750,000, according to George Magrath, NCPG program coordinator.

Over the past three years, NCPG has provided virtually free programming to such institutions as the cities of Newton and Quincy, the Department of Civil Service, the Arlington school system and the Massachusetts Hospital Association, Magrath said.

The program was established in 1968 under the direction of John Payton of Honeywell but was run completely by the inmates. Participants were taught three basic computer courses after which they began work as applications programmers for various governmental agencies. Experienced inmates teach new members of the program.

The incentive for the program has been jobs upon release and it appears to be quite successful as far as rehabilitaton is concerned. Of the 25 members of NCPG who have been released, none has returned to prison. That compares with 75% of total prisoners returning, Magrath said.

On the Inside This Week

Independent Packages Upgrade IBM 3705 — *Page 22*

CIA Backs Bill to Make Consent Decree Process Public —*Page 59*

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'Facts' Blame Computer In Insurance Scandal

Special Programming Only Incidental

The Great Fraud: DP or Not DP?

By Alan Taylor
Special to Computerworld

LOS ANGELES – The recent Equity Funding Life Insurance Corp. scandal [CW, April 18] has been called the "first great computer fraud in history," and perhaps in the future, evidence will confirm this judgment. But the "facts" relied upon by the staff members of leading national publications to support their published analyses that this was a computer fraud do not add up.

Other story on Page 3

Many stories implicitly or explicitly condemned the data processing professional staff of the conglomerate as obviously guilty of either fraudulent programming, or perhaps almost criminal incompetence (which is almost as bad a reputation for a professional programmer to live with).

This happened despite the fact that:

- Special programming appeared to be only incidentally used, and was not a significant item.
- The reporters had not checked their understanding of data processing with outside sources who understand in-house service bureau operations, normal programming or testing techniques.
- The accountants and insurance investigators had failed to look at the files behind the input, thus giving the conspirators time to forge them – or to check on their accuracy later. And so these people could be regarded as the key to the scandal, rather than the data processing personnel.

Analysis

Billing Programs Suspected

The main accusation of fraudulent programming was based on the existence of billing programs that could select policy holders to be billed on a departmental basis, using a 2-digit key.

Other grounds for accusation were the volume of standard input processed by the normal program system, which in fact represented fictitious input, and the preparation, for a user-actuarial department, of a list of unused policy numbers, utilizing a standard utility report generator.

None of these "facts" involved any requirement for sophisticated data proc-

(Continued on Page 4)

Telex Turns to Documents To Prove IBM a Monopoly

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Relying almost solely on previously secret IBM documents to prove its claim that IBM is a monopoly and has used monopolistic practices, Telex began its $1.2 billion antitrust case against IBM here last week.

Telex attorney Floyd Walker contended that before making any move against the independent peripheral equipment buyers IBM carefully charted the effect on its competitors in that market with "remarkable" accuracy.

IBM trial attorney Thomas D. Barr, of Cravath, Swain and Moore, claimed that if the court accepted the Telex definition of the market, it would have to find Telex also guilty of monopolistic practices.

He also contended that the actions which Telex said were anti-competitive were the result of technological improvements and not marketing considerations.

In the maneuvering before the case opened IBM had sought to keep most of the IBM documents Telex planned to use out of the public record of the case and possibly out of the case altogether, a move which would have destroyed most of the Telex evidence.

Judge A. Sherman Christensen, the presiding judge, ruled, however, that the documents should be admitted at the outset, but said IBM could later move that they be stricken from the record and therefore from consideration in the case.

Telex contends, Walker said, that "IBM has monopoly power" in the tape, disk, memory, printer and communications controller market and in the entire peripherals area. In addition, he said, "the principal complaints in this case have to do with marketing plans and strategies which have tended to eliminate Telex as a viable competitor in the peripherals business.

"Basically," he said, "these involve pricing in such a way by IBM of its products that the margin of profits left in the products for companies such as Telex has been so reduced that the companies can no longer continue to expand."

The IBM moves have made the firms in the business "dying companies," Walker said, and they would remain so unless "something is done to restore competitive environment to that which existed prior

(Continued on Page 5)

L.A. County Sues Ampex For $4 Million

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – The Los Angeles County supervisors have filed a civil suit in Superior Court here against Ampex Corp. seeking $4.25 million in damages against the firm for not living up to an $8.1 million contract to provide a sheriff's video-file system.

The suit claims that Ampex broke its lease agreement in three ways:

- As delivered, the system is incapable of performing as the firm promised either in volume of work to be handled or in time expected.
- No acceptable documentation has been produced on how the system is to be used.
- No proper acceptance test procedure has been produced by Ampex.

The county has spent $628,000 in rent for hardware for the system, which was to be part of a $19.5 million system of

(Continued on Page 2)

★ Special Report: Communications ★

Time Studies 'Mobile-ized'

Configuring a complicated communications network to meet one's individual needs is not an easy task. What is needed, above all, is extensive and dedicated planning. This special report looks at the users who have met the challenge successfully, and not always with the same tried-and-true methods. See Page 27.

By Ronald A. Frank
Of the CW Staff

APPLETON, Wis. – A motor home equipped with an on-line data communications terminal has changed traditional time and motion studies for many firms in Wisconsin.

The firm which provides the innovative approach to industrial engineering problems is Management Science, Inc.

When one of the firm's more than 40 clients wants to develop standards for an industrial operation, the motor home is rolled up to the door. A Sycor 340 terminal system is used to develop the required work standards. In order to obtain typical work flow information that in turn is entered into the terminal, Management Science representatives first produce a videotape of the actual operation. The videotape is less distracting than the original time-and-motion manual data gathering, according to Willard Kern, president.

'Film Editor'

When the tape is rerun inside the mobile data center, the important parameters are extracted by an operator who watches the tape, determines the important actions being taken by the worker, and translates this using the keyboard for

(Continued on Page 2)

Time and Motion Studies Get Moving

(Continued from Page 1)

entry onto the terminal's cassette. In addition to the terminal and videotape system, the motor home includes a card reader, printer and mag tape unit.

The entire process is based on special software, developed by Management Science, which generates English language instructions based on mathematical inputs.

When the operator in the "mobile computer lab" (as the company calls it) keys data into the terminal, the information is based on the movements of the worker who appears on the videotape.

The standards that are developed and printed out for the user in the mobile unit include standard costs, measurement of a "fair day's work," payment incentive levels for "piece work" operations and similar analyses.

The standard cost file of a job is based on the input coding. Elements and descriptions of work associated with assembly functions are generated into files by comparing the time required to perform a function with the cost of the operation.

The software data base that enables Management Science to produce short turnaround answers was generated with the Terminal Application Language (TAL) that is part of the Sycor system.

Engineers, Relax!

The Management Science services are not meant to replace resident industrial engineers. In most cases, the in-house people are trained when the initial analyses are done and programs are supplied for the client to continue to operate after the mobile van has left.

Usually after Management Science develops the system it then leases it to the client firm. The programs can be run either on the client's in-house CPU or with a terminal access to one of the several data bases maintained at area service bureaus by Management Science.

The Sycor system in the motor home operates on-line with a 370 at Acts Computing Corp. in Grand Rapids, Iowa. But any IBM "65K configuration" can handle the custom programs, Kern said.

The programs are currently running on 360s, 370s, Burroughs, Honeywell and other CPUs for the more than 40 clients, he added.

The mobile lab connects to dial-up lines using a DAA installed by the local phone company. In most cases the client will order the DAA ahead of time and for actual interconnection most firms have a phone jack in a conference room or somewhere in their building, Kern said. The equipment in the motor home is powered by a 4 kW generator.

The main advantage of operating on-line with the Sycor terminals is the elimination of data input preparation. But many of Management Science's customers run their jobs in batch mode.

The input data in the mobile lab is entered onto one of the Sycor cassettes and is sent to the Acts service bureau at 2,000 bit/sec using ICC modems, one of which operates in the motor home.

20% Savings

The programs usually run with either OS/Hasp or DOS/Power and the net effect is to reduce the industrial engineering function to 20% or less of more conventional study methods, Kern estimated.

Although the work study methods may be innovative, they usually have the backing of the workers involved. "We adapt to the workers, and we have a system that has been developed at a work pace rate that is acceptable to international unions," Kern said.

Instructions in English

One of the "positive communication points" of the Management Science system is a complete English language instruction sequence which is printed out in the motor home and given to the worker. The worker then can check that all parts of the job operation have been included in the analysis.

Among the clients which get Management Science services is an insurance company where the keypunch operation was optimized.

"We have universal math formulas and we put in specific variables that are object- and thing-oriented versus people- and pattern-oriented. And the variables can be used to describe any kind of job," Kern said.

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Small Banks, Beware of DP!

By a CW Staff Writer

SAN FRANCISCO – Smaller banks – those with under $25 million in total deposits – should be wary of turning to computer systems to automate their banking functions.

That is the message of a recent speech here by Frank Wille, chairman of the Federal Deposit Insurance Corp., before the 43d Annual Convention of the Independent Bankers Association of America.

Wille noted that a recent FDIC study showed that "a bank with $25 million in total deposits which automated its demand deposits, time deposits, installment loans, business loans and real estate loans tended to incur higher operating costs in all those categories than banks which had not automated.

"If a bank automated by setting up its own on-premise computers, operating costs were an average of 10.7% higher for demand deposits, 26.6% higher for time deposits, 13.6% higher for business loans and 12.7% higher for real estate loans than they were for banks that did not automate," Wille told the group.

County Sues Ampex for $4 Million

(Continued from Page 1)

record storage and retrieval, communications dispatch and microwave transmission.

The Ampex video-file system was to be used in the Oracle Program (Optimum Records Automation for Courts and Law Enforcement).

Ampex has denied charges that its equipment failed to fulfill the terms of its contract for videotape equipment.

Charles Steinberg, company vice-president and general manager for the audio-video systems division, said most of the equipment has been delivered and remaining components have been held up because the county has refused to permit their delivery.

He said the county, because of internal conflicts, changes of personnel and re-evaluation of the entire county regional justice information system, has repeatedly refused to meet with Ampex in its efforts to respond to the county's changing requirements.

A technical audit of the system last fall was made by Unicorn Systems Co., Los Angeles, on a contract from the county.

The audit found that the system did not meet the specifications for which the county had contracted.

Unicorn, which does systems design, analysis programming and technical auditing, said it found the system could not perform the functional tasks agreed to in the time frame Ampex said it could in its proposal and contract.

The contract was signed in March 1969. In December 1971 the county said Ampex was notified that its equipment did not comply with contract specifications and lease payments were stopped.

Suit Against Singer, Systemation Dropped

SAN LEANDRO, Calif. – Representatives of the International Chemical Workers Union, The Business Machines Division of The Singer Corp. and Systemation, Inc. jointly announced that the pending lawsuit by the union against Singer and Systemation has been dismissed by mutual agreement of the parties involved.

The suit, initiated by the Akron-based ICWU last fall, asked some $800,000 in damages in connection with the use of a computer supplied by Singer through its Cleveland office and software services provided by Systemation, also of Cleveland.

The announcement stated that "the lawsuit originated because of misunderstandings regarding the capability and use of the computer and software services which now have been resolved to the satisfaction of all parties."

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What Really Happened?--Analysis

Auditor Negligence, Fear of DP Called Keys to Fraud

By Alan Taylor

Special to Computerworld

LOS ANGELES – Four separate sets of fraudulent actions were being routinely entered on the computerized books of the Equity Funding Life Insurance Corp., but none of them involved the production of specialized programming for potential fraudulent purposes by the corporate DP staff until a final attempt to stave off rediscovery was made in the last week of March of this year.

The four fraudulent uses of the computer were:

- Reopening the previous year's books and adding new input (such as reinstatements, lapses, death claims, sales, etc.) until the results matched corporate aims.
- Accepting falsified, but correct, format input from user departments which created and maintained bogus policies.
- Preparing test files at the instructions of the actuarial department, officially for use in insurance-selling simulation studies, but actually used to create falsified input describing bogus policies.
- Accepting about 35 sets of falsified input and maintenance documents which resulted in dead policies being revived – accepted as having $3,000 to $5,000 surrender value and cashed in through dummy bank accounts.

All actions except the last one – which was apparently the work of some still untraced independent entrepreneur probably in the insurance company subsidiary – were being handled in order to provide management with data to support its claim as a strong, high-flying conglomerate.

The use of the computer appears to have two facets – how it assisted implementing in the fraudulent firm figures in fact, and how the auditors' fear of the computer was used by the conspirators to prevent the normal level of auditing from taking place, although it could have been done without any computer knowledge.

In March, with the new auditors already taking up position, a DP programmer, under protest, did program a listing which included only good policy details, but repeated each good policy about three times, and scattered them into different parts of the listing to hide the repetition. This listing made the amounts balance with the previously claimed policy totals which were input as program constants.

The major role of the computer appears to have been in its use to find out which policies the auditors were going to check on – so that microfiche of the policy documents could be forged in time – and the use of an official "stop-gap" policy-maintenance data processing system to permit evasion of full checking and reasonably allow reruns on the ground of "errors." In fact, the runs were to "document" false annual figures.

A minor role of DP was the improper use of a simulation study, The Model Shop, by the actuarial department, which was an independent user of the corporate system. Here, what were supposed to be fictitious Model Shop files of policies turned out later to be an elementary input-creation system for the major bogus policies. These major policies were only integrated into the main computer system last December, two or three years after the fraud started.

Eric Schulz, the DP department insurance system manager at the time of the integration, suspected what was going on and realized he had no proof. He also saw it was possible that Equity Funding Life would be able to pull out of the "reinsurance" business and thus make good on the policies. He himself started looking for a new job position while quietly seeking proof of a scandal. He is now working with new auditors to successfully reconstruct the actual annual figures since the firm went into bankruptcy early in April.

The independent frauds apparently were not known to the executives of the firm, but appear to have been the independent activity of some insurance-knowledgeable entrepreneur on the insurance company staff. The frauds started last Jan. 2, and have resulted in the company's paying out surrender values of between $3,000 and $5,000 on some 30 or 35 policies which had really been dormant for years. The payments were funneled via dummy bank accounts to some unknown person.

The big company-sponsored fraud system was perpetrated by Mass Marketing Office, situated on the 6th floor of the Union Bank Building. This apparently involved selling discount mass policies to employee groups, union locals, Knights of Columbus, etc. These policies were not treated like ordinary individual policies both because they often needed special billing, and did not need more than annual file updating.

The Teachers Annuities, for instance, were sold to school districts, and were sometimes billed on a nine-month basis instead of the usual 12-month basis, to fit in with the needs of the profession.

These policies with their low updating requirements were able to be handled

(Continued on Page 4)

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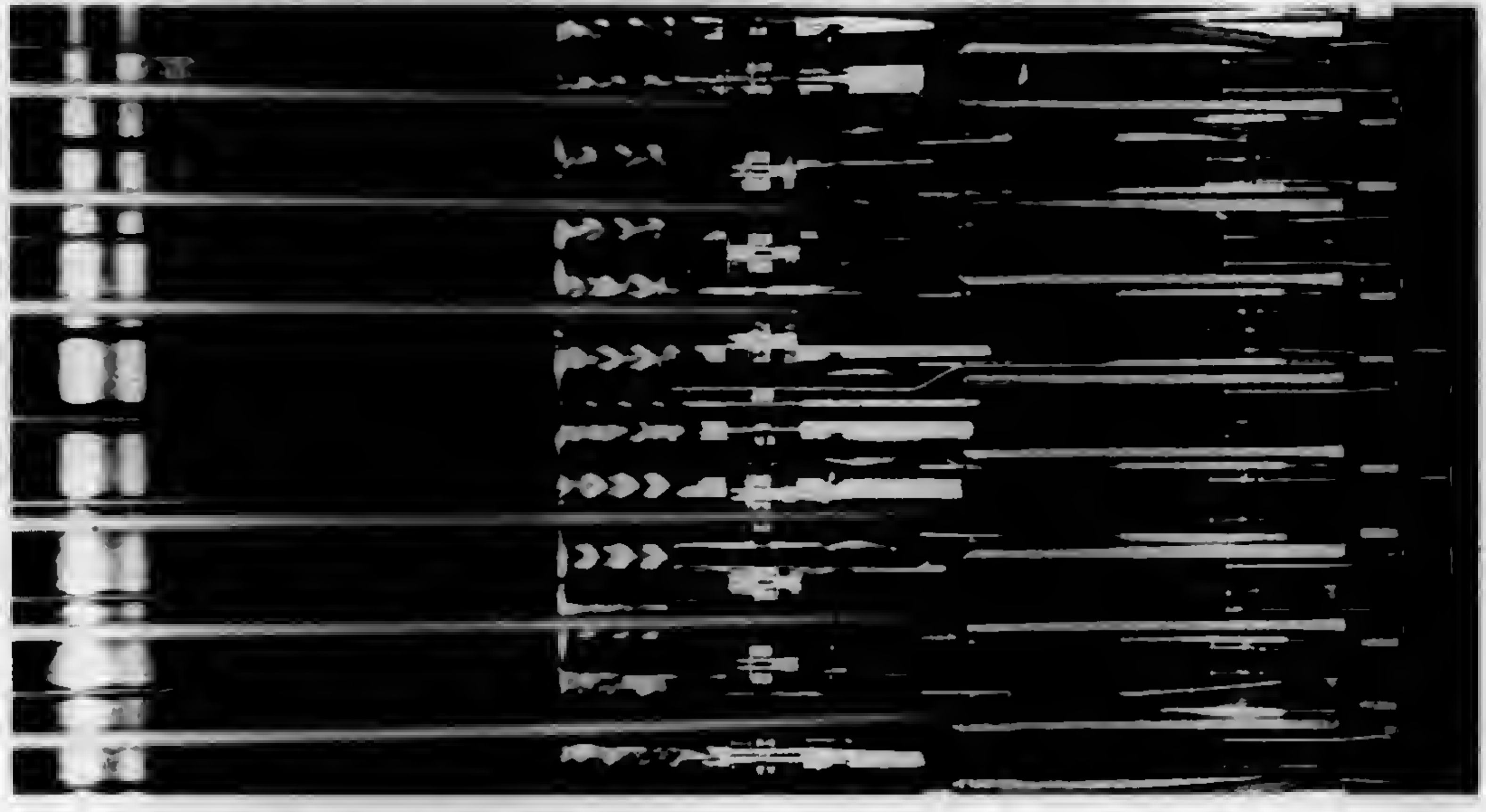

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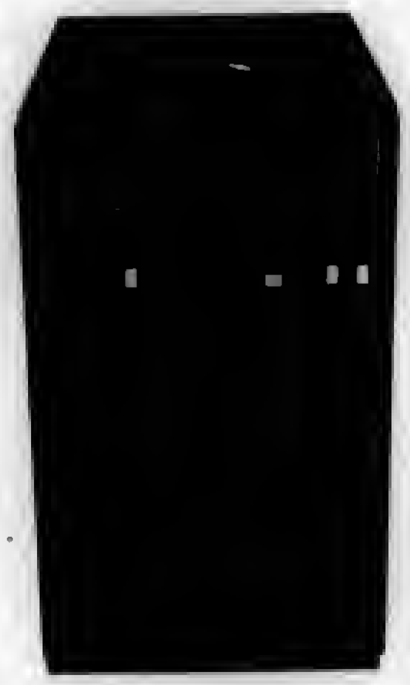

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Physical DP Tampering Discounted in Bank 'Shuffle'

By Don Leavitt
Of the CW Staff

NEW YORK – Continuing investigation into the apparent embezzlement of funds from the Union Dime Savings Bank [CW, April 4] has led bank officials to a better understanding of how the "shuffle" was handled and which accounts were affected.

The alleged theft did not involve any physical manipulation of the bank's computer or unauthorized changes in the software that supports the bank's operation, according to Chairman Walter R. Williams Jr.

Balanced System

DP was involved in the embezzlement, he added, only to the extent that customer account records stored on the computer were changed to keep the system in balance. These changes were made through unauthorized use of a teller's terminal and appeared to be valid transactions to the computer programming, Williams said.

Ironically, Williams noted, these transactions were captured by the system's audit trail routines with the results that – once the embezzlement was discovered – the affected records were "easily identified."

The bank's dual control system was circumvented at the branch level, Williams explained, when the supervisor of tellers gained unauthorized access both to the branch reserve cash supply and to a teller's terminal.

The thefts went undetected, he said, because the supervisor, who was unauthorized to use the terminal except for administrative procedures, in fact used it to enter transactions as required.

Spurious withdrawal notices were entered to account for cash allegedly taken from the reserve cash supply. Deposits and other adjustment transactions were used to restore the balance to the amount shown in a depositor's passbook, if the owner of one of the altered accounts appeared at the bank.

While some analysts have suggested that the embezzlement would have been recognized more easily if the system had been entirely manual, Williams disagreed sharply. In addition, he noted that ledger cards could have been replaced without being detected in that kind of environment, whereas the computerized audit trail records were inaccessible for alteration and have provided the bank with documentation needed to restore accounts to what they should be.

Auditor DP Fear 'Key' to Fraud

(Continued from Page 3)

directly by the actuarial department until last December (the actuarial department had the use of corporate computers on an open shop basis.) Originally in 1970 and 1971 these actuarial maintenance systems appear to have been held on a 5 in. by 8 in. card system. In 1972, the number of bogus policies jumped. Actuarial department-controlled computer runs were used to help create tape listings of the bogus policies.

These runs were done with a report generator, with the avowed purpose of creating the file data for the insurance sales simulation studies.

The only actual program known at this time that was written specifically to help in this input-creation, although it did not create such input, was a listing of unused policy numbers. This was created by DP reinsurance supervisor Peter Kaplan shortly after he joined the firm in January 1972 working under instructions of the actuarial department. The actuaries Kaplan recalled, last week said that they liked to have "safe" policy numbers that still looked like real ones, to use in their simulation studies.

A lack of real DP understanding by the actuarial department first aroused suspicions in December. Eric Schulz then felt that one of the Mass Marketing files of policies which he was being asked to merge into the now functional, but still stop-gap computerized insurance system, was apparently being created only hours before being supplied to him; rather than really coming from old records, as it was supposed to do.

Fear More Important

The fear of the computer was more important in the fraud operations than the minor programming or operational role it played in the late stages of the fraud.

The technique Equity encouraged the auditors to use was to request, by policy number, hard copies of the computerized records that it wished to inspect the next day. Instead of keeping this list of accounts secret until the computer was starting, or taking it themselves down to the computer operator and seeing it put into the system without being read by the Equity Funding officers, the auditors turned these lists over to the actuarial department personnel.

This advance knowledge gave the Equity Funding conspirators overnight to produce fake documents and photograph them.

National Journals Put the 'Mark' on DP

(Continued from Page 1)

essing methods, or indeed for any abnormal programming.

Cole Furr, director of a California data processing school, told *Computerworld* that his graduates certainly would be able to tell the difference between fraudulent programming, involving the creation of special insert routines, and the type of actions that appeared to be involved in the scandal.

The leader of the attack on the data processing area in Equity was the *Wall Street Journal's* Los Angeles staffer William E. Blundell. Data processing was fingered and found unquestionably guilty in an early paragraph of a long and very detailed story published April 2.

The *Journal* told its readers: "Special treatment of the (fraud) in data processing was imperative, for example, lest the wrong statements were sent to the wrong people."

Blundell told *Computerworld* last week that he had based his comments on the fact that the Equity data processing center had the ability to print bills by department and a random number generator.

"What," he asked rhetorically, "would an 'honest' insurance firm ever need a random number generator for?"

Generator's Job

Blundell's answer and why it proved DP guilt was that the generator was used to find non-active policy numbers which could then be allocated to the bogus policies. But, in fact, random number generators are standard routines used to help create test input and other normal data processing activities.

In any case, the listing of unused policy numbers was produced without a random number generator. It was made at the request of the actuarial department by a then-new employee, Peter Kaplan.

Kaplan told *Computerworld* last week that he had received, in the normal course of his work, other requests from user departments for reports, and that this incident certainly could not prove a charge of data processing involvement.

The *Journal* and Blundell took considerable care in the story not to go beyond what he thought he had heard from his EDP sources apparently entirely within the company.

Where he did not know exactly what had happened, he used phrases that did not directly indict the data processing area – but did not acquit it either.

Death Claims

For instance, one of the alleged fraud methods used in Equity was to falsely report that some of the people involved in the policies had died, and then to collect the insurance proceeds from a reinsurer. (Reinsurers bought the policies at 180% of the first year's premium.)

Blundell covered his ignorance of exactly how this was done by saying that "it is also known that on occasion a nonexistent policy holder was sent to his last reward via a forged death claim . . ." Other press coverage was not so cautious.

Newsweek magazine, however, in its April 23 issue, wrote about the scandal under the bold headline, "FRAUD: Conning by Computer."

"Even faked death certificates were programed [sic] into the computer, to cover the fraud trail further," ex-IBMer and *Newsweek* reporter Martin Kasindorf wrote. He told CW last week that the reference to "programing" was not in his original story, but had been added by editors in New York. The editors in New York apparently did not know that normally programmed systems would be able to record ordinary deaths, and so death claims would need no special programming to accept bogus input. So here it appeared to be the editors' alteration that had indicted the programmers. Kasindorf was guiltless here.

But Kasindorf himself seems to have been confused between ordinary and fraudulent programs.

Like the *Wall Street Journal*, he apparently thought that fraudulent – i.e., special – programs had to be written by the data processing people to prevent all the policies on a file from being billed at the same time, to create reports which either included or excluded the bogus policies!

The concept of utility programs, or normal program controls, which made any such specialized programming unnecessary, was apparently as unfamiliar ground for him as it was for Blundell.

1969 Sophistication

Kasindorf was "aware" of computer hardware, however. Part of his *Newsweek* story read, "Equity Funding had a highly computerized bookkeeping system even before the fraud started three years ago . . ."

He told CW last week that he did not know what equipment Equity Funding had at the time the fraud started, which he put at either 1969 or 1970. He did say, however, that equipment such as the IBM 360/30 would certainly not fit the description of a "highly computerized bookkeeping system." In fact, the 360/30 was the equipment installed at Equity in 1970, having just replaced the even less sophisticated Univac 1005 in 1969.

In any event, the work of the handling of the major bogus insurance policies was not integrated into the "sophisticated" corporate computer operations until December 1972, or two years after the fraud started. Small unsophisticated computer runs may have been used before then, but much of the updating was apparently handled manually.

But there was another way in which *Newsweek* implied programmer involvement and acquitted non-computer-oriented investigators.

In *Newsweek's* reports of California Insurance Comissioner Gleeson L. Payne's comments, Kasindorf quoted Payne directly as saying that he (Payne) would certainly call it a computer fraud, on the grounds that people could not build up hard-copy records so quickly in the "old days," and also because his examiners were not equipped to check out a computer run to see if it is authentic.

He was also quoted under the *Newsweek* alias of "one investigator" saying, "All in all, it was a beautiful job of programming."

As programming is well-known as something that only data processing professionals are skilled enough to judge today, such comments could easily imply that the data processing staff was directly writing fraudulent programs.

Factually, however, the major fraud was for years handled by hard-copy (or at least microfiche) methods – as Kasindorf had noted earlier and had made one of his bases for suspecting the involvement of data processing personnel! And Payne's investigators, or anyone else, would have had no trouble in uncovering the fraud even without any knowledge of programming.

All they would have had to do was insist on the immediate production of the bogus applications, medical examinations, etc.

This apparently was never done during the three years the frauds lasted! When the newly created forged records were produced (after being created overnight) Payne's investigators did not check on their accuracy – but only on their existence!

Similarly, the Illinois Insurance department failed to check on the existence of securities allegedly stored in Chicago banks, preferring instead to look only at printouts from California.

Ironically, none of the would-be press assassins of data processing apparently noted the two areas where some odd runs on the computer were requested, which, in hindsight, might have given the scheme away much earlier.

The first of these instances occurred in December 1972, three months before the "crash," when insurance system manager Eric Schultz found that the contents of files being converted from the earlier user-maintained systems, and supposed to go back some years, were apparently being created (under the guise of legitimate input for modeling insurance-selling operations) just hours before being handed to him as input data for the conversion then in progress!

He immediately started watching, making notes and trying to identify the real scope of the problem, as well as verbally complaining.

The second occasion came just one month before the crash in February.

Systems programming manager Frank Hyman became suspicious about the number of ways the 1972 figures were being rerun for the life insurance subsidiaries with different levels of cash reserves, with various products entered and producing twice as many sales, and with half as many sales actually occurring.

At the time, Hyman said, he questioned an official in the data processing department on the matter. He was told that a corporate austerity program was being designed, and that these additional runs were simulation runs to help plan the corporation's future course.

At the time, Hyman said, this temporarily satisfied him. Later, if any of these simulated printouts had actually been used as the published figures of trading for 1972 – which would have been theoretically possible just by sending out the simulated runs as real ones – the fraud could have become obvious to Hyman and perhaps to other DP people.

Equity Funding was handling the reserve calculation on the corporate computer for the first time this year.

But before the figures were ever published, which might have implicated DP, the roof had fallen in on Equity.

Telex Claims IBM Documents Back Monopoly Charge

(Continued from Page 1)

to what we claim to be predatory acts of IBM."

The first predatory move, Walker said, came with the announcement of the 2420 tape drive where the price for a unit was reduced in response to competition "without any decrease of manufacturing costs – but simply to reduce the marketing opportunities for competitors."

IBM could make such moves, he said, because it could spread the loss across its product line "without any real impact upon their total revenues."

For example, he noted that the 2420 Model 7 was priced at $1,000/mo but that the Model 5, which was introduced later and which was essentially the same unit, was cut in price about 40%.

The next move, he said, was the introduction of the 2319 disk unit, which he claimed was a reconfiguration of the 2314 with a 40% price reduction to meet the competition.

At the same time Walker charged that IBM protected its 2314 base by making the model number change so that it would not have to reduce the prices for similar equipment in the field in user installations.

Enter FTPs

Thirdly, he said, since the market share of the independents was still going up six months later, IBM then introduced the fixed-term lease (FTP), which cut prices another 16% to 30% and tended to lock the customer in and prevented him from choosing independent equipment.

All of the decisions were based on IBM projections of what would happen to the independents if IBM took no action and what would happen if it made the moves, he said.

The first Telex witness, G. Harry Ashbridge, Telex vice-president of business and market opportunities, testified that IBM documents showed the extent of IBM control of the market.

For example, one of the documents used as evidence by Telex showed, he said, that out of a total tape drive market at the end of 1970 IBM had 87%, or 39,600 out of a total of 45,300, while the "other equipment manufacturers" had only 5,700.

Similar documents showed that IBM had 94% of the total installed disk market at the time, he said, indicating that out of a total of 51,800 units IBM had 48,700.

Because of lower price units from the independents, however, IBM had only 9.1% of the revenues in the tape market at that time even though it had 13% of the units installed.

Quarterly product line assessments indicate, Ashbridge said, that IBM had rated its 2401 tape drive as "deficient" when compared with the competitive units, while the assessment showed that the 2420 would be "equal" to the competitive units in the field.

Before the 3420 tape drive unit was introduced, the document showed that IBM rated it "superior" to competition, but later had to revise that to "equal" to competition, he said.

At the same time, the IBM research from the document, Ashbridge noted, had rated the IBM 2311 disk drive as "deficient" when compared with the independents. The document also rated the 2314 disk drive as deficient, he said.

In the area of predatory practices, Ashbridge stated that the IBM documents themselves indicated that the 2319 disk drive was just a rework of the four-spindle version of the 2314 drive with no difference except the price reduction.

At the same time, he said, users in the field did not get the same price reduction even though the two units were essentially the same in all functional respects.

But when Telex reacted by lowering its price on its 2314 replacement, he added, IBM had lowered the price for all equipment then installed.

Using other IBM documents, Ashbridge then claimed that the products IBM had included in the fixed-term leases were those which had competition from independent suppliers, while those that were left out of the plan were ones without any competition in the field.

But immediately after the fixed-term plan was announced, Ashbridge said IBM raised CPU prices, a move that allowed it to make up for its loss in revenue on FTP leases.

The integrated controllers and memory on the 370/158 and 168 announcements from IBM also reduced the prices for these devices, Ashbridge indicated, without any functional change in their performance.

Even though IBM lawyers managed to keep Ashbridge from reading an IBM memo on the subject of CPU price increases and the fixed-term plan in open court, the memo said the price changes and the FTP "will probably be a wash in so far as business volume is concerned.

"Although there will probably be an adverse reaction on the part of some customers," the memo continued, "the net effect of FTP and price changes will not significantly increase his total cost and no system decreases are forecast."

In his opening statement for IBM Barr contended that "there is nothing" that supports the Telex claim that each of the peripherals markets was a definable market area.

"Now, we say that the law, sound economic theory and common sense demonstrate that Telex's version of the version will not wash and even if it proves what it claims here, even if it proves what it sets out to prove, it cannot succeed as a matter of law."

Follow the . . .

In the area of long-term leases, Barr said IBM's competitors had been offering such leases for a long time and that "IBM decided to follow that practice."

IBM, he said, is "experimenting" with the various lease plans trying to determine "what form of long-term lease is most satisfactory to it."

Barr felt the industry was presently undergoing a technological "revolution" that was allowing IBM to integrate more functions into its systems and said the technology made it economically sensible to do so.

In addition, he said, all of the Telex trouble was caused by a "manufacturing collapse" from the fall of 1971 to August 1972 and the problems it had were internal and not caused by IBM.

Aussies Eye Crime System

Special to Computerworld

CANBERRA, Australia – The Federal Government may put all its information on criminal activities into a computer.

Attorney General Sen. Lionel K. Murphy has set up a committee of public servants and academics to report to him by Aug. 1 on the plan.

The inquiry could be the first step toward amalgamation of all the federal law enforcement agencies in Australia.

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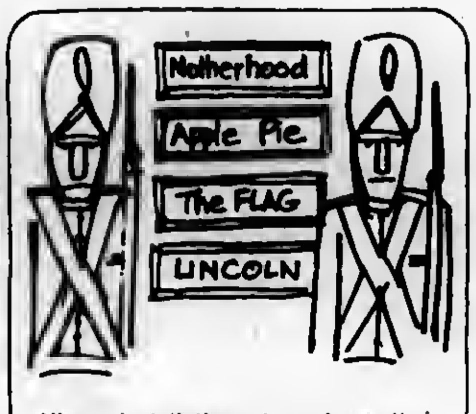

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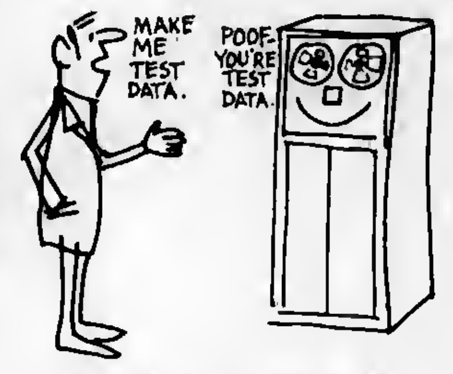
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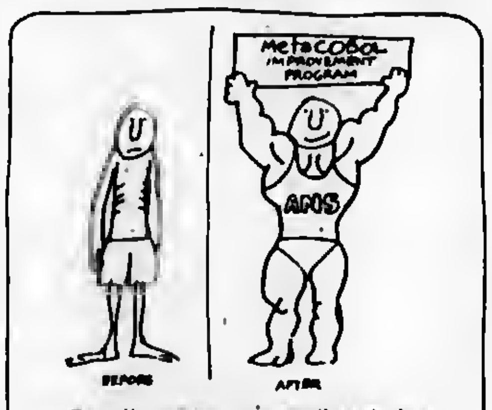

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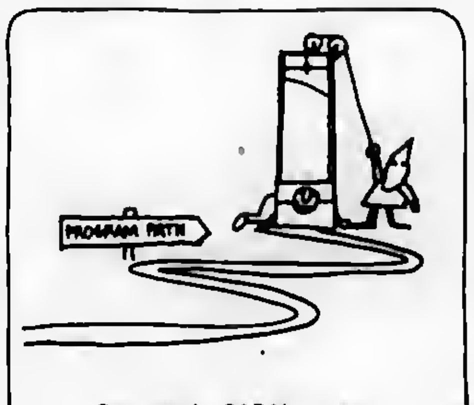

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Adoption Data Bank Would Stress Speed

CW Washington Bureau

WASHINGTON, D.C. – A central data bank of all "adoptable" children in the country that could be used to match them with parents wanting to adopt children would be established under legislation introduced in the senate.

Sen. Jennings Randolph (D-W.Va.) told the Senate "there are thousands of homeless children throughout the nation who are awaiting adoption.

"I am . . . introducing legislation which would establish a national information exchange system in hopes that we can better realize the placement of these children into homes."

The information system would be set up under the Department of Health, Education and Welfare, according to the bill, and would be used both for children without families and those that have to be separated from their families by court action, Randolph said.

In "the shocking problem of child abuse," he noted, it is often necessary for children to be separated from their parents by the courts.

"In such cases it is important in the rehabilitation process of the child that an adequate and loving home be provided as soon as possible. Yet in many areas, it takes months before foster families can be found for these battered children," he said, noting that "often the result is an extended stay in a hospital or institutionalization."

Under the legislation there would be a central data bank on all adoptable children and a registry for families seeking to adopt a child.

Randolph noted that presently "there are many families wanting to adopt a child who cannot find children awaiting adoption in their area. They need only to contact the registry to find where children are available for adoption" with the new system, he said.

"There may be large numbers of homeless children in one area while a neighboring region may not have any children awaiting adoption," Randolph noted.

In addition, the bill also has provisions that would allow the U.S. program to be coordinated with similar systems in other countries, which would facilitate the adoption of foreign-born children, he said.

Medical Record Problems Probed

Special to Computerworld

SEATTLE – Washington State doctors have started investigating the problems of computerized medical records, and have organized a special medical record association to study the possibility of developing legislation concerning the confidentiality of computerized medical records.

Mrs. Lynn Regudon of the Washington Medical Record Association noted that two major problems are currently under consideration.

- How can one correct errors entered into the computer without being charged with tampering with records, if a case is brought to court?
- What regulations should one impose to control release of computerized medical information?

Readers wishing to respond to Regudon's questions are asked to write to Lynn Regudon, The Mason Clinic, 11180 9th Ave., Seattle, Wash. 98101.

Civilian at Air Base Fits Right In

Special to Computerworld

CRAIG AIR FORCE BASE, Ala. – Charlotte Fikes is a civilian card punch operator, operating an IBM 026 card punch machine to transcribe supply and financial data for input to a computer.

Charlotte is also physically handicapped, having been born deaf and mute.

She works with about 50 different types of precoded transaction documents comprised of a wide variety of coded characters.

Item accounting officer Charles D. Ellis points out coded characters for Charlotte Fikes to transcribe.

Her deafness enables her to have total concentration where others might be distracted and her inability to speak does not keep her from communicating. She even has inspired the whole office force to learn spelling and sign language so they can "talk" with her.

Charlotte attended the Alabama School for the Deaf in Talledega, Ala., where she graduated from high school and completed a course in card punch.

Lower Prices? Mini Hopes It's No Bull

PHILADELPHIA – What do you get when you cross a minicomputer with a beef steer?

The answer could be a better price on beefsteak.

Amid all the explanations for the rising prices, one point often overlooked is the actual digestive chemistry by which grains and other foods are converted by cattle into beef on the hoof.

This approach may provide one of the best solutions through research being done at the Applebrook Animal Health Facility outside Philadelphia.

This facility is using a minicomputer to study meat-producing animals and the efficiency with which they convert food intake into protein.

Specifically, it hopes to learn how to improve the rate of growth (weight gain) and reduce the food required per unit of marketable meat to the consumer.

The experimentation involves testing for chemicals which selectively act on complex interrelated centers of the central nervous system and influence feeding behavior.

Sensors are mounted on the sheep and steers who have taken these chemicals with additional sensors attached to feeders and water cups.

These sensors allow a clocking of feeding times and amounts consumed to be entered by a Massey Dickison Data Acquisition System into a Varian 620/f.

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The data processing manager is the guy most likely to have gripes. And who'll be most pleased with what the 3200 does. Like, our powerful software package which minimizes training, edits, sorts, reformats and blocks data (up to 2880 bytes) to tape concurrent with keying. It also permits formats to be changed simply by plugging in a cassette or by supervisory entry. Plus many more features.

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Bill Would Coordinate Actions, Policies

Educational Technology Field Seen Outpacing Educators

By E. Drake Lundell Jr.

CW Washington Bureau

WASHINGTON, D.C. – Even though hardware capabilities seem to be moving ahead of software in the educational field, there is still need for research in both areas, according to Rep. Orval Hansen (R-Idaho).

Speaking on his bill (H.R. 6605) that would establish a Council of Educational Technology, Hansen noted "the conventional wisdom in the field of educational technology is that we are now in possession of more than enough hardware – computers, projectors, television sets . . . and that what is needed for realization of the full potential of educational technology is better preparation and understanding on the part of the educators."

But, he added, "this should by no means be taken to mean that educational technology hardware development is a final, completed accomplishment. The development of educational technology is still a fast-changing, dynamic field evolving more quickly than educators can digest."

While this situation leads to the development of more powerful tools for education, it also raises problems of standards and problems in matching the needs of educators to those of the equipment producers, he noted.

Research has shown that "although educators often complain that available technology does not fit their needs," Hansen said, "they have thus far successfully resisted providing manufacturers with precise descriptions of the qualities they need in products to facilitate the educational process.

"Neither have they accurately defined, in many cases, the instructional objectives they hope to reach through use of educational equipment," he said.

While he noted it was difficult sometimes for educators to define their exact needs in all cases, he said "greater precision on the part of educators in describing their needs can be achieved and would enhance the ability of manufacturers to respond to those needs."

At the same time he found that many of the standards in the field cannot be meaningfully related to classroom requirements of the educator.

"In some areas of educational technology," Hansen noted, "products are still in a rapid development state, evolving quickly as major and minor improvements and variations are introduced.

"Often the result of such technological improvements is the obsolescence of similar but older equipment, for which replacement parts and possibly even software can no longer be obtained . . . This plays havoc with long-range plans for integrating educational technology into the overall school program" in many cases, he said.

The council proposed by his legislation would help to overcome these problems, he said.

Coordination Needed

It would coordinate government agency actions and policies affecting the field of educational technology – both in-house and external projects. In addition, it would bring together representatives of various educational users of technology in a program that would try to identify and articulate common needs and concerns so they could be passed on to manufacturers.

In addition, the council would be charged with assessing the "quantity and quality of use of various types of technology in educational settings, including educational consumer reactions and evaluation of this technology," Hansen said.

The council would also encourage the development of needed equipment that is not presently available and would help to develop common formats and specifications for such devices.

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Lockheed Electronics

Preview: Lockheed's 3200 Data Management System will be demonstrated Wednesday, May 2, at the New York Hilton Hotel

Dairymen 'Milk' 24-Hour Hotline

CW Washington Bureau

WASHINGTON, D.C. – Dairymen around the country are presently calling into a computer-based system in Michigan to find the latest information on the best rations to feed their cows, the Department of Agriculture has reported.

The system, equipped with an audio-response unit, was accessed 4,733 times last year, the department said, by dairymen wanting the latest information on the best feed mix.

During the present period of rapidly rising feed costs and fluctuations in feed prices, the system has been most often used to help dairymen compute the "least costs dairy ration," according to Dr. Buel Lanpher, an extension economist in farm management with the department.

The computer system considers the latest costs for various feed mixtures to enable the farmers to find the least cost ration that can be formulated from the presently available feeds, he said.

The dairymen can access the system through Touch-Tone telephones from the area or county Agriculture Extension Service office, he said, and get an audio response from the system.

24-Hour Service

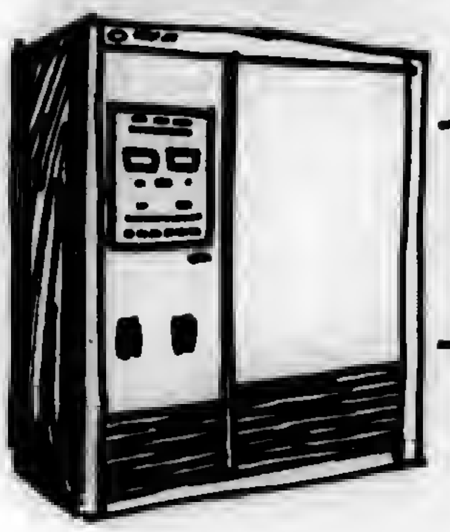
Charges for the service vary from between $5 and $15 for each analysis plus the cost of the long distance phone call, he said, noting the system is in operation 24 hours a day so that the calls can be made when the rates are the lowest.

Twenty-four dairymen in Ingham County, Mich., claim the system pays for itself by cutting the cost of feeding and they also report that 18 of them were able not only to cut the cost of feed, but also increase milk production by more than 190 pounds of milk a day with the system.

The system also has other farm-related programs for use by farmers, but the feed program seems to have been the most popular last year, the department reported.

In all, the "Capital Investment Model" developed for farms was used 917 times last year and the "Crops-Livestock Income Possibilities" program was requested only 390 times.

The department also noted the system was not only available to farmers, but could also be used by farm management consultants and bankers and others making financial decisions with farmers.



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Mini Monitors Transaction

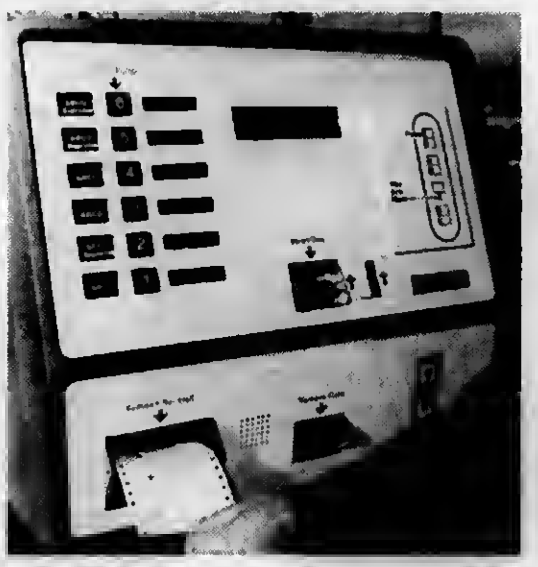
Self-Service Gas by Card or Cash

CW West Coast Bureau

LOS ANGELES – A computer-controlled, self-service gasoline station that accepts cash or credit cards has been opened in a suburb near here.

The station's 18 pumps are controlled by a minicomputer monitoring each transaction and linked by a telephone circuit to Atlantic Richfield's credit card center in Atlanta, Ga.

Developed by Atlantic Richfield in conjunction with Docutel Corp., Dallas, Tex., the system handles the dispensing of fuel as well as the printing of a detailed receipt.



After fuel is dispensed, a receipt covering pertinent facts of purchase is prepared electronically. Printed information includes: amount and type of fuel purchased; price per gallon; date; time of day; pump used; refund due, if any; and station identification number.

A customer inserts a credit card or cash in a control terminal on the pump island, selects fuel, fills the tank and obtains a receipt.

If he wants to use cash, there is a slot for $1 bills. An attendant will make change if necessary.

The credit card inserted into the pump slot is automatically verified at the credit card center in Atlanta. If a card is stolen, it will not be returned to the customer.

The credit check takes a few seconds and when completed the minicomputer directs preparation of a detailed receipt for the buyer.

The receipt gives the date, time of day, amount of purchase, type of fuel, price per gallon and number of the pump.

The station is part of an experimental marketing program. Additional computer-controlled stations will open soon in Los Angeles and East Coast areas.

ID Card Rule Sought

Special to Computerworld

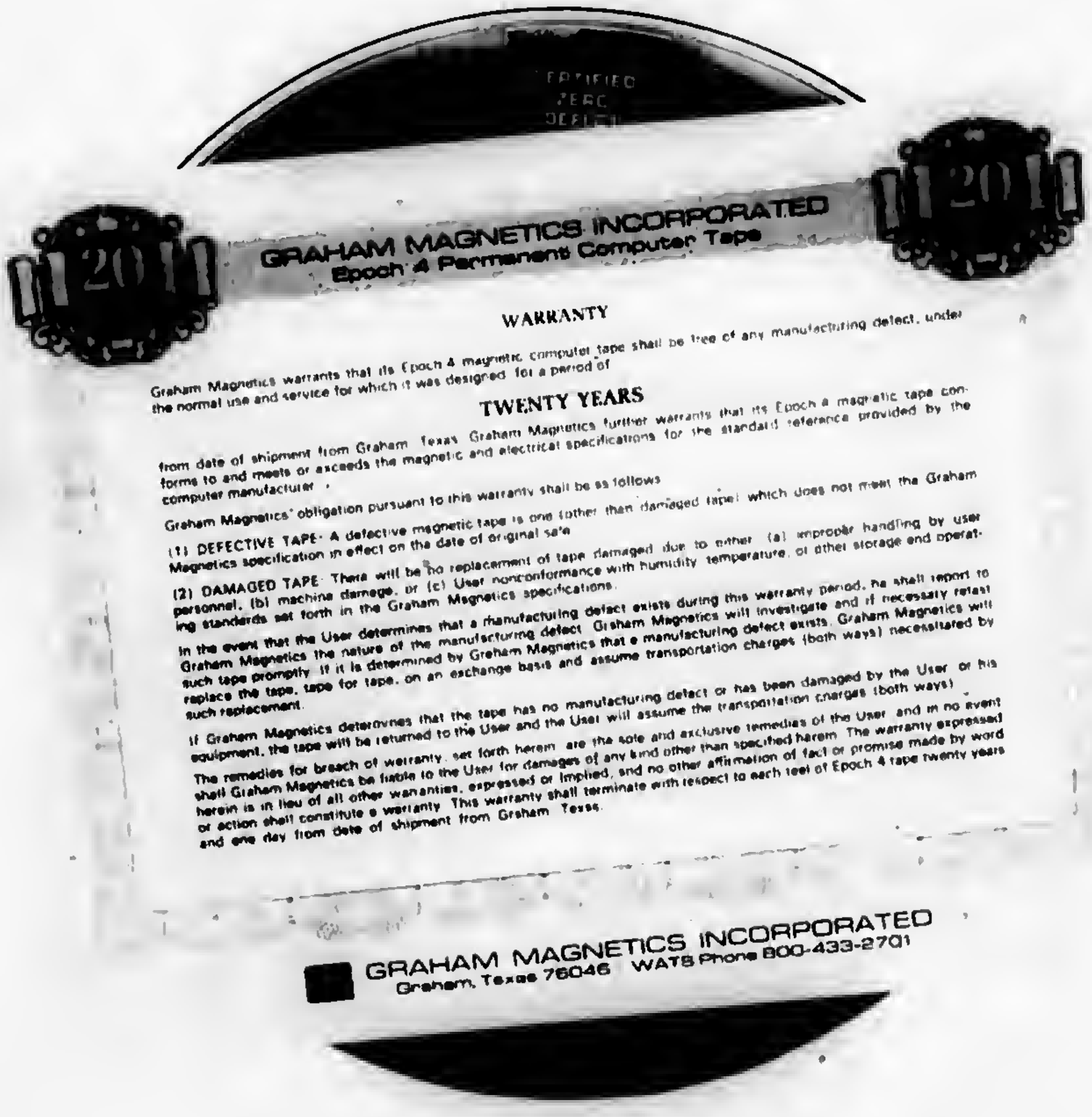
WASHINGTON, D.C. – The International Standards Organization (ISO) has started a program aimed at developing international standards for ID cards.

The committee responsible for determining the U.S. positions on these subjects, Ansi X4, is currently seeking information on the use of ID cards throughout U.S. industry, in the areas of physical characteristics, security and computer codes involved.

Other information being sought by the committee includes the type of machine-sensible encoding to be used, including magnetic stripe, embossed bar code and optical bar code.

The committee explained that these cards, which are not to be used for credit card purposes, are used in conjunction with driver's licenses, hospitalization and programs such as Social Security.

Details of the survey are available from Edward M. Piehl, Secretary, Ansi Committee X4, CBEMA, 1828 L St. N.W., Washington, D.C. 20036.



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TWENTY YEARS

from date of shipment from Graham, Texas. Graham Magnetics further warrants that its Epoch 4 magnetic tape conforms to and meets or exceeds the magnetic and electrical specifications for the standard reference provided by the computer manufacturer.

Graham Magnetics' obligation pursuant to this warranty shall be as follows:

(1) DEFECTIVE TAPE: A defective magnetic tape is one (other than damaged tape) which does not meet the Graham Magnetics specification in effect on the date of original sale.

(2) DAMAGED TAPE: There will be no replacement of tape damaged due to either (a) improper handling by user personnel, (b) machine damage, or (c) User nonconformance with humidity, temperature, or other storage and operating standards set forth in the Graham Magnetics specifications.

In the event that the User determines that a manufacturing defect exists during this warranty period, he shall report to Graham Magnetics the nature of the manufacturing defect. Graham Magnetics will investigate and if necessary retest such tape promptly. If it is determined by Graham Magnetics that a manufacturing defect exists, Graham Magnetics will replace the tape, tape for tape, on an exchange basis and assume transportation charges (both ways) necessitated by such replacement.

If Graham Magnetics determines that the tape has no manufacturing defect or has been damaged by the User or his equipment, the tape will be returned to the User and the User will assume the transportation charges (both ways).

The remedies for breach of warranty set forth herein are the sole and exclusive remedies of the User and in no event shall Graham Magnetics be liable to the User for damages of any kind other than specified herein. The warranty expressed herein is in lieu of all other warranties, expressed or implied, and no other affirmation of fact or promise made by word or action shall constitute a warranty. This warranty shall terminate with respect to each reel of Epoch 4 tape twenty years and one day from date of shipment from Graham, Texas.

GRAHAM MAGNETICS INCORPORATED
Graham, Texas 76046 WATS Phone 800-433-2701

No Hot Air

A minicomputer coupled with an interactive terminal is saving close to $250,000/yr in the operation of one of the largest wind tunnels in the U.S. at the Air Force Systems Command's Arnold Engineering Development Center in Tennessee. Personnel now have individual CRTs which report test conditions (above). This DEC PDP-8e-based system saves from two to five minutes in setting each test condition. Seated at the remote terminal (right) are J.P. Christopher of Propulsion Wind Tunnel's Facility Engineering Branch and Gerald Allen of the facility's Plant Operations Branch.

Users Ride 'Intelligent' Bandwagon

By a CW Staff Writer

KANSAS CITY, Mo. – Monsanto Co. has chosen to link remote intelligent terminals to its central DP facility to avoid the proliferation of stand-alone systems and the accompanying systems staff for each, Dr. Ray Bowman told attendees at the data entry session of Computer Caravan/73 here.

The sizes of the 40 "terminals" linked to the IBM 370/165 and 155 in St. Louis range from 360/20s and 40s to small intelligent terminals, he said.

Many of the plants have no DP staff, he explained, and the intelligent terminal route will avoid having to create a staff in each location, and will provide central systems development capability, he explained.

The 165 handles prime time remote job entry while the 155 is on-line and can back up the 165.

In addition, data entry is performed by the user, thus benefiting from his familiarity with how the information should look.

Reduced Error Rate

Dick Baker of Chemagro also mentioned the benefits of reduced error rate from having the user departments enter data as they often flag incorrect reports before entering them.

One user in the on-line data entry workshop, Howard Sunderland of Western Union, said he had done several studies on error rates, and found that 90% of the errors occur after the data has left the source.

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Editorials

No Credit Here

As one of the early backers of the Fair Credit Reporting Act, we feel it is time for Congress to review the whole field of computer-based consumer credit reporting.

Apparently, according to a report from the National Commission on Consumer Finance, the Fair Credit Reporting Act has not completely met its original goal of providing accurate and timely credit information.

At the same time, the commission also noted a developing trend toward consolidation in the credit reporting field. Because of this, the commission recommended study be given to establishing credit bureaus as public utilities.

The Fair Credit Reporting Act is not as strong as it should have been.

Therefore, Congress should find ways to strengthen it in order to provide greater security for the information in the systems and better ways to ensure correct and up-to-date information.

Further, all computer-based systems that contain information on an individual should be required to send that individual a yearly report on pertinent information in its files – so he can check it for accuracy and timeliness.

However, there are grave doubts about the Commission recommendations for establishing credit bureaus as public utilities, unless their operations are more restricted and controlled than they previously have been.

The concept of a centralized data bank in any field frightens many people, because of the many errors found in smaller systems. In the credit area, an erroneous report in a centralized file could jeopardize a person's credit rating anywhere – and might be harder to correct than a record in one of several local agencies.

Whatever is done, however, should be done from the consumer's point of view – with an eye to protecting his rights before consideration is given to the problems of credit grantors.

A Safe Way to Change

A participant in the San Francisco Computer Caravan recently urged users to "discard the safe approach." It was understood he meant they should be prepared to try formats of other than 80 columns when dealing with key-to-disk operations.

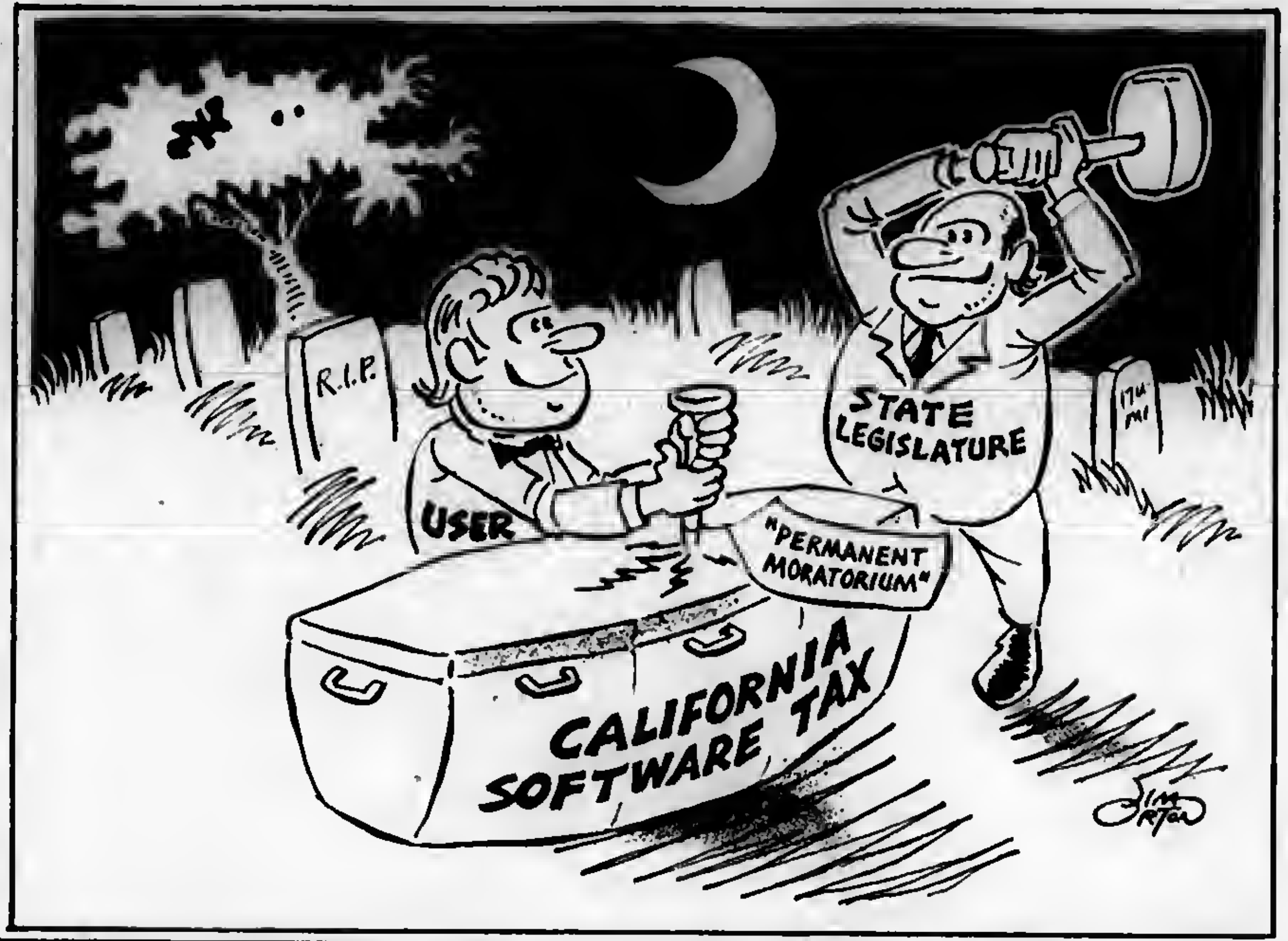
The phrasing was effective – but should be put into the proper context. The idea is to be willing to depart from the old ideas which are dominated by an obsolete efficiency that no longer constrains us.

Terminals can be made more efficient and cost-effective if they are not constrained by outmoded concepts. Whether the terminal is used for key-to-disk, or for any other of the myriad terminal uses, is unimportant.

The concept of efficiency within need will often demand change. And change should not be that frightening to us. By now we should be professionally strong to control change and yet ensure safety.

We join with those who urge that we drop safety as the only goal, and familiarity as the only acceptable purpose in system design. We want efficiency, and we want to be able to change when we find it necessary. But we also want safety, and if the new ideas cannot provide it, then regretfully we must say the old concept must be maintained.

Finally Laid to Rest?



Letters to the Editor

Some Insights on Why CDP Exam Is Useless

Regarding Joseph A. Leubitz's letter [CW, April 4], I couldn't agree more with his assessment of the shortcomings of the CDP exam. I too sat for it this year, and I was as disappointed as he was, most particularly with the subjectivity of many of the questions on project management and on system design and analysis.

I think I can offer some insight as to why the exam, in its present form, is so superficial, and why it will no doubt continue to be virtually useless as a measure of a man's ability in data processing.

The CPA and bar exams are highly respected, comprehensive tests of an individual's knowledge and ability in the fields of law and accounting. To my knowledge, no one has ever seriously suggested that either of these exams could feasibly be graded automatically. DPMA, however, must grade the CDP exam using automation in order to make a profit from the administration of the exam.

If a valid test could be devised and administered in the manner that the CPA exam is administered, DPMA would be forced to charge many times the already-high $60 fee in order to operate the exam at a profit. I doubt this will ever come about.

Let's face it: data processing is one hell of a long way from becoming a profession in the sense that law, medicine, architecture or accounting are professions. I suppose the CDP exam is better than nothing at all, but to suggest that all CDP holders are professionals in their field is laughable.

Having sat for the exam, I know that any reasonably bright individual with any training or experience in DP could, by cramming from any one of the many study guides promoted by DPMA, easily pass it.

I only hope that Alan Taylor and his friends can tear themselves away from their diversion of zapping IBM long enough to bring about drastic changes in the CDP program; they are badly needed.

Roger C. Wilgus
Memorial Medical Center
Corpus Christi, Texas

Everybody Wants 'Professionalism'

Consider the burly dishwasher in a well known TV commercial. Up to his elbows in dirty dishes, he grins around his missing tooth and blurts, "Professionally speaking, this product gives more suds than any other." Now, there is a man who displays both qualifications and convictions.

It occurs to me the same guy could easily make commercials with nearly the same dialogue for any one of the many "professional" data processing societies now garnering columns of print in current DP periodicals.

Better yet, he appears as a "grass-roots" member of the dishwashing fraternity. So, change his setting to make him an old-time "professional" computer operator. He has seen multiple changes in hardware; upgrades, downgrades, compute power, throughput and so on . . . He has seen program changes, system refinements, software revisions and modifications to each of these. He has survived them all.

Now he speaks for a new organization, the Society of Computer Operators Familiar with Fiascos (Scoff). When he says, "Professionally speaking, my society has more to offer than any other" – wouldn't you believe him?

He could be representing one of the largest segments of the data processing community, couldn't he? The very name of his organization would lead you to believe he has the experience to deal constructively with the problems of his society, wouldn't it?

Ridiculous? Perhaps. On the other hand, the pseudo professionalism being exhibited by the majority of the DP societies and by those who want to form additional splinter societies has already established some pretty ridiculous patterns.

After all, the good ol' operator should be entitled to his professionalism, too, shouldn't he?

R.L. Stadler, CDP
Arlington Heights, Ill.

Get All the Facts, All the Answers

I've long enjoyed Alan Taylor's columns so I hope *Computerworld* and Taylor will accept this criticism not as a general indictment but as a plea to stay on target. In his March 28 column he finds U.S. Steel to be "the prime cause of the failure of Cobol," ostensibly because it has not provided adequate support to an employee who is its representative on Codasyl.

Now that may very well be the case, but since his three-quarter-page column fails to provide a *prima facie* argument, one worries lest he has joined the anti-corporate legions.

Given the same facts presented, the reader finds it far easier to view the representative, Warren Simmons, as the villain. Simmons is secretary of the Codasyl Executive Committee and chairman of the Codasyl Planning Committee (is there a conflict of interest there?), and uses a single filing cabinet for Codasyl records.

Several questions pop into the reader's mind: has U.S. Steel relied upon Simmons to outline his required support? What has he asked for and how has it responded?

If Simmons views his company's support to be inadequate, why appoint a fellow employee as vice-chairman? And, ultimately, why hasn't Simmons resigned his Codasyl positions since (regardless of the cause) he hasn't the resources necessary to carry them out?

What I am saying is that Taylor's facts do not support his conclusion, and that amounts to sloppy journalism. Please, let's get all the facts and then present them so as not to create questions that are left unanswered.

Gerard McBride

(other letters and viewpoints on Pages 13, 14 and 16)

Accuracy Not Always of Prime Importance In Some Information Processing Systems

The Taylor Report

By

Alan Taylor, CDP

Last week's Taylor Report considered the differences between data processing and information processing. At that time one point detailed was that the worth of data processing could be measured by considering how the system operated in relation to the processing instructions given.

The worth of the information processing system could only be determined according to the accuracy of the output – is it information, not misinformation?

This is a perfectly good distinction for one type of information processing system. Unfortunately, there are two types of such systems, and the suggested way of checking the merits of one information system just does not work for the other.

So, as information processors, we should learn to distinguish between the two systems before we start evaluating either type.

The object of the second type of information is to affect the behavior of individuals receiving the information. "Walk" and "don't walk" lights are good examples. The object of these systems is to ensure as well as possible the safety of the individual crossing the road.

This objective can be measured in several ways. The time that the "don't walk" flashes before the first car will cross the crossing – and whether it is long enough to permit a slow, but not loitering, pedestrian to cross safely – can be measured.

In a good information system the time will be long enough – in a bad one it will not. (Bad ones do exist. Near where I live one recently installed crossing system at the library "mixes" pedestrians and cars at the same time!)

Accurate Assumption

The accuracy being checked here is the accuracy of the assumption upon which the pedestrians are being asked to act. In the case of a "don't walk" sign, the assumption is that it may be unsafe to cross. In the case of the "walk" sign, the assumption is that it is safe to cross.

Do we therefore have to check upon the accuracy of both assumptions? Are both equally important?

Now we come back to the function of the system to find how to evaluate it. The function of a crossing system was previously stated as ensuring as well as possible the safety of an individual crossing the road..

The comparative priority of the two assumptions – that crossing when the "don't walk" sign is on is unsafe, and that crossing while the "walk" sign is on is safe – can be evaluated, and authenticated.

Such an evaluation would see that a breach of the "don't walk" sign – which would occur if it were on while it was actually safe to cross – would not directly break the function. It would not be dangerous for people not to walk during a safe period.

By contrast, it would be dangerous if people did walk during an unsafe period.

In evaluating a "walk/don't walk" information system, then, an evaluator needs to know a number of different items, including a functional definition; any created assumptions on the part of individuals receiving the various types of information; and the results, in terms of the function, of individuals basing their behavior on these assumptions.

Noticeably, there is nothing here that directly talks about the *accuracy* of the information given! Accuracy, therefore, need not be a determinant of an information processing process.

Inaccurate Yet Valid

In fact there are many cases where inaccurate information is quite effective in carrying out the role of information processing. At Regal Wallpaper in Massachusetts, there is a perfectly good information sign that says "all wallpaper must be returned within 30 days."

Now I know that that notice is inaccurate. Our house is covered with wallpaper from this shop, and we never returned it after having it pasted up for a month! And Regal never asked for it back either.

What the sign means – as anyone can realize – is that if something is wrong with a roll of wallpaper, and I want Regal to give me a credit on it, then it must be returned within 30 days.

So here is a perfectly good, yet inaccurate, information system. It certainly shows that accuracy is unnecessary. At the same time it could be argued that it would not hurt.

But can we even say that that much is true? Can accuracy be always correct – or can an information system which provides accurate output be faulted on these grounds alone?

This time I offer as an example a crowded theatre. A fire information system that called "Fire! Fire!" when a waste bin caught on fire in a projection room would not do an adequate job of maintaining its function – even though the accuracy was 100%

By contrast, a cry of "stop thief" used to stop someone about to walk under a moving unseen truck could be effective even though it was inaccurate.

Its very inaccuracy, which brought into play a high priority situation that made a pedestrian turn around (and therefore saved him), would make it a good information system.

In computers, as well as in dealing with data processing systems, we must also deal with information systems. As information processors we should be able to categorize them, to recognize them and to evaluate them. We should do this as a part of our profession, for how else can we call ourselves information processors?

True, some information systems can be evaluated on accuracy, but some cannot, as we have seen. How then can we be sure that we are doing a good job of evaluation? That is a topic I will be returning to shortly. In the meantime, alongside are another set of items to consider, and their information processing implications.

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Evaluate These Systems

Check your evaluation of some information systems. What criteria do you use to evaluate each item? What categories of information and data processing systems do you recognize here?

(1) A bank sends out a notice saying "try our 4% daily interest account."

(2) A bill arrives with a big arrow, pointing to an amount of money. The arrow is marked "pay this" in bold letters, followed by the phrase "and you will have nothing to pay next month" in small letters.

(3) Soldiers training at a boot camp are told to jump three feet in the air when the sergeant shouts "snakes."

(4) An accounts receivable report for the corporate accountant lists Alan Taylor as three months' delinquent.

(5) An accounts receivable report for a credit reporting agency lists Alan Taylor as three months' delinquent.

(6) The chairman of a corporation standing alone tells his stockholders that a suit against the corporation has been settled.

(7) The chairman of a corporation tells his stockholders that a suit against the corporation has been settled, and the corporation's attorney standing next to him on the platform says nothing.

Letters to the Editor

RPG Installation Operational Nightmare

Marvin S. Ruth's letter [CW, March 28] gets my support. I am in 100% agreement with his desire to "design the system for the customer."

In my 11-year career, I have yet to see an RPG or RPG II (or any other "quickie language" like Fargo, etc.) data processing environment that was not an operational nightmare, was developed from a total systems-oriented standpoint, considered the needs of management as a whole, or didn't give half the company and all of the accounting department heart failure when some key individual in computer operations wanted to take a vacation or leave the company.

Any system that does not provide management (and I don't just mean the accounting department) with alternative choices and operating control should not even be allowed in the door.

Norman F. Allen
Director, Information Systems
First Development Corp.
Sarasota, Fla.

Strong Staff Gives Guidance to Systems

I enjoyed the March 28 issue featuring non-IBM user likes and dislikes. However, in the article "Non-IBMer Must Develop Strong In-House Staff," there are one or two statements which I would like to clarify.

I am a firm believer in the necessity of building a strong in-house staff but not merely for the purpose being independent of the supplier when trouble arises. More importantly, the strong in-house staff is needed to give guidance and direction to systems efforts and to avoid dependence on the vendor for development of systems software and hardware plans.

Honeywell has been behind the industry in the past but is now making significant and rapid progress in producing good operating systems. The article attributed these thoughts to Honeywell's production of application packages, which are of little importance to us, since we have used very few.

William E. McMillen
Toledo, Ohio

Holding Hands Can Be Painful

Re: "It's the Hard and Dangerous Way to Break Into DP" [CW, March 28].

Gilchrest understated the problem. We went from unit record to computer and the vendor told us, "We will hold your hand all the way." They did, but what help is the blind in leading the blind?

To save our necks we hired them to send their expert. At times he had six or eight other experts with their heads together trying to get an updated file.

We too, have been looking at nobody!

Gradually we are getting everything redesigned and programmed, but it has taken three years and will take another to get where we should be.

Del Anderson
Data Processing Supv.
Home Health Education Service
Decatur, Ga.

A Few Kind Words For the Societies

In recent months I have heard a lot of complaints against DPMA, ACM and other societies. I too complain. However, there is some good in our associations and I feel we all should recognize these points.

For example, DPMA has accepted the challenge to present rewarding and educational exposure for its members in the field of data processing management. (These seem strangely appropriate for DPMA).

I am speaking of the seminars it presented at chapter level last year on management techniques and the current series of seminars, six in all, produced by Advance System, Inc. and sponsored by DPMA.

It is a videotape presented in a seminar fashion. We here in Indianapolis feel we have gained from our experience in these seminars. We look forward to more of the same. The DPMA should be congratulated and specifically the Central Indiana Chapter and its director of education, Lewis Marks.

Again DPMA has accepted the challenge to let the voice of its members be heard. The president, Herbert B. Safford, has invited the members to "speak up now if you have a suggestion or if something is not quite right." Local chapters are also offering this opportunity.

Central Indiana Chapter under the direction of J. Owens Brant is having a special monthly meeting for "DPMA Improvement." I urge every DPMA member to express his views, now. I should think other associations should take notice, especially ACM. Listen to your membership.

Cornelius M. Head
Indianapolis, Ind.

'Residual Value' Inappropriate Term

Regarding Dick Brandon's comments on investment tax credit on residual value [CW, April 4], it does not seem logical to view investment tax credit in terms of pre-tax dollars when relating it to purchase, which represents an outlay of after-tax dollars to the purchaser.

If his logic, or illogic, is applied to a situation of 50% ITC, for example, the residual value on day one would be 0 percent of the purchase price. There is confusion here between cash flow and pre-tax costing.

Also, the term "residual value," notwithstanding its wide use, is not appropriate. To the accounting profession it is synonymous with book value.

Residual or book values stem from the application of arbitrary depreciation rates to capital assets, such as computers, and can be – and in the case of IBM 360 computer leasing companies manifestly were – far afield from market or resale values.

In calculating ownership costs, estimated future market values are what must be cranked into the calculation. The after-tax difference between residual (book) value and proceeds from sale of the asset at "market" is applicable as a credit (if sold at a profit) or a debit (if sold at a loss) against the initial outlay.

Finally, any presentation of future value tables should emphasize clearly that the table for each specific model must be adjusted yearly.

Michael R. Nadurak
Greenwich, Conn.

Reexamination Every Five Years Might Save CDP

By Robert Higgins

Special to Computerworld

In my opinion, the Computer Foundation is dead – or at least is so hopelessly compromised that death is imminent and inevitable.

What the hell happens? Why did this bright hope of professional skills burn to a cinder, meteor-like, in less than three months?

I welcomed CF. I sat for the CDP exam five years ago (fighting my work demands to do so) not because it had great significance then but because I believed the idea was right and I wanted to strengthen my constructive criticism of the CDP program by appending CDP to my signature.

I am by temperament an ACMer rather than a DPMAer – I have attended DPMA meetings, and read and contributed to JDM, but my mix of interests and goals matches the ACM profile more than the DPMA profile.

I thank DPMA many times for initiating the CDP program, but this "parent-owns-child" resistance to the growing maturity of the CDP seems destined to destroy it or render it completely meaningless. People, have you no teen-age children? Can't you see the analogy?

Viewpoint

I perceive in the history of the CDP program a small element of a "con game" played by such financial greats as Jay Gould and Jim Fisk: create something that is intrinsically of small value, hand it out to all your friends, then begin a propaganda campaign to convince the outside world that the "something" has great worth/value/significance.

The "grandfather" clause, the back-and-forthing on the college-degree prerequisite, and the recent challenge to the exam's validity all are relevant to this point.

But "con" artists succeed by masquerading as well-meaning amateurs.

5-Year Reexamination

Let me propose a simple, revolutionary change to the CDP program – reexamination every five years. I would then favor all kinds of "grandfather" clauses, including one permitting those who failed reexamination to continue trying indefinitely. This proposal breaks the deadlock on the continue vs. stop pending validity study – continue and study validity: any changes resulting from the validity study will be completely applied to all CDP holders within five years.

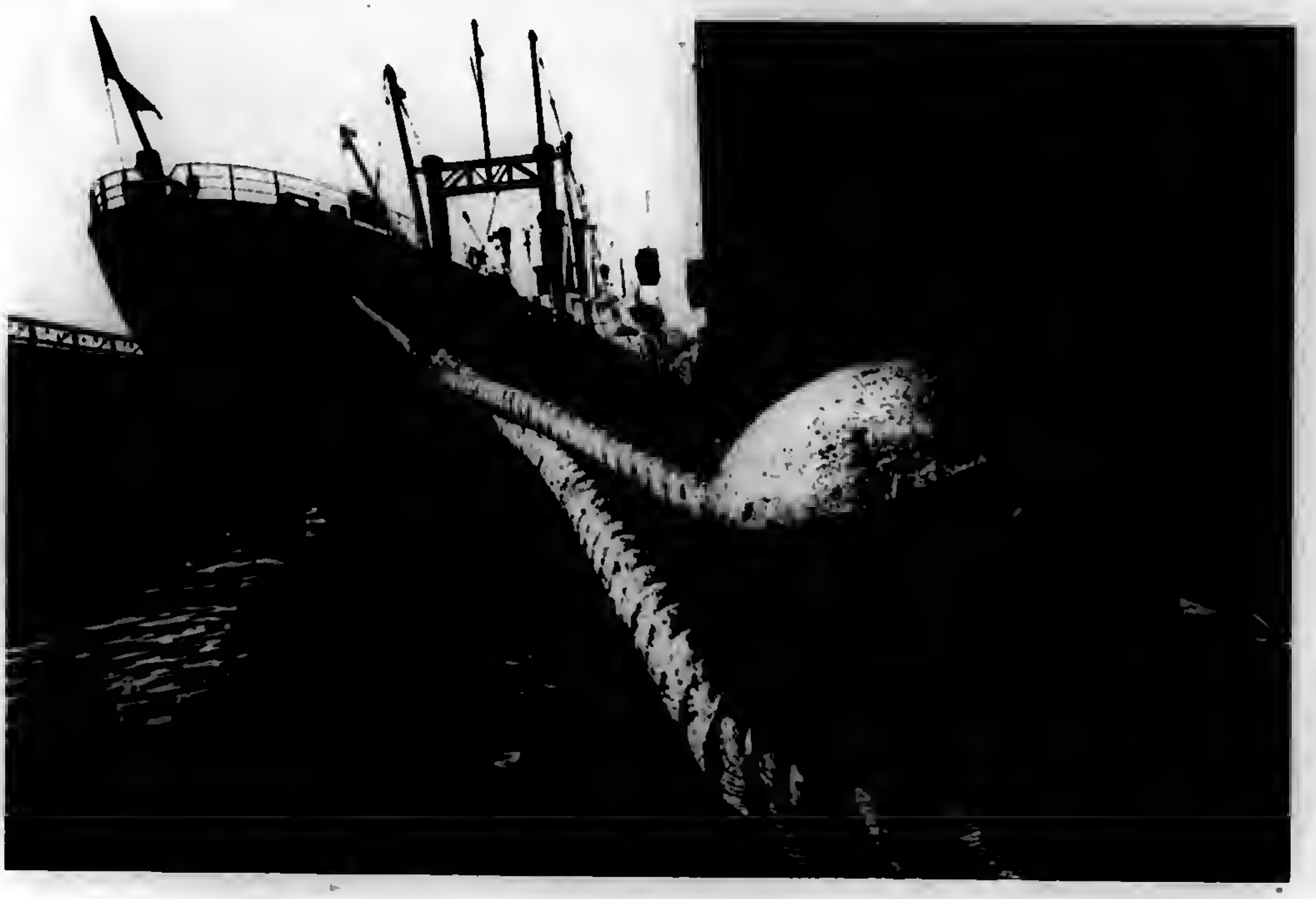
If the examination is discontinued for study, odds are it will never resume, because all the momentum will be dissipated. To back up my proposal, I will post a bond guaranteeing that I will retake the exam next year – if it survives the current troubles.

We claim to belong to a dynamic, kaleidoscopic, ever-changing profession – what's dynamic about a certification which, once obtained, is never renewed or reverified?

To Messrs. Harris and Swearingen I say: Is Mr. Nixon's example giving you dreams of dictatorial glory? Is there a lot of money, or a lot of power, or a lot of prestige, lurking where only you can see it?

Beware a sudden devaluation of the currency you are flinging around: if I do not see a clear reversal of CF's course, I will start doing four things:

- Prominently announcing myself as EX-CDP.
- Prominently announcing myself as EX-ACM.
- Encouraging all my associates to do the same.
- Organizing the resurrection of the computer foundation ideals safe from your power-grabs.



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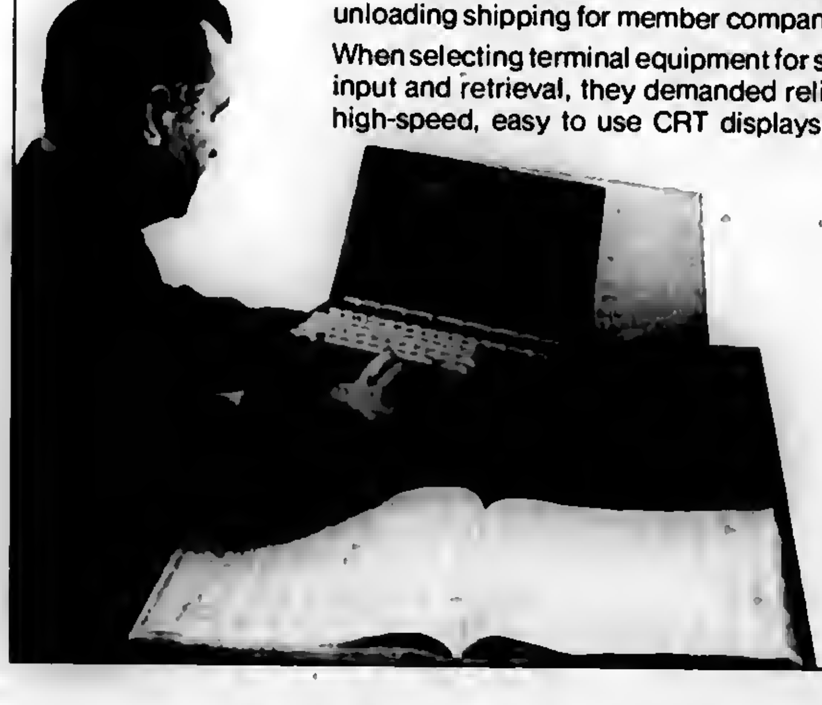

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Robot-Like CEs Need To Learn to Practice Human Hand-Holding

By Nancy Foy

Special to Computerworld

With respect to *Computerworld's* April 4 editorial about IBM's field engineers having to be robots, I'd like to turn the issue around. The other side of the matter might be called "user's lib."

The real "new generation" improvement in the 370 is that it has been designed and built to be much more reliable and maintainable – a point we've overlooked in the political/judicial clambake since 1970.

The field engineer (or CE as IBM calls him) is no longer the remote doctor for the system; now his functions are much more nurse-like.

Viewpoint

Remember the sixties? Reliability was laughable and maintenance a constant, emotional problem. Applications were late, bureaus went broke, and the computer got a questionable reputation in business, mostly because the computer companies spent more energy on new technology than making the existing machines dependable.

The new systems are nearly idiot-proof, and that will indeed be a problem for the overqualified, overtrained young men, the "computer doctors" IBM is still hiring to do these nursing tasks. (I'd rather have my son making typewriters in an IBM factory than maintaining its computers!)

The manual for 370 maintenance is full of robot-like procedures. The CE arrives (less often these days), looks at a log in which the computer records every bit it has dropped along the way, then plugs in his floppy disk of "microdiagnostics."

Another printout tells him where the trouble is. He turns to the cited page in his manual, replaces the cited circuit cards in order until the computer reports a return to vibrant health. Most of the time cards are replaced before they go wrong, not after. Even severe problems can be handled normally without taking down more than a single partition. Total time elapsed? A few minutes.

Yes, it's a job with less technical challenge for the CE now. They'll have to learn to do more human "hand-holding" in the field, or hire less intelligent people.

Meantime, the user gets full use of the machine, and his maintenance is scheduled and efficient. Very few would want to go back to the good old days, even if it enriched the jobs of the CEs.

A more apt journalistic campaign might be to ask IBM to pass on some of the maintenance savings to the users – who are presently too happy with the sheer reliability improvement to bother making waves.

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Or the Death of a Status Symbol

An Obituary on the Fated DP Certification Program

By Joseph T. Rigo
Special to Computerworld

It is time to recognize that the data processing certification program is dead and that the carcass is beginning to smell.

The program was ill conceived and ill directed. A rational justification for its continued existence never evolved. Death was due to natural causes.

Supporters generally contended that it would serve two measurably useful purposes:

- It would help employers evaluate job applicants.
- It would help everyone by denying professional status to incompetents.

Employers Disinterested

The most interesting thing about the first point is that it was seldom mentioned by anyone who actually hired programmers and analysts. At best, if pressed, they would say that it might be of some value in the distant future when all the bugs were worked out. Mostly, though, they didn't say anything. Their lack of interest was overwhelming.

Viewpoint

For one thing, they had already had experience with tests and the people who take them. They felt the Programmer's Aptitude Test was, in most ways, an excellent exam. Some people did well in it. Others did poorly. The problem was that these were not necessarily the same people who did well or poorly on the job. In real work, personality factors became at least as important as an ability to manipulate symbols.

No one was ever very enthusiastic about the quality of the certification exam. It was constantly being debugged. A few suggested that the DPMA was deliberately keeping it simple until all its members had their certificates framed.

. . . in Reality

DPMA members might be very good at whatever they do. But few were regularly practicing the skills that the test was meant to measure.

This leads to the question of who those people were who actually showed up for the tests. There is little reliable data, so I must go on personal observations and guesswork.

First, I suggest, it had strong appeal to people who were neither programmers nor analysts, but worked closely with those who were. This group included journalists, teachers, middle managers and up, and vendors of various support services. They were all marvelous people, I'm sure. They may have been practicing programmers and analysts at one time. They might even become so again.

In the meantime, they worried that their technical competence, like their youth, was slipping away. Or they tired of hearing slogans, such as "them what can, do; them what can't, teach/write/consult/etc.".

They hoped that the certificate would provide the technical professional status that they did not have the opportunity to demonstrate in their daily work.

Second, the certificate appealed to the minimally qualified. This person knew just enough to get a passing score. He might have been fired from his last three jobs for incompetence. He wanted a certificate to convince another prospective employer that his previous managers just didn't understand him.

Third, there were the insecure. There are a lot of good people in this business who never go to college and worry about it. There are others who attended low prestige diploma mills and worry about it. Most outgrow this. Some never do. They constantly search for additional testimonials and credentials to prove that they are as good as the next guy. No certificate could solve their problems.

Finally, there were the good guys, the well-adjusted, self-confident programmers, analysts and managers who do good work and know it. Some of them got lured into the program by accident.

Others were genuinely concerned about their profession and saw certification as a valid, useful activity. They will not agree with anything I say in this obituary. I can only point out in return that very few of their colleagues displayed any interest whatever in certification.

These others felt they proved their professionalism every day in their regular work. They had no need for certificates from DPMA or ACM.

Wheat and Chaff

In my book, a professional is someone who gets paid for his work. Beyond that, some professionals are better to have around than others. The job market is quite effective in separating one from the other.

DPMA's vested interest in certification was obvious. As an organization, it was never accused of pioneering the leading edge of computer technology. By being first to define the standards of professionalism, it ensured that its members would have a good chance for admission.

ACM's interest was another matter. ACM was not about to admit that its members and their friends had anything to fear from a test of technical competence. Clearly then, it must have been worried about those other people – those people down the block who code payroll programs.

ACM never had much to offer the business programmer or analyst. It seemed to be afraid of contaminating its members.

Striving for Status

The certification program was never much more than an elaborate attempt to establish an official status symbol. Many good people got involved with it along the way, but no other, more useful purpose ever evolved. As a result, the program barely tapped its intended market, and it was never able to attract enough people to cover the costs of administering its tests.

Now the program is dead. The various organizations are still fighting over possession of the carcass, but the stench is getting stronger. Why don't we just carry the poor thing back into the trees and bury it before it gives the profession a bad name?

Joseph Rigo is a systems documentation manager.

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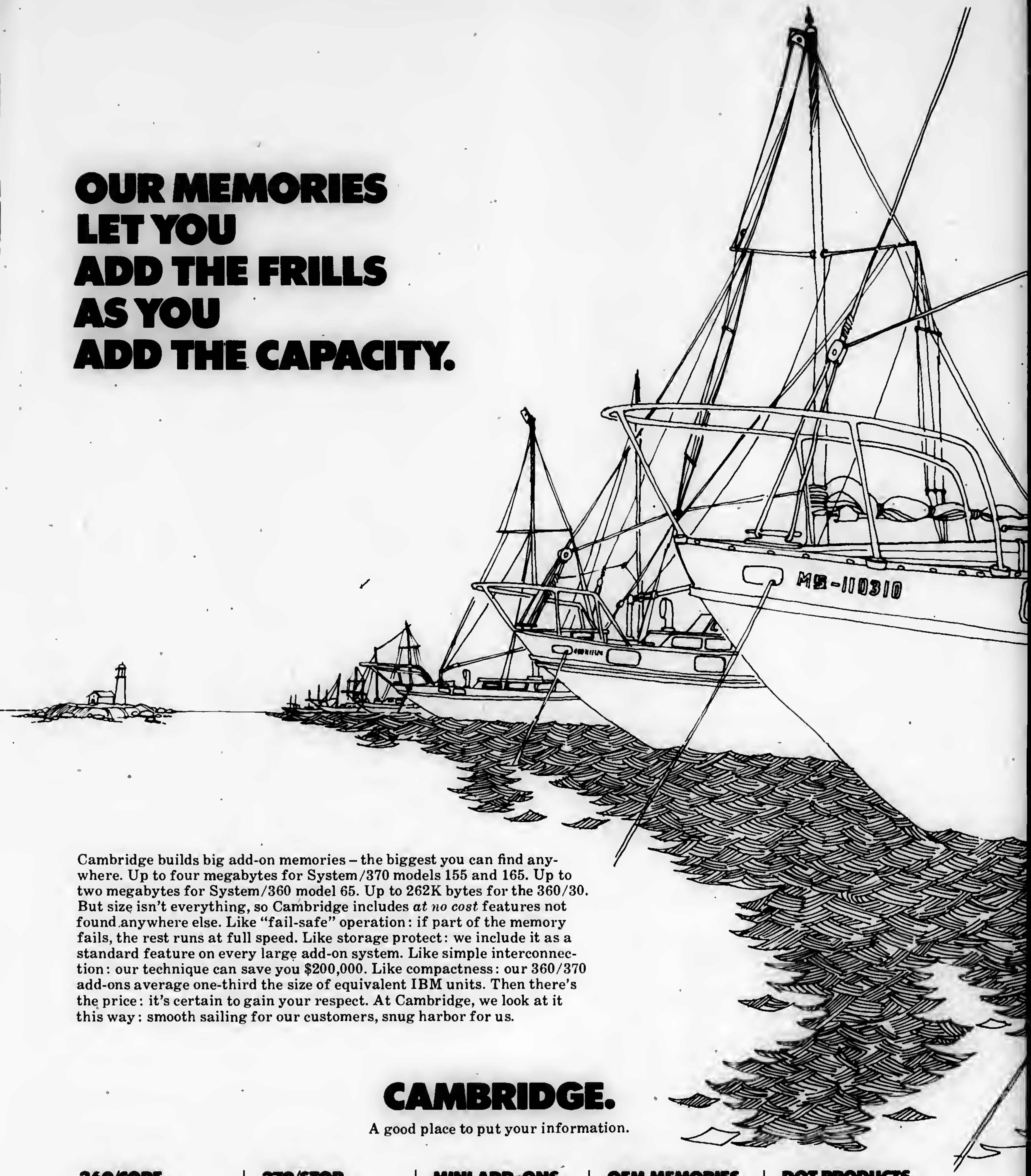

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Random Notes

ITS Takes Over HIS 1640s To Complement CDC 3300s

CHASKA, Minn. – The conversational power of the H-1640s recently acquired by International Timesharing Corp. (ITS) from Honeywell's own time-sharing operation will ultimately be available on the same network as the computing power of ITS's own CDC 3300s, a company source said recently.

The consolidation probably will not take place until the Honeywell units, now at HIS headquarters in Minneapolis, can be moved to ITS offices here in Chaska, the spokesman added. Once that move is made, subscribers to each of the now separate services will be able to access either type of CPU, on a program-by-program basis.

Expansion Eases Datamacs Use

PHILADELPHIA – Diagnostic messages have been expanded and technical manuals rewritten to make Datamacs, the test data generator package from Management and Computer Services, Inc. (Macs), easier to use, according to a company spokesman.

There are now separate diagnostic messages for each Datamacs-related coding error so that the specifications can be debugged more quickly. Datamacs can be used with source programs in various languages and is available for OS/360 users for $6,500, and for DOS users for $5,500.

Macs is at 104 Park Towne Place East, 19130.

Mark III Adds Financial Language

BETHESDA, Md. – Financial analysts can study pertinent data, perform calculations and make projections on an interactive basis, with the Financial Analysis Language (FAL) now available on GE's Mark III remote computing Information Service.

Complex algebraic formulas structured directly into FAL statements provide the user with a means of creating a complete system of recurring or one-time financial reports.

Based on Fortran, FAL's logic includes statements to control iterative execution, to alter the sequence of execution or to test for specified conditions.

Newsletter Issue Features APL

COLORADO SPRINGS, Colo. – Two years ago the *Computing Newsletter* began to devote the March issue to the subject of interactive computing. Increasing interest in APL has resulted in more than half of this year's special issue's being devoted to that particular language, according to editor Daniel J. Couger.

Copies of the March issue for each of the past three years are available for $3 each from *Computing Newsletter*, Box 9630, 80932.

Non-DP Managers Favor Effective MIS

By Don Leavitt
Of the CW Staff

OTTAWA, Ontario – Though middle-level management has often been called the main stumbling block to the development of management information systems (MIS), this assumption is not completely justified, according to Prof. Art Guthrie of Simon Fraser University.

A survey of nearly 2,000 Canadian middle-managers indicated that they see a need for MIS development. However, the need is still slight enough, Guthrie found, so that as a class the managers feel they cannot be expected to give the development task any significant time and effort.

Organizational environment, rather than the background of the individual manager, appears to be the key factor in this attitude development, Guthrie added. In many cases, people in this level of management feel as if they are literally in the middle of something they can't control.

They feel squeezed, in many instances, between uninvolved, disinterested executive management on the one hand and overinvolved, overenthusiastic DP management on the other.

Almost 80% of the responding managers expressed a desire for heavy user-manager participation in the development work when it is done, but they aren't generally going to push hard to get the development started.

Many of the managers answering Guthrie's questionnaire recognized they could use more information when trying to make decisions, but the information has to be both relevant and concise to be useful. They shrink from visions of voluminous printouts of data "useful only to clerical minds."

MIS reports, as pictured by a number of the managers, can be extremely self-serving and leave no room for management intuition. "Computerized information systems are Parkinsonian panaceas for organizations incapable of understanding themselves," one manager wrote Guthrie.

"The existence of a formal information system tends to rigidify an organization around the data collected, making it less able to cater to changes in information requirements."

Several managers recognized what can happen if they don't take the time to work with the DP staff during MIS development. "Information saturation results simply because management has not adequately examined and specified what it wants, e.i., bad planning is rampant," according to one respondent.

Guthrie's work was funded by the Social Environment Planning unit of the Canadian Department of Communications.

Flowcharts and Decision Tables 'Harder Than Prose' to Interpret

UNIVERSITY PARK, Pa. – Problems stated in prose appear to be easier to interpret than the same problems stated in either flowcharts or decision tables and, according to professors T.C. Willoughby and A.D. Arnold, the superiority is measurable in time and correctness of interpretation.

In a recent issue of *Data Base*, the Penn State researchers also noted that flowcharts seemed to require less time to use than decision tables but that the tables may be superior in providing a thorough understanding of the problem to be solved.

Great Expectations

The professors had expected that decision tables could be both more quickly and more accurately interpreted than either prose or flowcharts. They were not concerned with which method might be a better source of information for programming, a problem being studied in a parallel project.

Based on the "interpretation" project, they concluded that since representatives of end-user departments were usually unsophisticated in the use of flowcharts or decision tables, "the preferable user-DP communication media is prose."

The original hypotheses were tested by asking respondents to read three problems and then answer questions related to the problems. In this case, the material was presented in three different forms with the same set of questions for each form.

The tests were given to two groups of Penn State students – sophomores in a business statistics course and seniors in a DP class. Each student worked each of the problems in a different form so he was exposed to all three media.

The two measures of effectiveness of each of the three versions of each problem were time needed to complete each problem and number of answers correct. The range of time needed by the DP students was smaller than the range for the business statistics students, but – to the surprise of the investigators – mean time to answer the questions was longer for the DP students.

The time studies led the investigators to two "very interesting observations" about unsophisticated users trying to solve relatively simple problems:

- They seemed to be able to finish a problem in "significantly less" time when it is presented in prose rather than flowchart or decision table.
- A problem presented in flowchart form seemed to take less time than one given in decision table form.

Analysis of the answers seemed to show that the range of the number of correct answers is less in the more experienced group of students – that is, the DP-oriented seniors – and that the mean number of correct answers was greater for this same group. Neither finding was surprising, the professors noted.

Even though prose seemed to come through as the best way to present a problem – particularly one in which interpretation by both DP staff and end user is important – Willoughby and Arnold tempered this conclusion.

It may not be valid, they warned, when dealing with a sophisticated end user who has dealt previously with flowcharts and decision tables.

'IRS' Adapted to On-Line Mode

NEW YORK – OS/360 installations using either TSO or Programming Methods' Intercomm as a message-processing facility can support a free-form on-line, interactive version of Inquiry and Reporting System (IRS) from Sigma Data Computing Corp.

IRS is a general-purpose system that allows the user to extract information from as many as 44 input files and to produce a wide variety of output files, in a load-and-go environment. In its previously available batch implementation, it required user specifications to be coded according to special formats.

The on-line version will accept input from a teletypewriter or a 96-character display CRT terminal, and the IRS parameters need not be structured ahead of time. The system converts them to the fixed format required by IRS for execution, a Sigma spokesman explained.

The on-line user may have each parameter checked interactively as it is entered, with immediate correction possible, or he may have an entire set of parameters checked after they are all in the system. The system will not execute if errors are uncorrected.

IRS can be used to create and maintain sequential or indexed sequential files, having fixed-, variable- or undefined-length records on tape or disk. Retrieval logic includes ANDing and ORing, and data can be identified by start position or data name.

Written in Assembler language, the on-line IRS requires a minimum of 50K bytes of core, and is available for $30,000 ($1,000/mo). The batch version costs $20,000 ($650/mo).

The system can be adapted to message-processing facilities other than TSO or Intercomm, with a 90-day delivery and reasonable additional cost, Sigma said from 2 Pennsylvania Plaza, 10001.

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'CEIS' Handles Business Office And Pupil Records for Schools

By Don Leavitt
Of the CW Staff

SACRAMENTO, Calif. – Large schools or school districts are able to handle both business and pupil accounting with the California Education Information System (CEIS) now being marketed by the state's department of education.

CEIS is made up of two generalized subsystems – for business and for pupils – and each includes a series of application modules. While the system allows each module to be run in standalone mode, the real value of CEIS, according to state officials, is that it permits an integrated approach to a school district's administrative problems.

Some of the logic is tied to specific requirements of California law, but the modular design of the system and its low cost ($2,500 for out-of-state agencies) make it a worthwhile acquisition even for those schools and districts that can't use all parts of it directly, a spokesman suggested.

The business subsystem, for example, currently includes four application areas: accounts payable, stores inventory, personnel/payroll and financial reporting and a control system to tie these operations together.

The pupil subsystem also includes a control section, and eight application areas: master file maintenance, attendance accounting, mark reporting, test reporting, California guidance, educational planning, student scheduling and master schedule builder.

The control section in each of the subsystems supports the concept of single entry of data even if it affects more than one application. Under CEIS, each application passes any data it receives to all other applications having need of the same information.

Within each application module, users have a wide variety of report options, except when state or federal law requires a particular form such as tax reporting under payroll. Many of the optional reports are available in two or more different sequences of information.

The system is written in Cobol and has been implemented on IBM and Honeywell equipment, but "should be easily translatable" to other computers as well. It requires a 65K MSR-1 environment on the H-200 line or a 65K DOS configuration on the 360.

The subsystems are available for $1,000 each to California school districts, or $1,500 each to any other users. Together, the subsystems cost $1,500 to California districts and $2,500 to others.

The California Department of Education, Bureau of Information Systems, is at 721 Capitol Mall, 95814.

Novas Gain Batch Mode Under RDOS

SOUTHBORO, Mass. – Nova minicomputer users are able to stack jobs and run in a full batch processing mode by utilizing a system-software extension package just introduced by Data General. The Batch software supports both program development and execution of programs in assembly language, Algol, Fortran IV and Data General's new Fortran 5 [CW, Jan. 31].

'Batch' runs under Data General's Real-Time Disk Operating System (RDOS) previously limited to on-line and interactive application support. The new software "clearly makes the Nova more of a general purpose machine," in the opinion of one industry observer.

'Batch' lets the user specify, with a single command, which input and output devices and files will be used by each job. As a related capability, the new software enables the system to accept and run successive jobs from different input devices without operator intervention.

Throughput can be optimized on a 'Batch'-based system, the firm noted, since the output can be spooled to a disk rather than directly to a low speed output device. The data is called off the disk when the device becomes available, without interrupting the application program that generated the output.

Spooling of input from low speed units to disk before being processed was considered but is not in the current implementation of the batch support software. As with developers of spooling packages for full-scale CPUs, the designers apparently felt this capability would not be worth the cost in development time and core required.

The new software can be run alone under RDOS or it can operate in the background of a multiprogrammed RDOS environment.

'Batch' operates on any Nova equipped with a disk, at least 16K words of memory and whatever I/O devices are appropriate to the user's needs.

Freight Costs Added Directly to Invoice With Rate Data Base

ENGLEWOOD CLIFFS, N.J. – Shippers working with almost any type of computing equipment can bill actual freight charges at the same time they invoice for the goods shipped, by using the Prepay and Charge data base service now being offered by Numerax Inc.

The service provides timely motor carrier class rates, applicable to the user's specific products and distribution pattern, for direct input into his billing system. By also adding the weight of each item, the user is able to post the correct freight charges.

The service itself relates freight charges for each product, and the shipper's origin/destination combinations to city zip codes. Numerax provides a magnetic tape that enables the user to match his customers' zip codes to motor carrier rates by product.

Numerax is in continuous contact with motor carrier rate-setting authorities to keep its own master data base on a current basis. Part of the Prepay and Charge service is the distribution of new tapes to the user whenever changes in the rate structure affect his operation.

Separate data bases are developed for each of the user's shipping points since motor carrier charges are often based on start point as well as distance covered and type of product being shipped, Numerax said.

Cost of the data service is dependent on the number of products and the number of origin/destination zip code combinations required by the user.

It might cost a New Jersey firm shipping nationwide $5,000 for set-up and anywhere from $6,500 to $9,800/yr for maintenance, a Numerax source estimated. Numerax is at 560 Sylvan Ave., 07632.

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Independent Packages Upgrade IBM 3705

By Ronald A. Frank
Of the CW Staff

MANHATTAN BEACH, Calif. – IBM 3705 front-end users now can use independent software packages to obtain capabilities not available with vendor-supplied software.

Comm-Pro Associates has an automatic line speed and system select package, and a code conversion package for operation with 3705s operating in emulation mode.

The auto-speed select package allows use of varying speed terminals operating at 110, 135, 150 and 300 bit/sec on a single interface. This in turn allows a user to reduce the number of modems he has to install. With the IBM 3705 a line interface must be maintained for each speed at which data is transmitted to the front end.

The code conversion package allows the data user to transmit both TTY Ascii and IBM 2741 BCD code to the same line interface. When used in conjunction with the speed select package, the 3705 can support varying speeds and codes.

Both packages can be added to a 3705 emulator program with "minimum modification," according to Comm-Pro. The packages do not affect IBM maintenance because the user can easily load a standard version of the 3705 emulator when IBM performs its maintenance functions, according to Bruce Armor, systems analyst at the University of Southern California DP center.

The university is one of the first prospective users of the 3705 packages and is currently evaluating them. Armor said the software has allowed his site to continue to have the reliability of 3705 hardware and systems support together with the operating enhancements.

The independent software has enabled USC to eliminate about 30 of its low-speed modems and still service varying-speed terminals up to 300 bit/sec, Armor said.

The code conversion package also allows a 3705 user to generate TTY paper tape under TSO while the IBM software does not have this capability, Armor said. At the USC site, the independent software also enables 2741s to operate with either TSO or APL on the same line, he added.

Each 3705 package from Comm-Pro includes full instructions, generation macros and object decks. Storage requirements are 256 bytes for auto-speed select and 768 bytes for the code conversion program.

Comm-Pro is reportedly developing additional 3705 packages that will enhance the network control communications capabilities of 360 and 370 users. This software could be significant for 360 users since most of IBM's latest telecommunications software operates only on 370 virtual storage systems.

The speed select package costs $400 and the code conversion package is $1,000. The company is at 638 14th St., Suite 700, 90266.

Data Briefs

Terminal Replaces IBM 2741, Offers APL Graphics Ability

OGDENSBURG, N.Y. – I.P. Sharp Associates has a portable terminal designed as a compatible replacement for the IBM 2741 terminal and which also offers APL graphics capabilities.

The IPSA-100 can communicate with a central CPU via telephone lines or can he attached to any standard TV to display data received.

The unit can be equipped with an APL or Correspondence keyboard and a character generator to provide the 89 APL graphic symbols or the upper- and lower-case Correspondence characters. The unit can be configured with both sets in a switch-selectable arrangement.

The terminal can display either eight or 16 lines of 32 characters.

Prices range from $1,695 to $2,095 depending on the character set and display size required. Delivery is 30 to 60 days from Bridge Administration Bldg., 13669.

Mod/II Replaces Model 33 TTY

SOMERVILLE, Mass. – The NDI Mod/II Teleprinter, from National Data Industries, is designed to replace the Teletype Model 33 which can be used as both a line printer and time-sharing terminal.

The unit has a standard Ascii 64-character keyboard and prints asynchronously at operator-selectable speeds of 10-, 15- and 30 char./sec.

The print carriage is adjustable to accommodate any sprocket-fed paper in widths from 26 char./line to 132 char./line.

The unit uses electronic stepping motors which NDI said increases its reliability. In tests, the Mod/II operated 6,800 con-

The teleprinter costs $3,750 and the numeric pad option is $325. Leasing plans are available from 59 Union Square, 02143.

Bunker Ramo Adds 9-In. CRT

TRUMBULL, Conn. – Bunker Ramo has added a 9-in. screen model to its 2200 Series of CRT terminals.

The BR2204/15 has two independent elements – the keyboard and the display monitor. The 2215 display carries up to 12 lines of 80 characters each and can be mixed with other terminals in the 2200 Series under the Series 2200 terminal control unit.

The 2204 keyboard has alphanumeric keys arranged in standard typewriter format, a 10-key numeric pad, 16 programmable function keys and editing keys.

The unit costs $1,440 or $36/mo. Maintenance is an additional $15/mo. Delivery is three months from the Information Systems Group, 35 Nutmeg Drive, 06609.

Raleigh Aids CEs

On-Line Service Helps IBM TP Users

WHITE PLAINS, N.Y. – Users of IBM teleprocessing (TP) equipment with operating problems often can get assistance from an on-line diagnostic service center available to customer engineers (CEs).

CEs servicing TP equipment anywhere in the country can telephone the teleprocessing test center in Raleigh, N.C. They use on-line diagnostic tests to track down difficulties in terminals and other communications equipment.

Substitute Host

The center provides the CE with remote diagnostic data and verifies equipment operation – usually within minutes – without interrupting the user's DP system. In effect, the teleprocessing test center is a substitute host system for a teleprocessing terminal.

Using the regular telephone network, the CE calls the test center from the user's TP machine. After dialing and signing on with a special number the center's computer runs a general diagnostic test. A specific test tailored to a particular problem also can be requested.

The diagnostics test the user's terminal and control equipment with a series of exercises. The results are sent to the CE for analysis.

From his display terminal, the TP specialist in Raleigh can monitor the diagnostic tests being run by the CE. The specialist can often recognize the difference between a properly operating terminal and one that isn't, by merely listening to the signal.

Besides handling trouble calls, the test center reduces installation time of new TP systems. As each machine arrives at the user's site, CE can install and check whether other parts of the system are installed.

A small portable diagnostic device also allows CEs to test teleprocessing equipment that does not normally attach to the switched network.

This device, the 1,200 bit/sec terminal diagnostic analyzer and tester (1200 TDAT), is especially useful in TP installations using private lines because it makes available the facilities of the Raleigh Test Center.

The TDAT features an acoustic coupler, tape recorder and a modem that allows connection through private telephone lines, from a TP terminal at one location to another at a remote location.

Besides the acoustic coupler feature, the portable testing instrument can:

- Simulate a data set, another TP terminal or even a remote central computer by being able to play recorded data into a terminal.
- Monitor a TP system, and when an error occurs, stop and store data leading up to, and including, the failure for analysis.

By recording data as it is transmitted from or to a terminal, the TDAT verifies transmitted data. The tape recorder also can be used as an exerciser to service a terminal with a malfunction. In this way, a user's central processing unit need not be tied up exercising the terminal.

FCC Reprimands Satellite Firms

CW Washington Bureau

WASHINGTON, D.C. – The Federal Communications Commission has apparently reprimanded the two firms planning to launch domestic satellites next year, for acting too hastily.

The commission has not officially approved the applications of either American Satellite Corp. or Western Union Telegraph Co. to operate such a system, but has waived a section of its rules to allow them to begin procuring satellite equipment for the proposed systems.

However, last week the commission sent identical letters to the firms indicating they "may have entered into contracts for procurement of earth station equipment."

The commission noted it had allowed them under Section 319 of the Communications Act to procure satellite equipment, but it indicated it did not know whether this authority would cover the procurement of equipment for earth stations.

"You are therefore requested to appraise the commission," the identical letters said, whether you have "in fact entered into any contract for procurement of equipment . . . and if so, your views as to the applicability of Section 319."

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I hate to tell you, Ma, but the VA3400 can be used in Vadic's Multiple Data Set or standalone units which have analog and digital loopback, display of all EIA interface signals, built-in 300 and 1200 baud test signals. It can also be used with any of Vadic's automatic dialers.

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Entrex 480 Adds Communications

BURLINGTON, Mass. – Users of Entrex System 480 key-to-disk data entry equipment now have the option of system-to-system communications. The added capability makes it possible to send data on one System 480 to another System 480 or to the central computer over leased telephone lines, making possible remotely located key-to-disk stations.

A communications adapter, like any communications controller on a computer system, is the only addition that has to be made.

This adapter makes possible the transmission of data from a remote disk or tape file for writing on a local tape or disk unit or for reception on the printer.

The communications adapter rents for $180/mo on a one-year lease. The monthly maintenance cost is $30. Entrex, Inc. is at 168 Middlesex Tpke., 01803.

Runs on PDP-11

PHI Adds Dual 270X/3705 Software

TEWKSBURY, Mass. – The 370ϕ Telecommunications Processing System, built around a DEC PDP-11 by PHI Computer Services, can be used as either a 270X transmission control unit emulator or a 3705-like front-end, on a program-by-program basis, with the Dual Operation feature recently introduced by PHI.

Another new option, the Multi-Host feature, allows a single 370ϕ equipped with two DEC DX-11b channel interfaces to communicate simultaneously with two 360 or 370 CPUs. This could be used to allow a single terminal to access applications stored on different mainframes, or to allow inter-mainframe communications, a PHI spokesman noted.

The Dual Operation feature is particularly useful, the company said, for installations that require emulation for such IBM Program Products as RJE/Hasp, but want full front-end capabilities for programs that have been written for that mode of operation.

Previously, 370ϕ users have had to choose between the two modes and have the PDP-11 configured accordingly. Now they may utilize Dual Operation to run each program in its best environment, or to keep operations going during a period of conversion from emulation to front-end processing.

A pair of 370ϕs, each having the Multi-Host feature would provide redundancy for communications systems that must remain intact despite failure of any single piece of gear, PHI noted.

The two new options may be used at the same time so that, for example, a single 370ϕ can be linked to two separate mainframes and work with each in front-end or emulation mode, program-by-program, for maximum flexibility.

The Dual Operation software costs $7,500 in addition to the cost of the basic front-end 370ϕ configuration. The Multi-Host feature costs $7,500 and can be used with either the emulation or front-end versions of the 370ϕ. PHI is at 836 North St., 01876.

Bankwire Customers Get Telex/TWX Turnkey Service

MAHWAH, N.J. – A complete turnkey communications system for two banking applications is available from Teleprocessing Industries, a subsidiary of Western Union.

The System 3000 automates bank wire and cable functions as well as money transfer activities. In the wire and cable service the operator-assisted system handles messages from a variety of sources including Fedwire, Bank Wire, Telex and TWX and routes the messages on an age/priority basis automatically through the proper channels. A central processor validates and formats the messages, while keeping a record of all message activities.

Similarly, the money transfer function maintains an on-line account of all interbank and interbranch transactions.

The system is modular and the user can expand it as his needs grow, the firm said. A typical configuration including CPU, disks, tapes, communications interfaces and all the necessary software, ranges from $225,000 to $750,000 depending on the features and the size of the installation. The firm is located at 82 McKee Drive, 07430.

Telephone Line Changes May Require New Data Sets

HOUSTON – The flexibility to change data sets is a must for the communications user, according to attendees at a recent session on equipment selection.

In some cases the changing characteristics of a telephone line can require the user to change data sets in order to get satisfactory results, one user suggested.

At his site, the phone company modified the characteristics of a private line only to have a diagnostic indicator on the data set "flicker continuously" pointing out the line was marginal, he said. A switch to another modem did not clean up the line, but the new equipment was better able to tolerate the degraded line characteristics.

Rental of data sets can often be more desirable than purchases, one user stated. In addition to facilitating a move to different equipment, the leased modem is often accompanied by better vendor support than a purchased device would be, he said.

One suggestion for solving the maintenance problem was made by a user who said he had contracted to have his terminal supplier also maintain his data sets.

This approach can often eliminate fingerpointing when a network fails to operate efficiently, he said.

DP Goes to the Dogs

NEW YORK – Computers are going to the dogs, or at least one is – the one used by the American Kennel Club.

According to AKC DP director David D. Wachsman, the club is presently operating a mix of manual and computer systems, but will soon have everything on its 370/135.

In addition to registering some 1.1 million dogs yearly, and an average of 450,000 litters, the computer is used for statistical analysis of the registration by breed.

This year it is also being used to prepare the AKC's point schedule for dog shows throughout the U.S., an operation which took 35 minutes. Manually, it took 300 manhours.

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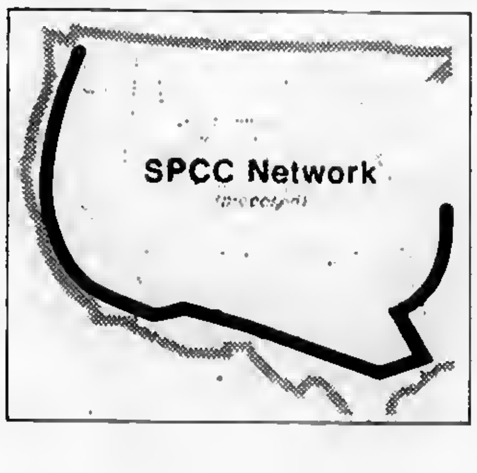
For the details, contact Southern Pacific Communications Company, 105 Market Street, San Francisco, California 94105. (415) 362-1212.



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COMPUTERWORLD

CW SPECIAL REPORT

★ Communications, or Getting It Together ★

Configuring a complicated communications network to meet your particular needs requires extensive and dedicated planning. This special report looks at some users who have met the challenge successfully and presents various alternatives to data users.

Front-End Mini Replaces 270Xs, Saves $250,000

CLEVELAND – A 360-based terminal communications network that uses a minicomputer front-end processor has saved its user $250,000, compared with conventional IBM line controllers.

After an objective equipment search of more than a year, Champion Service Corp. decided the most cost-effective front-end processor was a DEC PDP-11/20 combined with in-house software.

Champion is a DP service company that provides accounting services to more than 35 savings and loan institutions. These S&Ls have an on-line network of 300 terminals that rely on the mini acting as a front end to a 360/30.

Customers in the remote S&L locations present their passbooks for updating of their accounts. The books are inserted into various terminals to post the latest transaction. The terminal mix ranges from IBM to Olivetti and includes terminals that operate at speeds from 134.5- to 1,200 bit/sec, according to John Hall, Champion's president.

"We have an average response time of six seconds," Hall said, "and anything above 10 or 12 seconds is really not acceptable in our industry."

Search for Cost/Efficiency

The on-line terminal system, in operation since 1967, originally used dual 360/30s, twin 2701s and twin 2703 line controllers. But Champion was determined to cut the costs and increase the efficiency of the system.

The result of the equipment study was a switch to the DEC 11D23 front-end processor configuration and a move to a single Model 30 mainframe. "The 2703s were $125,000 each and the 2701s were $50,000 each," Hall said.

"So we are talking about $350,000 worth of equipment that has been replaced by the PDP-11/20 that cost about $100,000." And that does not include the savings from eliminating one of the Model 30s.

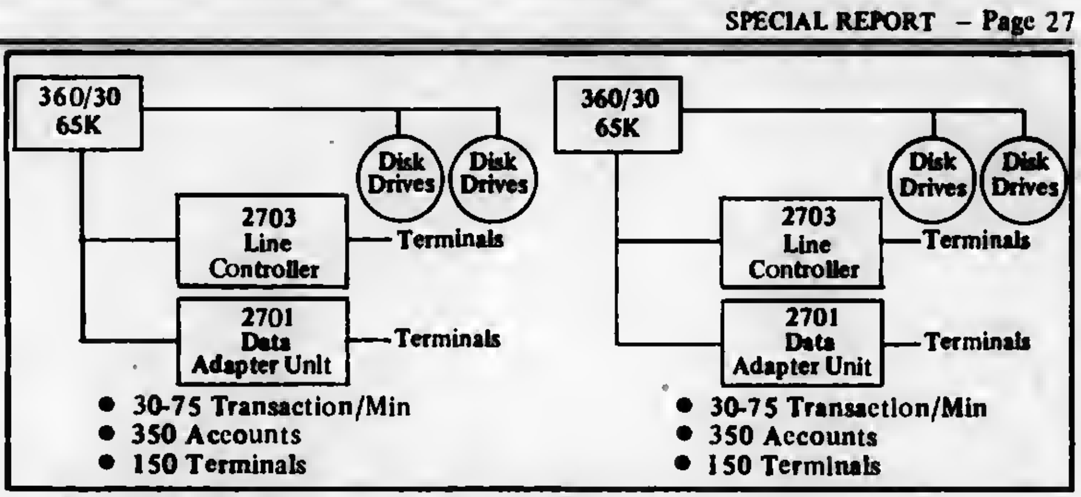
Before deciding on the DEC communications system, Champion considered the IBM 3705 communications processor. But the IBM front end was "not flexible in terms of I/O gear," Hall said. "IBM is always attempting to insure that they are not competing with other equipment in their own line, so they will not allow the user to put different kinds of I/O devices on their 3705s."

But the DEC PDP-11/20 with its DX interface to the 360 (called the 11D23) had the price/performance and flexibility the user was looking for. "There aren't any transmission characteristics we needed that the 11D23 could not support," Hall said.

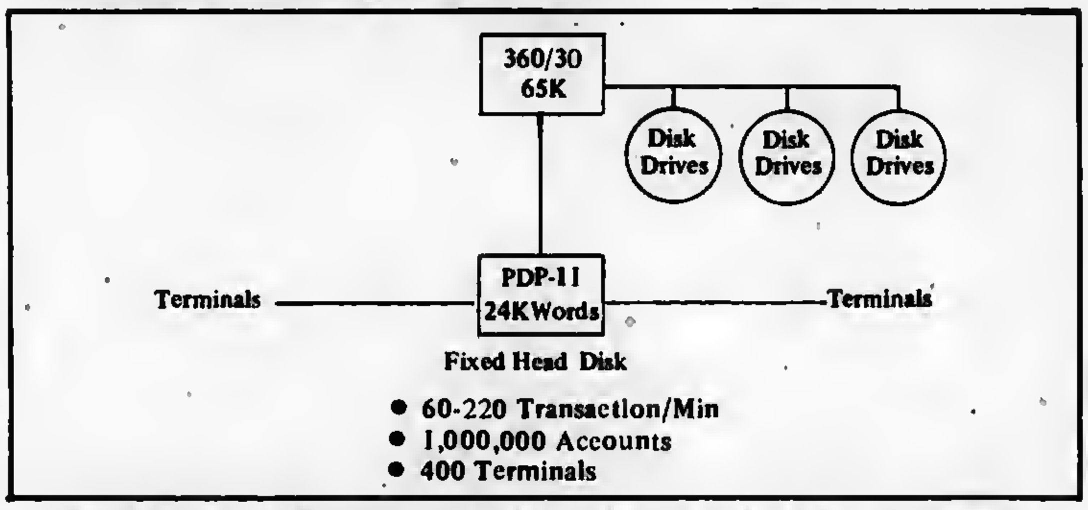
Software Flexibility

Much of the operating flexibility of the system is the result of the specialized S&L package written in-house by Champion. It allows the system to perform "live on-line updating of files."

(Continued on Page 31)



Before using the mini as a front end, Champion had two 360/30s connected to its terminal network through IBM controllers.



Using a PDP-11 as a front-end processor Champion was able to eliminate the controllers for a $250,000 savings.

Two Possible Terminal Nets? Test Both

SAN DIEGO, Calif. – When a company is considering two possible methods for the configuration of a terminal-oriented communications network, the best plan is to test them both.

This dual terminal test approach is being used by the Fotomat Corp. to determine the best communications equipment for its 1,200 photographic stores located around the country.

The goal of the company is to establish a regular reporting system for all its parking lot locations to develop accurate information on sales, inventory and other operating data.

The dual test is unusual in one respect, because the firm is testing an on-line and a partial on-line terminal system concurrently, in two different states.

The on-line test involves 14 Singer MDTS point-of-sale terminals in the Dayton, Ohio area. As each sale is made at a test site, the pertinent data is recorded on a built-in, fixed tape cartridge in the terminal. After the close of business, each terminal is polled from the Fotomat DP center in San Diego where a Burroughs B3500 processes the data.

The average time to transmit the day's receipts from an Ohio store to California is about two and a half minutes, according to Paul Salcido, senior systems analyst. The B3500 is equipped with a Burroughs synchronous line adapter and the mainframe performs the polling routines using a special Cobol teleprocessing package developed in-house.

The MDTS terminals transmit at 1,200 bit/sec in asynchronous mode to the line adapter. Each Dayton test store terminal is equipped with a Bell 202E9 modem which transmits to a similar data set at the DP center.

A Singer transmission adapter converts the data to 2,000 bit/sec synchronous format for entry into the B3500. The terminals transmit Ascii code which is converted into Ebcdic within the mainframe for processing. It takes the CPU about two minutes to process the daily records of each test site.

One of the advantages of the MDTS terminals is their ease of operation, Salcido said. Each key on the terminal is illuminated during its sequence in the data entry cycle, thereby avoiding errors, he said.

"We really don't have a day-to-day picture of what is being sold," Salcido said. If the terminal system develops as planned, each day's transmitted data will give the firm a picture of exactly which products are moving. This in turn will make it possible to print out inventory needs at area warehouses before route workers are dispatched to the stores.

And with closer knowledge of products sold from day-to-day, the company may be able to reduce its warehouse product inventory.

Concurrent with the Ohio on-line test, the company has 13 cash register-type terminals from Victor Comptometer Corp. operating in Ventura County.

The Victor units also accumulate sales data automatically but the information is entered onto removable tape cartridges which are picked up each day by the route man who normally picks up film for developing.

As each route truck returns to the area office, the cartridges are dropped off and merged onto a magnetic tape unit.

The data from the Ventura test sites is then transmitted to the B3500 in San Diego using 2,000 bit/sec Bell 202C data sets. Since the data is already in synchronous format, it does not have to be converted by the line adapter and it is entered directly into the CPU.

This semi-manual system can result in a one-day delay in getting sales data from some test sites but this may be tolerable, Salcido said.

One major objective of both tests is to eliminate as much paperwork as possible at each sales site.

When a nationwide system is configured, the B3500 will probably be able to handle all locations with some additional memory. The system now has 90K of storage in addition to a disk subsystem.

While no final equipment choices have yet been made, Salcido believes that the network will continue to use dial-up Wats lines similar to the polling operation in the Dayton area.

Asked if the concurrent benchmarks from two contending terminal suppliers had led to closer support from the vendors, Salcido said, "we were aware of this factor when we decided to test both systems simultaneously."

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Can Scientific Mini Find Happiness In Business World? 'Decidedly So'

LAKE BLUFF, Ill. – Can a scientifically oriented mini find happiness as the main processor in a business/accounting operation?

Decidedly so, according to the DP staff at ASC Tabulating Corp., which uses a Varian 620/f to handle the administration of pension funds, health and welfare programs, and dues payments for a local labor union.

The 32K mini is located at the ASC DP center about 35 miles from the union offices. Operating on-line with the processor is a mixture of CRTs and TTYs which union personnel use to access member records in response to phone and other inquiries. File updates, data entry and other jobs are initiated at the terminals to modify the data base.

The 620 is equipped with a DCC-2 data communications controller that acts as a line adapter and multiplexer and can handle up to 64 lines, according to Bill Hohri, manager of technical development at ASC. Rather than use the 620 as a front end, ASC interfaced the processor to an IBM 2319-type disk system and a fixed-head drum unit to provide expanded storage capability. The disk is made by Century Data and the drum by Vermont Research but the entire system was supplied and is supported by Varian.

Priority Interrupt

Instead of operating in a polling environment, the terminals access the ASC DP site using an interrupt-driven system. "The hardware grabs a character off the line," and then establishes a priority to complete the particular inquiry, Hohri said.

The system responds on a demand basis and inquiries for the union are run under a roll-in, roll-out partition on the drum. Each partition gets a 100 msec time slice, and the response time to the person at the terminal is usually "less than a second," he said.

At the union office, records are accessed either by a Datapoint 3300 CRT or a Model 37 TTY. The four 3300s operate at 600 bit/sec while the 37s transmit at 150 bit/sec. The office also has one Model 33 TTY which is a reminder of the earlier system when Model 33s and 35s were used to access a GE Datanet 30.

ASC switched to the 620 about 18 months ago, writing all the required software in-house in assembler language. The operating system and about 40 application programs took about "five or six months" to develop, Hohri said.

The terminals transmit to the DP site over Telpak lines using Bell 202 and 103 data sets. And the system including the hardware has been remarkably reliable with better than 99% uptime, Hohri said.

Train Union Personnel

In addition to developing the software and selecting the system, ASC has trained 16 union office personnel to operate the terminals and initiate inquiries to the 620 data base. The system handles all administrative accounting for more than 25,000 members of the Chicago-area local.

Telephone inquiries that need only verbal answers are initiated on the 3330 CRTs, but those that require printed responses must be entered on the Model 37s. The printing speed on the TTYs can be slow, according to Don MacArthur, marketing manager, but there is usually another terminal available for new transactions.

Some of the larger printing jobs can be time-consuming. For example, once a month the 620 prints out 1,600 union welfare checks and a check register, all on the Model 37. In addition dues receipts are printed out in the same manner. All daily file updates are logged on magnetic tape and stored for a specified period by ASC for later reference. But primary control of the system is at the terminals in the union office.

ASC is considering additional unions and other applications for the mini-based system. As a first step, the firm has ordered a larger Varian V73 mini with 64K scheduled for delivery in September. The new configuration will include a DCM communications controller which will allow use of Varian's Vtam communications software, Hohri said.

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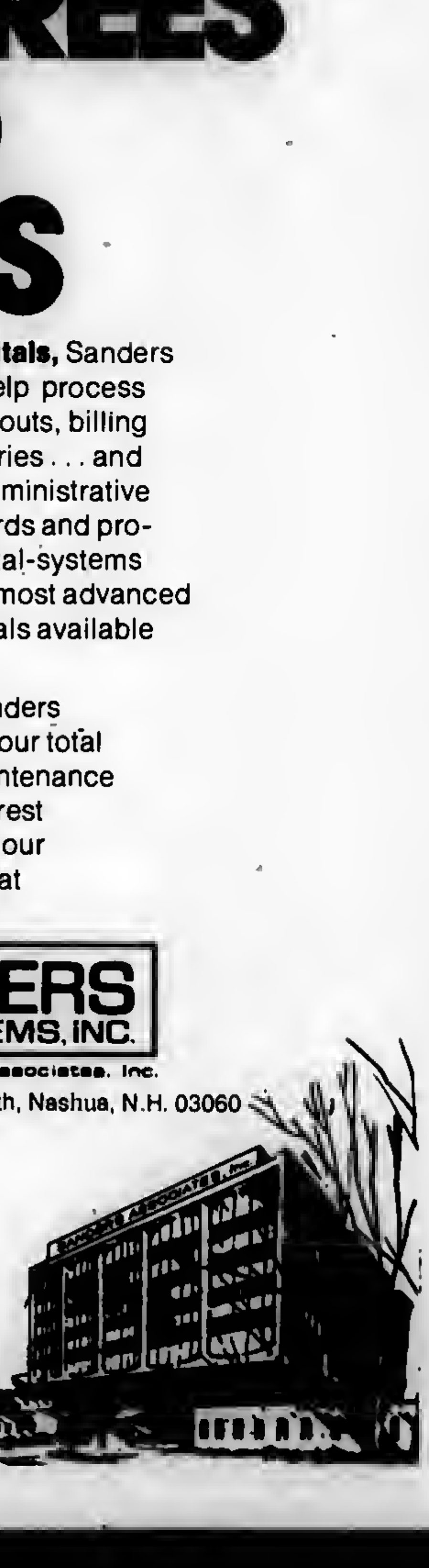
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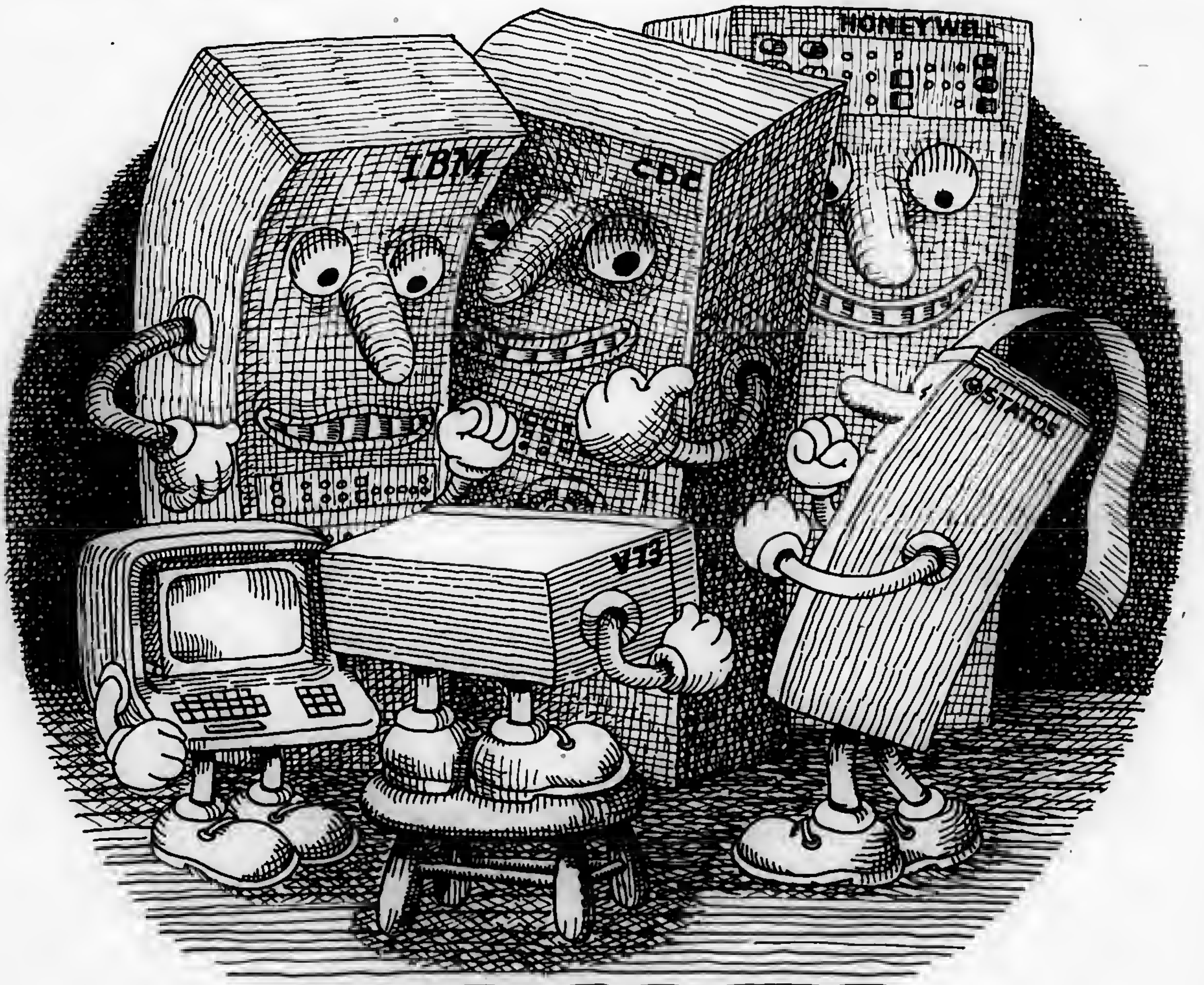

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(Continued from Page 27)

When a customer's passbook is inserted into a terminal at one of the S&L sites served by Champion, the on-line file for the teller is updated at the same time the transaction is being recorded at the terminal.

"We are able to build work-in-process or transient areas in the PDP-11. And this data is then fed into the Model 30 where the totals are processed," Hall said. Totals by teller are available at any time to balance the cash drawer.

All totals are also transmitted to the S&Ls once each day. In addition to batched data on the day's transactions, the Champion system provides other administrative information to the remote terminal sites.

The system handles between 60 and 150 transactions in a typical 10-minute period, Hall said. Bell 3002 voice-grade lines are used to reach the central site in Cleveland. "We have a full-time man who takes care of phone line problems with the telephone company," he said.

Individual sites can post transactions manually in cases of a line failure. Then when the phone line again becomes operational, the central files are brought up to date. But despite some outages, the system averages an uptime between 98% and 99%, Hall estimated.

The present system can probably handle another 100 terminals before "it runs out of gas," Hall said. After that a second 360/30 would give the system additional expansion capability.

The possibilities of having dual 360s running on the 11D23 are now being discussed with DEC, and a second front end could also be added later.

The Champion software package is available to other service firms or direct to S&Ls for operation of an in-house system. The package would work with a 360 and a 270X front end, Hall said. "But if a user wanted to receive our future software updates, he should have the 11D23 front end," he said.

Asked if there were any disadvantages with the DEC system, Hall said he had some doubts about the firm's ability to provide adequate maintenance in the field. But so far there have been few problems. "I talked with other DEC users who said the equipment seldom needed servicing. But the company was ready to provide support when needed," he said.

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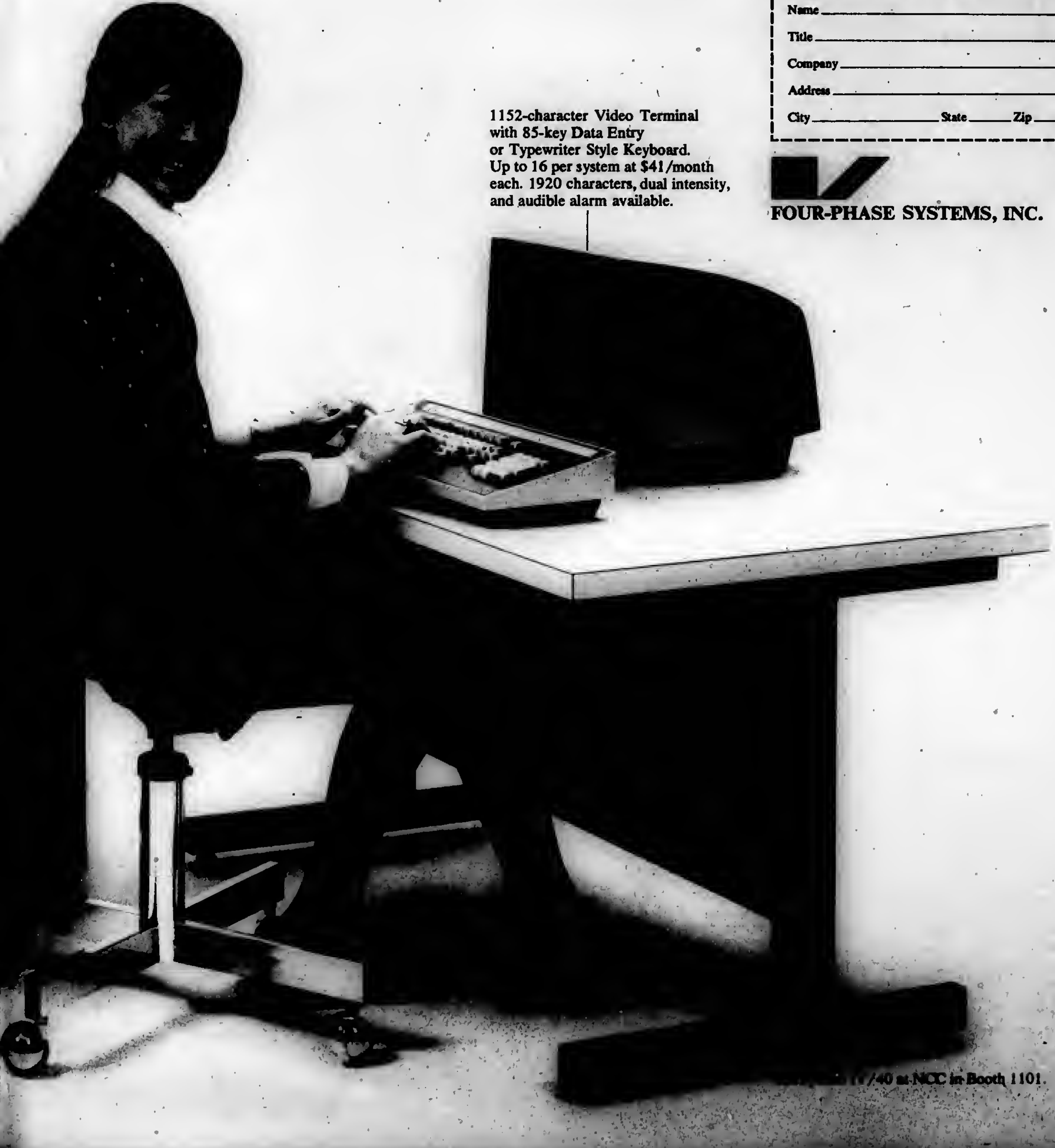

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Third National Network A Viable Alternative?

As the specialized carriers move closer to providing full-time service to data users, a third national carrier net in addition to MCI and Datran may be forming.

For data users operating national networks this would eliminate the difficulties in choosing different specialized carriers for service in specific geographic areas.

While MCI and Datran are planning their own coast-to-coast systems, the third national network reportedly in the making would interconnect the remaining regional carriers.

Few of the regional carriers that would make up this network would comment on the plan, but some interesting facts are known. A tentative specialized carrier association to represent the members in regulatory proceedings has been discussed. While outwardly the organization would act as a spokesman for all specialized carriers, Datran and MCI have thus far apparently not participated.

The remaining five carriers could interconnect their respective areas with limited duplication of facilities, although there would be some problems in specific states such as Texas.

Who Are the Carriers?

Southern Pacific Communications Co., San Francisco, already has much of its system in place based on the railroad microwave system operated by its parent company. The firm expects to provide both individual channels and turnkey facilities including modems and terminals depending on the users' needs.

Customers will be able to order anything from a single narrowband circuit up to a 240-channel supergroup. A 300 bit/sec service will cost about $.36/mile for the first 500 miles and $.28/mile thereafter. At 1,200 bit/sec, users would pay a flat $.80/mile.

The company will provide service from Seattle down the West Coast. From San Diego it will swing east into Texas and up to St. Louis. Although rates have not yet been filed, prospective users are being quoted a range of rates from $.95/mile/mo for a single 4KC circuit up to $24/mile/mo at a site with 60 channels of the same bandwidth. This compares with Bell's Telpak rates of $30/mile/mo on 60 channels.

CPI Telecommunications Inc., Austin, Texas, plans to offer facilities to data users in Texas and Louisiana. The firm also handles CATV and video distribution so in most cases existing routes would be "overbuilt" to add the data capability. CPI could connect with Southern Pacific at El Paso and carry data transmissions east to New Orleans. The firm reportedly plans to begin service to data customers late this year.

Many of the Texas cities CPI plans to service will duplicate locations where Southern Pacific and others propose to operate.

More Texas Links

Another specialized carrier with links in Texas is United Video Inc. of Tulsa, Okla. The company describes itself as a southeast regional carrier and its routes will stretch from Texas through Atlanta to Miami. Service would also be provided north from Atlanta to Washington, D.C., and from Atlanta north to Minneapolis.

The first data customers in the United Video net will get service later this year between Dallas and St. Louis at rates "30% below the projected AT&T high/low density tariff." Compared with existing AT&T interstate charges, the specialized carrier expects to be about "50%

(Continued on Page 35)

Specialized Carriers Go Their Special Ways

MCI and Datran are two specialized common carriers which plan to provide coast-to-coast service with their own nets, and their progress to date is almost as divergent as their proposed systems.

MCI has been building its Chicago-to-New York route for some months. It expects to provide service between Chicago and some of the intermediate stops along this route such as Toledo or Detroit, by the end of this year.

The company has received FCC approval for 270 microwave sites that will link 42 major metropolitan areas and has announced the 4K Plus service for data and other users. This offering includes five speeds ranging from 300 to 9,600 bit/sec that will save users from 28% to 44% over Bell rates, depending on speeds. At 2,400 bit/sec, the savings could be as much as 40% under Bell private line charges, MCI said.

In contrast to other specialized carriers, Datran has had little to say about its rates. Officially it has said it will be in service from Houston to St. Louis by the end of 1973. But it has said prices will not be available at least until September.

At the same time, the carrier has admitted it is talking to potential users about providing services and presumably these users are being quoted rates. At a recent communications show, Datran spokesmen were quoting "typical" 4,800 bit/sec rates at $10/hr for dial-up service, which reportedly can be split into six-second usage increments. This would set the rate at $1 for each six seconds of contention-type service on the proposed system.

Private line users who need dedicated facilities were being quoted monthly rates of $0.90/mile. The Datran service reportedly will guarantee a 500 msec (or less) connect time for data users.

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How to Transmit? Phone Company Has Ideas, but...

By Arthur L. Katz

Special to Computerworld

Because many decisions must be made by data users, it is often left to the local telephone company to suggest the most economical approach to data transmission over voice-grade facilities that will fulfill the transmission objectives. And the telephone company will suggest what it considers to be the best solution, whether it be WATS, toil, tie lines, etc.

In the majority of instances the telephone company recommendations are accepted with very little challenge by the user.

The telephone companies, however, make broad assumptions when planning facilities. One assumption is that the busiest hour of the day represents 17-1/2% of the total day's traffic, which they say is the national average.

While 17-1/2% may be a national average it may not be the actual busy condition for the user's firm, and if not, then the telephone company's recommendation would be erroneous.

Assumptions Faulty

The interconnection of dialed number printout machines that electronically capture concurrent statistics on alt long distance transmission facilities (WATS, tie lines, tolls, etc.) have shown that many assumptions about traffic flow are incorrect. For example, very few studies of individual firms disclose the figure of 17-1/2% for the busy hour.

Since an unbalanced configuration of long distance services would result in higher than necessary charges, here are the basic statistics users should assemble before any decisions are made:

- Destination of call (Area Code and number for dialed calls; digits dialed for tie lines or networks)
- Date of call
- Time of day call was made
- Length of call in minutes and fractions of a minute.
- Facility used (toll, WATS, private or tie line, foreign exchange, etc.)

When these statistics are organized, the options regarding the available facilities become apparent.

The user who can develop these statistics in-house is in a much stronger position to confirm or deny the accuracy of the phone company's recommendations, or make his own recommendations. There are also firms that can prepare this information for the user.

Any recommendation from the telephone company must be supported not only by the statistical base, but also by the guidelines of how the statistics were used to determine the recommended lines.

A network configuration variance of only 15% plus or minus can cost as much as 50% more in long distance costs to the customer. So the optimum configuration should be installed, and periodic checks should be made to make adjustments when necessary.

Arthur L. Katz is general manager of Computoll Inc., New York, N.Y.

Third Network An Alternative?

(Continued from Page 34)

less."

United could tie into the potential national network in Texas, or at points in the Midwest with another regional carrier, Western Telecommunications Inc. (WTCI).

Denver-based WTCI gets considerable revenue from long-haul video transmissions for the major TV nets. The firm already is providing a high-speed data link for a military application between San Diego and Yuma, Ariz. [CW, March 7]. In addition to the West Coast, WTCI plans to provide service to the Midwest, possibly connecting with other carriers somewhere east of Denver.

WTCI has over 13,000 miles of microwave routes in operation and much of this could be converted to service data users.

The carrier that plans to operate primarily through the center of the country is Nebraska Consolidated Communications Corp., Lincoln, Neb. Planned routes include service from Minneapolis to Texas with a major east-west segment from Chicago to Omaha. It could interconnect with a national net at most points in its proposed system.

Questions to Resolve

While the geographic factors may favor a tie-in between these smaller specialized carriers, there would be important marketing and technical questions to resolve. Each would have to build its facilities with a view toward being compatible with the others. And several firms serving the same state (and even the same city) might not be completely desirable.

Presumably some cities would be dropped, or conceded to others if a viable net is to be interconnected. For example, all the firms except WTCI plan to service Dallas. And with Datran and MCI also committed to the city, as well as the existing carriers, there may not be enough data users to go around.

From the users' standpoint, an overabundance of carrier facilities may offer competitive prices, but there would also be some risk in signing up with a carrier that may not survive. It is for this reason that an association and a possible third national network could offer data customers a viable alternative.

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INFOREX

An Analysis

New AT&T Rates Could Change Network Designs

If AT&T's proposed private line rate changes [CW, March 7] are approved by the FCC, users will have to drastically alter their network design methods. Although opposition to the tariffs and regulatory delay could forestall the revised rates from taking effect, data users should understand the potential impact on their networks.

Under existing FCC Tariff 260, which covers voice-grade private lines, it has been possible for the user to design his communications routes in such a way that he optimizes his monthly line charges.

With the present method, users can plan their networks based on determining the optimum points for network nodes, concentrators, multiplexers, etc.

Many software design packages are available to help the user configure his network. Most are based on a coordinate system developed by Bell which establishes V and H coordinates through all rate centers within the U.S. phone system. The V and H system is similar to the X and Y coordinates used to plot graphics. The software design packages optimize network routes based on the V and H coordinates and the "long haul" phone rates that are applicable.

But AT&T proposes to change the ball game and utilize a dual rate structure based on high density and low density centers, which could obsolete many of the design packages.

Under the existing rate structure, monthly charges are based on a sliding scale which depends on the total mileage. For example, "interexchange rates" are $3/mile for the first 25 miles, $2.10/mile for the next 75 miles, $1.50/mile for the next 150 miles, etc.

Most vendors who have network design packages guard their methodology carefully. They are quick to point out the potential savings that can accrue to the user if he works with their network planning capabilities. One vendor claims a line savings of $100,000/yr for one large customer. This was reportedly achieved by introducing multiplexers into the network.

The network-planning capabilities are available in several forms for the user. They range from packages offered on an interactive basis on time-sharing services to full-blown systems design studies.

A representative (but by no means complete) sample includes APL Plus Net available from Scientific Time Sharing. A user utilizing the package on a time-sharing basis could configure a 30-city network for "about $10," a spokesman estimated. The package is written in APL and the calculations involved in configuring the system determine the minimum network distance. This is a matrix-oriented problem which works well with APL, he said.

Another approach is used by Computoll Inc. The firm concentrates on examining existing telecommunications systems to find ways the user can cut costs. Often this will include monitoring the data traffic to determine where less costly lines can be obtained by the phone subscriber.

Almost all of the network planning packages and/or services use computerized analyses to recommend less costly operating methods to the user. Even IBM has several packages which are officially described as "marketing support" tools.

One of the earliest IBM packages was the Communications Network Design Program (CNDP). Although once available on a fee basis to users, IBM now uses it only to help salesmen who are making systems proposals to teleprocessing-oriented prospective customers.

A similar package, which may have re-

(Continued on Page 39)

'Hi-D Lo-D Optimizer' Handles Proposed And Present Rates

ANN ARBOR, Mich. – One of the first firms to introduce a network design program geared for the newly proposed AT&T tariffs is DMW Telecommunications Corp.

The Hi-D Lo-D network optimizer program is a batch-oriented system. It contains "prestored V and H coordinates" for all high density rate centers and will run on any mainframe which supports standard Fortran IV, the company said.

The program evaluates direct routing and all necessary indirect routings through nearby high density centers which might be less costly than direct routing. For each input card containing V and H coordinates for "arbitrary locations," the program generates an output including total cost and routing rate centers for the minimum cost billing configuration.

Costs under the current AT&T rate structure are also available. An interactive version of the system will be available soon, the firm said.

One of the problems handled by the program is the Bell proposal that all low density (higher cost) centers be routed to specified high density "homing centers." This plan (if approved by the FCC) would limit the design flexibility that users have to configure a network.

The DMW program, designed by Dixon Doll and Kevin Whitney, will allow for network configurations with or without the homing center restrictions depending on the rate structure ultimately approved by the FCC.

Although the high and low density designations seem confusing to some users, they have a logical explanation.

The Bell System has always had a hierarchy of long distance telephone centers based on the number of circuits being handled at each center. According to this hierarchy, Bell has taken the regional and sectional centers and classified them as high density. Bell defines these centers as those having the facilities to terminate 1,200 or more L-carrier transmission routes.

But within this definition, it comes as no surprise to industry experts that these lower-cost locations also coincide with the cities where most of the specialized carriers expect to compete with Bell.

The rest of the centers in the Bell hierarchy including primary centers, toll centers and end offices are apparently designated as low density sites under the proposed tariff revisions.

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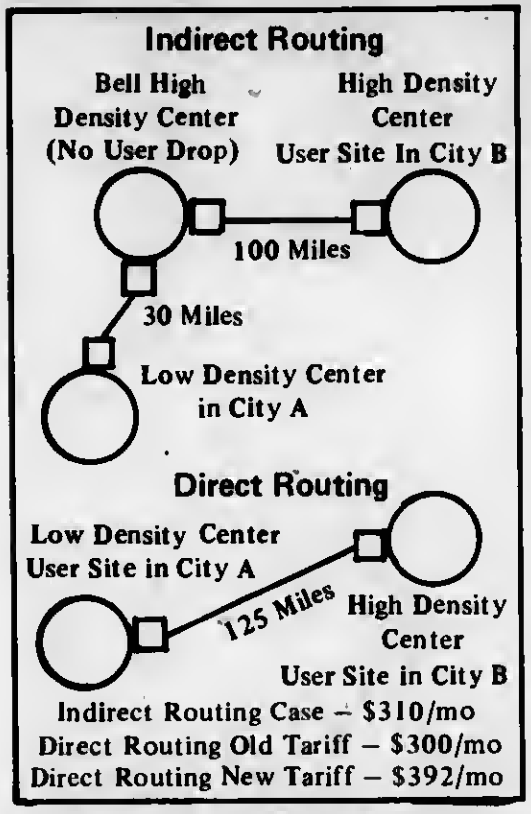
New Rates May Alter Net Design

(Continued from Page 38)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Comparison of Two Routing Procedures Between a Low-Density Center and a High-Density Center

placed CNDP, is called TP Net. It is also available only in marketing situations and IBM spokesmen said additional details on both packages are unavailable.

Complex Undertaking

The theoretical problems presented by the design of a telecommunications network is a complex undertaking even for skilled mathematicians. Despite IBM's silence on the packages, a recently published article demonstrates the complexity of CNDP:

"The package accepts input data in the form of tariff information, terminal and computer locations, terminal traffic volume, and line loading or response needs. The IBM technique assumes that a star network of point-to-point links from every remote terminal to one of the central [CPU] complexes is the most costly (worst case) layout.

"In successive iterations, it removes a link that attaches to one of the centers, and replaces it with some other shorter link to reduce line costs by the formation of multipoint lines. At each iteration the method selects a particular pair of links (one to be removed and the other added) to produce the greatest net reduction in link cost without violating line traffic constraints.

"Although this method takes care of traffic overloads, it assumes the placement of concentrators and disregards the use of mixed grades of service in the same network."

But many network design experts believe CNDP and similar packages will become obsolete if the high and low density rates are approved. The IBM package can only evaluate networks in which links terminate in cities where there are actual drops (terminals).

But the new high/low rates allow the user to design a network in which it may be more economical to route circuits indirectly through centers where he does not actually have terminals. CNDP and most existing design programs don't allow for this, the experts say.

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Exchanging Ideas, Solutions

Education Prime Goal

TP Associations Expanding to Meet Managers' Needs

By Jerry A. Goldstone
Special to Computerworld

The telecommunications association was born because of the need of managers in the field to exchange information and experiences. Association members are responsible for administering communications facilities and services in the hundreds of millions of dollars and with telecommunications becoming increasingly complex, these association have grown extensively.

In terms of geography, there are two types of telecommunications associations: national (or international) and regional. Of the national associations, the International Communications Association (ICA) is the largest with members in 34 states as well as Canada and Venezuela.

Other national associations are the Communications Systems Management Association (CSMA) and the Association of College and University Telecommunications Administrators (Acuta).

Most telecommunications associations, however, are regional in scope. The largest regional group is the TeleCommunications Association (TCA), which is located primarily on the West Coast.

Another way to classify associations is by the members: general industrial and commercial companies or specialized companies. ICA, CSMA and most of the regional associations are general in that they have members from many different industries. On the other hand, Acuta is an example of a specialized group.

No matter which category a group is in, most of the associations have two common characteristics: they are composed entirely of end users (specifically excluding suppliers and consultants), and they have company rather than individual memberships. The only exceptions to these rules are CSMA, which allows suppliers to become members and has both company and individual memberships, and Acuta, which has individual rather than university memberships.

Typical Members

The company members are generally large companies or institutions with substantial communications facilities. They are often multiplant operations with many private lines or even a complete private telecommunications network.

The representatives of the member companies are responsible for managing their companies' telecommunications facilities. They may do this full-time or part-time. (Most associations require that the voting member from a company spend at least half of his time on telecommunications activities.)

The background of a member very often includes experience in a telephone company, particularly a Bell System company, but there are some who have come up through various departments in their present organization and who have no common carrier experience.

The purpose of most telecommunications associations is education. This is understandable since until recently there were virtually no formal educational programs in telecommunications management and no comprehensive sources of information on the subject. Telecommunications managers have found that by getting together and sharing experiences, they can keep better informed.

No Lobbying

One activity that almost every association explicitly prohibits is regulatory lobbying. Most have the prohibition written into their bylaws. Most associations feel that member companies' interests are too varied to make a common position possible.

This rational seems rather dubious, particularly when it comes to testifying before regulatory bodies on tariff matters. Certainly companies with extensive (and similar) telecommunications facilities would have a common interest in most tariff filings. And most commissions would be glad to get the user's viewpoint.

The real reason for the prohibition against lobbying is more complex, and probably involves the role of telecommunications management in a company and the pervasive influence of the telephone companies, particularly AT&T, in American industry.

But the telecommunications associations may become more active in this area in the future. At least two major groups have discussed the possibility of testifying before regulatory commissions. While both rejected the idea for now, they believed it necessary to discuss and reevaluate their positions. In addition, many individual members and small groups of members do testify before commissions and are becoming more active.

Relationship with Carriers

The relationship between the common carriers and the associations is interesting and complicated. It seems to be a kind of love-hate relationship. On the one hand, most groups bar suppliers from membership so they can frankly discuss problems they have with the carriers.

On the other hand, the carriers' services are the central element of most members' jobs. The members deal with the carriers almost on a daily basis and have developed a close relationship. In a real sense, the carrier helps the telecommunications manager do his job.

This relationship carries over into association activities. Many regional groups devote at least one meeting a year entirely to the local telephone company and another to Western Union and perhaps a

(Continued on Page 41)

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While telecommunications associations have many common characteristics, there are also some important differences.

The International Communications Association (ICA) is the oldest and the largest of the associations. It was founded in 1948, and today has over 300 company members represented by more than 700 individual members (voting and alternate).

To become a member of ICA, a company must be an end user and must spend at least $1 million a year for telecommunications services and facilities.

ICA publishes a monthly newsletter and holds an annual conference. The group also sponsors occasional seminars.

CSMA Unique

The Communications Systems Management Association (CSMA) is a new organization formed in 1970 by a group of graduates of the now-defunct AT&T communications school at Cooperstown, N.Y. The organization is rather unique in at least three respects: it allows suppliers to become members; it has both company and individual memberships; and it is managed by a full-time staff.

Although founded in 1970, CSMA did not really get off the ground until early 1972. Today, it has about 300 members (mostly individual) and local chapters in New York, Philadelphia and Baltimore, with one soon to be formed in Chicago. It hopes eventually to be nationwide.

The organization has some lofty goals. Its primary purpose is "to further professionalism in the communications industry." It hopes to accomplish this through programs in three areas: information interchange, professional certification and public relations.

The Association of College and University Telecommunications Administrators (Acuta) is just over a year old, having had its first organizational meeting in November 1971. The reason for this specialized group is that educational institutions have many unique communications problems. Some of these problems are administrative caused by the inability to communicate with faculty department heads, frequent service connections and disconnections, a serious problem with toll fraud among students and a wide variety of facilities and systems.

Unlike most other groups, Acuta explicitly plans to conduct lobbying activities. One reason it can do this easily is that the organization is composed of individuals – the schools themselves are not members and Acuta does not speak for them.

The organization appears to be interested in promoting special lower telephone rates for non-profit educational institutions.

TCA Expanding

The Tele-Communications Association (TCA), the largest of the regional organizations, was founded in Los Angeles by five members in 1961. It expanded to other cities in California in 1964 and today, while still primarily centered in California, it has a handful of members in Washington, Oregon, Idaho, Illinois and Pennsylvania. Its current membership is 126 companies.

To become a member of TCA, a company must have multiple offices connected by telecommunications circuits and not be engaged predominantly in the consultation, administration, production, sale or rental of telecommunications services.

TCA holds an annual conference each year in San Diego, and publishes a monthly newsletter. The organization also has sponsored an evening course in communications management at the California State University, Northridge, and expects to establish similar courses in the San Francisco and San Diego areas.

Other regional groups include the Chicago Industrial Communications Association, the Michigan-Ohio Telecommunications Association, the Communications Managers Association of New York, the Wall Street Communications Association, the New England Telecommunications Association, the New England Hospital Telecommunications Association and the Arizona Telecommunications Association.

Societies Expanding To Meet User Needs

(Continued from Page 40)

third to an international carrier. And these meetings are often held at the carriers' facilities. Of the 19 seminars and presentations at last year's ICA Annual Conference, 12 involved carriers (including MCI and Datran).

Equipment vendors have nowhere near the same amount of influence. Only one presentation at the ICA conference involved a vendor. The reason is clear: no matter how much a telecommunications manager might complain about telephone and telegraph services, the carriers are just about the most important element in his professional life.

The direction and programs of the associations may change in the future with more emphasis on in-depth educational activities. The complexity of telecommunications will demand such a change. Several associations are already sponsoring seminars and formal courses and lending support to an advanced university degree program. This trend should continue as telecommunications becomes less of a technician's function and more of a profession.

Jerry A. Goldstone is the editor and publisher of Business Communications Review, in Oak Brook, Ill., a bimonthly journal for telecommunications managers.

About the Author

This special report was prepared by CW Technical News Editor Ronald A. Frank. Frank has been responsible for the communications section since 1969.

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Dual 165s Receive Data

Fireman's Fund Finds 'No Fault' With On-Line Net

SAN FRANCISCO – One of the primary reasons for establishing a computer/communications network is to provide on-line reporting of important data. For a large insurance company such as Fireman's Fund, the activities of branch offices around the country produce a steady stream of information that must be reported to the DP center in San Francisco.

The main DP capability for the company rests with dual 370/165s that receive data from six satellite processing centers strategically located around the country.

The satellite centers receive data from smaller offices in their geographic areas and transmit this information over 4,800 bit/sec lines to the 165s.

Incoming data is received by an IBM 3705 equipped with a 2914 switch. The 2914 is attached to the multiplexer channel on each 165 and allows the DP center to connect the front end to whichever CPU is available to accept data from the field. The 3705 cannot serve two CPUs simultaneously.

The 4,800 bit/sec lines are equipped with Paradyne M48 modems which include built-in diagnostics to help isolate problems, according to Ray Schwarz, telecommunication analyst. The diagnostics allow Fireman's to provide AT&T Long Lines with valuable operating data when lines go down, Schwartz said.

Variety of CPUs

The six regional processing centers have a variety of IBM CPUs which are integrated into the company's network. Included are 1130s, 360/25s and a 360/20. Each satellite CPU handles administrative and other jobs for local centers as well as operating on-line in a Hasp environment with the 165s.

Each regional center used to keypunch transactions received from branch offices, but with thousands of transactions to be processed daily, a faster method had to be implemented, Schwarz explained. To speed the process, each regional center installed Four-Phase CRTs controlled by a mini and each mini was connected directly to the main DP center so that both the CRT entry systems and the satellite processors could transmit data on-line to San Francisco.

The 4,800 bit/sec lines are 3002 series from AT&T with C2 conditioning. This network configuration will be improved with a dedicated Common Control Switching Arrangement (CCSA) from Bell later this year, Schwarz said.

The CCSA configuration will be the backbone of an integrated national network being configured by Fireman's parent company, American Express. To be called A-Com, for American Express Communications Network, the new system will provide communications services for all American Express divisions.

The total American Express telecommunications network will be one of the largest communications systems ever integrated within one company, according to Ben Bevis, manager of Fireman's technical services division.

Because of the national network goals spelled out by its parent company, Fireman's has expanded its own computer/communications capability with an eye toward later integration into the total corporate network, Bevis said.

Although the American Express net will be totally integrated into one network, each subsidiary will operate functionally discrete operations designed to its particular applications, he added.

Meanwhile, Back Home

But for the present, the Fireman's teleprocessing staff is concerned with solving immediate requirements. At its home office in San Francisco, the company uses 39 2260-type CRTs from Trivex Inc. Most of these operate under IBM's TSO to communicate data to the 165s. The remainder are used for operational systems and in-house monitoring, Schwarz said.

The Trivex displays are spread around the campus-like office complex and transmit their information over hardwired lines into a 2848-type controller installed at the DP center.

At present, the individual branch offices send their data manually to the regional centers. One proposed upgrade now being considered is the installation of buffered 2740-type terminals that would allow each office to capture data using key-entry onto tape cassettes, Bevis said.

The Fireman's communications network has evolved over a period of six years. Some of the outlying Fireman's centers use earlier systems compared with the 165s. As an example, the Newark, N.J., regional center still runs some 1401 emulation software on its 360/25.

Major Upgrade

One of the major upgrades being planned by the firm is a conversion from the 165s to 168s. And when the corporate network becomes fully operational, the company may save up to $2 million/yr, Bevis estimated. This is based on a projection of 26 million calls coming into the regional centers by 1977.

As the system grows each regional center's processing functions would be displaced by branch offices connected to a store-and-forward concentrator. Fireman's goal is to have most transactions reported on-line to its central DP center, and according to Bevis this capability should be available within the next three years.

CW Photo by Ronald A. Frank

Ray Schwarz, telecommunications analyst at Fireman's Fund, points out capabilities of the IBM 3705 as Ken Watts, telecommunications manager, watches.

Wiltek data commu
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The Wiltek difference. The Wiltek terminal combines high speed with the ability to batch data and transmit it *automatically* over standard dial-up facilities. Two unique 50,000 character storage buffers are built into the Wiltek terminal. One temporarily stores incoming data, the other outgoing data. The buffers enable the terminal to send and receive large amounts of data during a single call – *and with no interruption of data entry.* Data moves fast, phone calls are brief. Transmission costs go down more than 50%!

The Wiltek Model 300 is the most economical Wiltek keyboard entry terminal, suitable for low to medium volume locations. Like all Wiltek terminals, the Model 300 automatically makes error checks during transmission. At a large oil company which recently installed 300's in its regional field offices, terminal operators used to spend hours each day re-entering garbled messages. Automatic detection and re-transmission has resulted in more efficient operation and considerable cost savings.

The Wiltek Model 400, with its 30 cps KSR, is perfect for high volume locations. Several corporations use the Model 300 (left) at all remote locations and the Model 400 at corporate headquarters. A packaging company uses 400's at a central location to receive reports from offices around the country on the status of shipments in transit.

and save hundre
of dollars in

Off-Line Telecontroller Makes 'Swift' Work of 75 Terminals

CHICAGO – Keeping track of 75 outlying teleprinters without unduly impacting a main CPU can be a formidable problem. But Swift & Co. manages to operate an administrative message system off-line with a programmable communications processor.

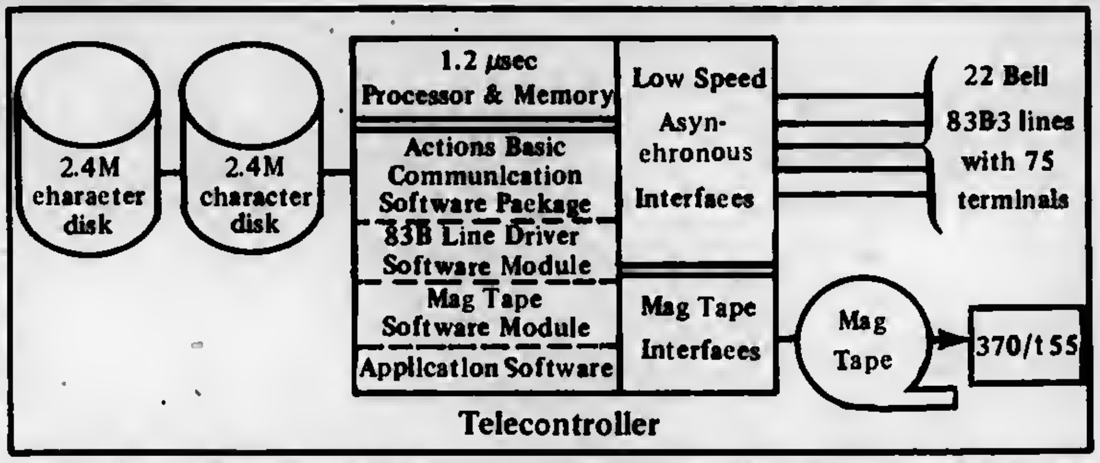
The firm previously used a 360/30, also as a free-standing off-line system to keep track of messages from its remote sites. "We were running message switching as part of a DOS package using the old CCap program," explained Ralph Woods, communications manager at Globe Decision Services Inc. Globe is the Swift DP subsidiary that operates the Swift communications system.

The company issued invitations to bid to eight vendors when it was decided to replace the Model 30, Woods said. Of the eight "full-blown proposals," the company seriously considered five. Among these was an IBM plan to replace the Model 30 with a 360/25, Woods said.

A Telecontroller from Action Communication Systems Inc. was chosen because it had the best price/performance ratio compared with the other systems including the Model 25, Woods said. In addition, Action seemed to be "in a better position to respond to our software needs," he said.

'We Were Chicken'

Part of the specifications detailed by Globe included the contingency capability to connect the message switching system to the firm's 370/155 later on. Asked why the system was operating off-line with mag tape being manually transferred to the 155, Woods said, "We were chicken. We wanted to prove that the Telecontroller would do what they said it would before we took that next step."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Mag Tape Interfaces
Mag Tape
370/155
Telecontroller

Swift & Co. handles messages from 75 remote terminals off-line through Action Communication Systems' Telecontroller, a programmable communications processor.

The Globe/Swift operation is a high-volume message system. The Telecontroller handles administrative messages from 75 Model 28 TTYs with 25 machines located in the greater Chicago area and the remainder spread across the country.

Data flowing into the Telecontroller includes accounting and financial information; sales, price and order data; and other operational traffic.

One application is a data collection system that gathers information from pork plant locations on every hog that is killed. Each hog is covered by a 10-digit "message" that includes the lot number, grade and weight of the animal, Woods said.

This data comes in as the pork plant sites are polled by the Telecontroller. It is then "spun off" onto mag tape for entry into the 155.

The next morning, during the early hours, the processed data is transferred back into the "line queues" and transmitted back to the remote sites. The pork plants are told which weights and pork grades currently represent the best buy based on market conditions. In addition the plants receive data on what type of yields they can expect from the hogs butchered the day before.

"This is a high volume, low margin type of business," Woods explained. So the processed data is designed to tell the buyer where he should be looking for best buys. In addition it tells plant managers whether their buyers have done a good job of grading live hogs, Woods said.

Traffic Spread Out

The relatively slow speeds of the TTYs operating at 10 char./sec "hasn't really hurt yet" because the network is essentially a data collection application rather than a real-time inquiry response operation, Woods said. "We can spread our traffic out during the day as long as we get it all in by the end of the day."

The Telecontroller polls each station on the network. Each site is polled "five times per hour at the very minimum," Woods said. "When we pick up a station we will accept only one message at a time. The site might have four messages on the paper tape but we limit the transmissions to the Telecontroller to one message."

The system runs 12 hour/day and transmits between 2,000 and 2,500 messages each day from the central site in Chicago. These also include messages being sent to Chicago to be retransmitted to other sites. This is done with the Telecontroller's store-and-forward capability.

The TTYs operate with a Bell 83B3 control mechanism that is used to poll and address each station. The firm has thought about upgrading to faster units which will probably "be in the printer category," Woods said, "although CRTs have also been considered."

Another enhancement possibility is the addition of a TWX/Telex interface from Western Union. This could be connected directly to the Telecontroller to expand the present message switching net.

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The Wiltek Model 350 is used where many copies are required or where almost continuous operation is expected. A chemical company uses 350's at its regional offices where sales orders are entered on four-part forms, and at its plants where the orders print out on eight-part forms.

The Wiltek Model 820 terminal transmits punched card data from remote locations. A major manufacturing corporation has installed Model 820's to transmit payroll data from forty plants to a single computer center for centralized processing. The same system also employs Model 400 terminals at all locations to handle administrative messages.

The Wiltek Model 500 terminal uses an advanced CRT with 2000-character display. The 500's editing features make entry of formatted data fast and easy. A nationwide delivery service using the Model 500 to enter package tracers increased operator output by 50% over the previously used teletypewriters.

Our new booklet shows how Wiltek's terminal concept can make corporate data communications more efficient and less costly. Write Robert Colella, Commercial Marketing Manager, Wiltek, Inc., Glover Avenue, Norwalk, CT 06852.

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For more information, call our local sales office, or write System 700 Marketing Manager, Honeywell Information Systems (MS 061), 200 Smith Street, Waltham, Massachusetts 02154.

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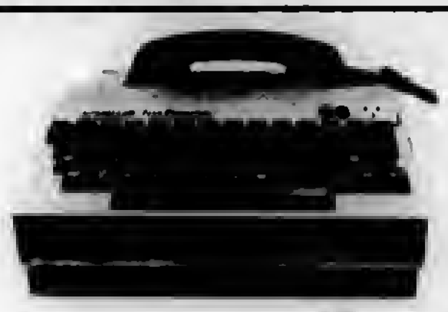

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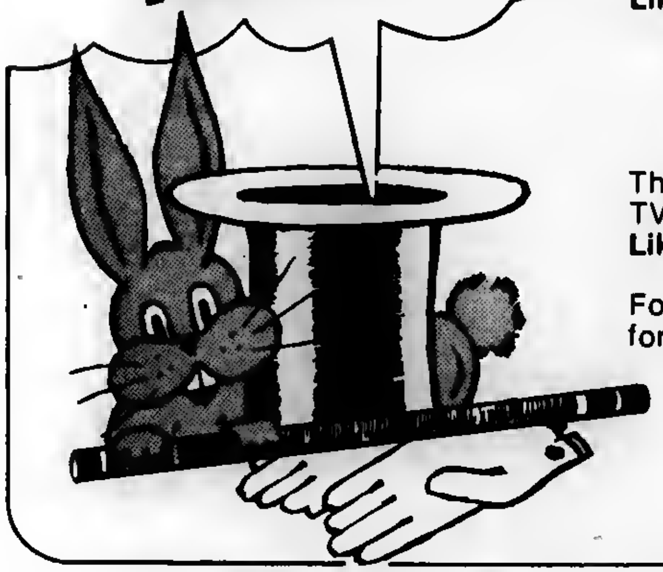

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CRT Display Terminals Augment Dartmouth's Classroom System

HANOVER, N.H. – Dartmouth College, like other progressive educational institutions, has brought the computer into the classroom. With over 130 Model 33/ASR TTY units available to students around the campus, 50% of all students use the computer in any given month, and 90% use it in a year's time.

But by adding CRT displays, Dartmouth was able to make the computer a more useful classroom educational tool. While the school has had TTY terminals in the classroom for several years, it was previously necessary to employ closed-circuit TV cameras to get the TTY printout displayed on a screen for all students to see at once.

A problem with the TV approach, according to Steve Garland, assistant director for education and planning, was that the teacher had to spend much time focusing the camera.

In addition, resolution and contrast were bad because the camera had to "look through" the plastic shield which covered the printout.

The CRTs now used make any information printed on the TTY instantly produced on the screen.

An advantage of the computer/CRT display system is that students can use the system to test problem results. If a student is not sure of the result of a given input he can try it anyway and obtain the result instantaneously.

Dartmouth student solves math problem using computer/CRT display.

When your data transmission goes down, you don't want excuses.

You want that fault fixed. Fast.

Here's how to do it.

Faults in your date communication system, modem and line are automatically identified faster with Antekna's new Model 221 than any other means. We call it the Fault Fixer. Because it fixes responsibility whara it belongs within seconds of a data interrupt. Automatically.

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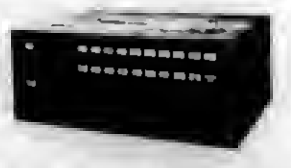

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After the pain of the design and implementation of a data user's communication system has subsided, the sobering requirement of day-to-day operation must still be faced. In terms of longterm system success this is perhaps the most crucial area of operating management.

Operating management can be broken into two areas. The first is designed to prevent the surprises that come from rapid growth and result in system overloading. System records of such items as number of transmissions, line time used, etc. are relatively easy to keep.

These can, and should, be kept through either software or simple transmission logs. These are very important in determining long-range requirements and future needs.

The second area – recording system downtime – is even more important. This is what will actually determine the ability to maximize system throughput and simultaneously minimize system downtime. Actually, by reducing downtime the true data throughput is increased.

The first step in increasing this throughput is to determine where system failures occur. The statement, "We have a lot of trouble with X," is not good enough. It is necessary to establish relative percentages of downtime for major system items such as terminals, modems, circuits, CPU and software.

This record should include the standard items of when the system went down and came up; what failed (established after failure indicates area of trouble); and elapsed downtime.

In dealing with a carrier or circuit supplier it is also important to record the name, initials or service report number. This is required because the carriers do not appear to keep accurate records of their own service calls.

In cases where a user has to review an operating problem with his carrier, complete information is vital. It can make the difference between correcting a line fault immediately or requiring the carrier to first retrace the original repair effort.

The record of calls becomes important in determining the "weak link" of a system. In the case of equipment with alternate vendors it is possible to replace this trouble area with competitive equipment. In the case of circuit problems the call record is required to establish refunds due.

The actual refund received is negligible and certainly provides no reason for the recordkeeping. However, the records can point to troublesome segments of the circuit which can be replaced. As such they can be valuable to the carrier and the user in eliminating problems.

In addition, they will provide the records necessary to request help from the regulatory body governing the carrier. As a purchaser of a service it is logical for the user to expect service from the supplier. However, with limited sources, such as existing or specialized carriers, some higher appellate body may be necessary.

This is either the FCC for interstate circuits, or the state regulatory body for intrastate circuits. If supplied with factual back up of dates, times and reasons for carrier failures they will be very helpful in securing the operating system desired. As a purchaser of service, when all other avenues fail, no user should hesitate to contact the regulatory body.

The manager of a data communication system has the responsibility of maximizing the efficiency of his system. Without good records efficiency is impossible.

Richard A. Kuehn is president of RAK Associates, Cleveland, Ohio, a communications consulting firm specializing in the design of private line networks.

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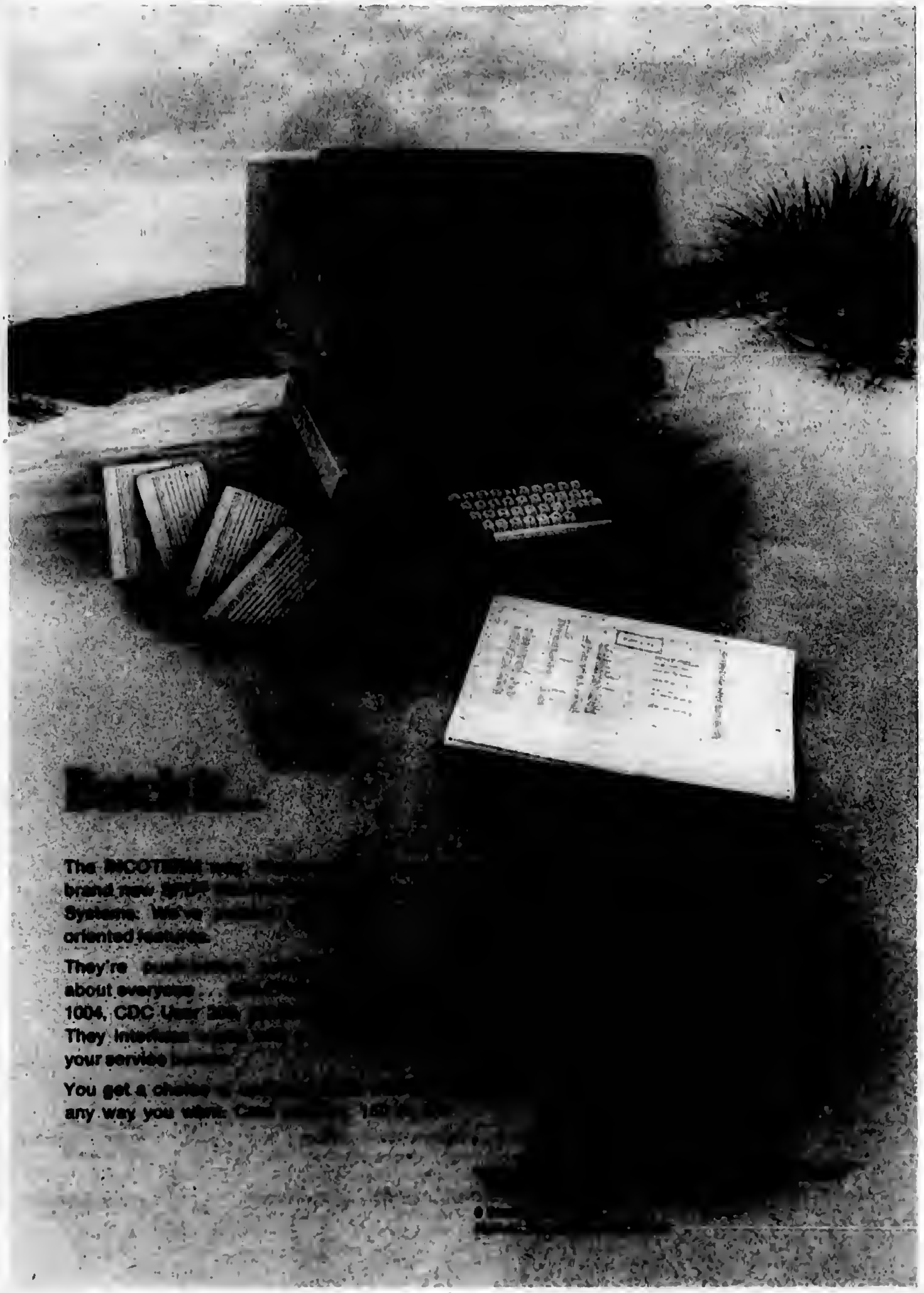

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Voice Units Vary From Touch-Tone to Integrated CRTs

By Glenn E. Dawson

Special to Computerworld

Voice response units have been developed from a variety of approaches by a number of different companies. However, the specific technical approaches to handling the voice signal are of little interest to the user as long as output responses are recognizable and the price remains reasonable.

The major components of voice response systems can be divided into the communications equipment which transmits the tones and voice reply, and the computer equipment which processes the input inquiry and generates the voice reply.

The most popular terminal is the Touch-Tone telephone. However, independent manufacturers have developed their own terminals; over 50% of these make a Touch-Tone-type transmitter. Others provide limited hard-copy, increase the size of the keyboard beyond 12 keys, etc.

The use of the telephone as the only computer terminal does constrain the effectiveness of voice response. Some of these constraints have to do with the lack of extensive hard-copy; the necessity to encode control or alphabetic characters using simultaneous key depressions or extended keying; the appearance of keying errors; and the unavailability of the Touch-Tone telephone.

Unnatural Response

Historically, the unavailability of voice response units with many lines and a large vocabulary also inhibited the development of many attractive application areas. In addition, responses formed from the individual words stored in the limited-vocabulary devices resulted in a somewhat staccato response that sounded unnatural.

Some constraints (e.g. no hard-copy) can be considered disadvantages only when applying voice response inappropriately, since it is these constraints (e.g. the elimination of paper) that makes voice response attractive in other areas. Obviously, system constraints offer opportunity for creative product and system design.

Today, many banks have integrated voice response with alphanumeric CRT displays. The CRTs are used typically to obtain detailed information concerning an account whereas voice response is used primarily to obtain the status of an account.

Using voice response to complement and increase the flexibility of CRT-based computer systems is expected to increase rapidly throughout all industries during the 1970s and beyond. The key to such growth will be the introduction of more applications-oriented systems. Such systems should encompass not only voice response, CRTs and hard-copy capability, but also applications software.

Low Cost: Good and Bad

The major reason for the appeal of voice response to the computer user is its overall low cost. Of course, this is precisely why the major equipment vendor is sometimes uninterested in discussing voice response.

For example, a hypothetical banking system might have 12 telephone lines, a 64-word vocabulary and eight local CRT displays. Based upon summer 1972 prices, the cost of such a configuration might range from $2,300/mo from Wavetek to $3,600/mo from IBM. Approximately $1,000/mo is spent on the eight displays.

However, the 12 telephone lines might service 200 telephones or separate locations. Using only CRTs and placing one CRT at each of the 200 locations might then increase the monthly cost to the computer user by some $25,000/mo.

It is obvious that the equipment vendor would concentrate on selling the large CRT systems without voice response. It is just as obvious that each computer user should persist in investigating the applicability of voice response in his own company.

The main advantage of voice response is that the telephone is the only device that needs to be seen by the user. This is the key to its low cost, speed, simplicity, flexibility, acceptability and adaptability.

Voice response systems are cost-competitive with other data input and retrieval methods when many people must access a large and rapidly changing data base, when an immediate decision- such as check cashing must be made, or when a simple inquiry can be answered with a short reply.

Who Are the Vendors?

The IBM 7770 Audio Response Unit is the industry standard largely because it probably represents 85-90% of all voice response installations. The IBM 7770 can have from four to 48 lines and 127 maximum 0.5 sec long word segments.

Other voice response vendors are American Systems, Burroughs, Cognitronics, Datatrol, Federal Screw Works, Honeywell Information Systems, Metrolab, Periphonics and Wavetek.

Systems offered by the newer companies such as Datatrol and Wavetek are, for the most part, based on minicomputer techniques and hence can operate as stand-alone systems. This makes them extremely flexible and in essence they become programmable communications front ends capable of servicing a variety of different terminals and communciations techniques.

Glenn E. Dawson is president of Alltech Computer Systems Inc., a publishing and consulting firm in Pennsauken, N.J.

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Bits & Pieces

370/145 Users Offered Monolithic Add-On Memory

LOUISVILLE, Colo. – Users of IBM 370/145 models I and II can obtain a plug-compatible solid-state monolithic memory system from Storage Technology Corp. (STC).

The add-on is a self-contained unit allowing users to add up to 1,024 bytes of storage for both IBM models.

System features include: use of high-performance monolithic memory chips; error-correction code electronics that detect and automatically correct single-bit errors. pluggable memory arrays that allow in-line repair; modular and independent power supplies with each unit for maintenance and upgrading; and in-line diagnostics for fault isolation.

Deliveries are set for September 1973 at prices 12% to 20% below comparable IBM memory systems, the firm said, from 2270 S. 88th St., 80027.

Data 100 Adds Print Station

MINNEAPOLIS – Data 100 Corp. has added the Model 75 Print Utility Station to the company's Seventy Series family of remote batch terminals.

Designed as a stand-alone tape-to-print station, the basic Model 75 configuration includes a 1,000 line/min printer, a 9-track – 800 or 1600 bit/in – magnetic tape unit, a video display console and a 12K-byte memory terminal control unit.

A card reader and 1250 line/min printer are optional.

The off-line terminal system utilizes standard IBM DOS- and OS-generated tapes with internal software permitting the operator to define record and block-length characteristics of the tape to be printed.

Basic lease price on one-year lease is $1,780/mo including maintenance from 7725 Washington Ave. S., 55435.

OCR System for Typeset Users

BEDFORD, Mass. – A laser-based Optical Character Recognition (OCR) page reader system is available from ECRM, Inc. for computerized typesetting applications.

The Model 5100 is set up to read OCR-A and IBM Courier 12 fonts at speeds up to 250 word/min while maintaining an error rate of less than .01%.

Basic hardware includes a single cabinet containing both the scanner subsystem and processing units. The processor is a PDP-8 with 16K of core memory.

Available options include an on-line keyboard/display console and a 75 char./sec paper-tape punch.

System price is $29,500 from 205 Burlington Road, 01730.

Fourier Processor for Mini Users

NORTHRIDGE, Calif. – Spectra Data's new Model 1040 is a stand-alone, hard-wired, Fast Fourier Transform processor.

It is designed to increase the speed of any computer in arithmetic operation involving Forward and Inverse Fourier Transform, Power Spectrum, Cross Power Spectrum, Cepstrum and others.

Plug-in interface cards adapt the Model 1040 to operate with standard computers such as those manufactured by Digital Equipment Co., Data General and Varian Data Machines.

Price of the processor is $11,250 from 18758-6 Bryant St., 91324.

. . . for Katakana Coders

DALLAS – Recognition Equipment's "Total Data Entry" systems now offer the ability to process data printed in Katakana as an option.

Katakana, the Japanese font derived from the basic Japanese language, Kangii, is the EDP industry standard for Japan.

Model 4 Supercharger

1130 Device Can Save Users $1,000/Mo

By Michael Weinstein
Of the CW Staff

TORRANCE, Calif. – IBM 1130 users may save up to $1,000/mo system rental with modules from Logicon, Inc. that supercharge an 1130 Model 4 so that it has the same capabilities as the faster 1130 Model 2.

The basis of this savings is a module that bypasses delay circuitry in the standard IBM Model 4.

Once these circuits are passed, the Model 4 is essentially the same machine as the more expensive Model 2, according to a spokesman for Logicon.

The standard Model 2 has an internal cycle time of 3.6 µsec and is available from IBM with core memory from 4K to 32K 16-bit words.

Users can have one 2310 disk subsystem with a 500K-word storage capacity incorporated in the mainframe of the Model 2.

Optionally, Model 2 users who want to add extra disk drives and a faster line printer can use the Storage Access Channel (SAC) from IBM at a slight extra charge.

Without the SAC, users are limited to the one internal disk drive, an 1132 type printer (100 line/min) and a card reader/punch.

The 1130 Model 4 is essentially a "crippled version" of the Model 2, according to the spokesman.

The delay circuit used by IBM in building the Model 4 effectively reduced operating speed from 3.6 µsec to about 5.7 µsec. This slowdown results in a machine that is about 62% as efficient as the Model 2, he added.

While the Model 2 could have up to 32K words of core memory, the Model 4 is limited to a maximum of 8K words. Further, the Model 4 does not allow for the SAC and users can not attach extra disks.

The inability to attach the SAC means that Model 4 users are limited to the internal 2310-type disk drive, 1132 printer and card reader/punch, the spokesman related.

Curing the Lame

Logicon's adapter consists of circuitry and a switch that bypasses the IBM delay circuits. With the switch users can switch back to a standard Model 4 at any time to meet IBM maintenance requirements.

Included in the adapter is the SAC, so that Model 4 users with Logicon's module can operationally turn their system into a Model 2 with SAC.

The adapter is available as a part of two packages: add-on memory or controller option.

Add-ons for the Model 4 are available in 8K-, 12K-, 24K- and 28K-word versions. Rental costs for these add-ons on a three-year lease are $345, $585, $660 and $815/mo respectively.

For an additional $50/mo, users can have the adapter with the SAC and speed-up switch.

Users can thus attach 2314-type disk drives, a 600 line/min printer and IBM-compatible 7- and 9-track tape drives.

The other option is to get the speed-up switch and SAC with the Logicon Peripheral System (LPS) – a controller for attaching faster peripherals to the Model 4.

Cost of the LPS with the adapter is $780/mo on a three-year lease. This rental includes one 2314-type disk drive with a 10M-word storage capacity.

To put potential savings into perspective, the spokesman outlined two hypothetical users:

User A has an 1130 Model 2 with 32K words of core memory and the SAC – all from IBM. He pays about $2,460/mo rental on this configuration.

User B has an 1130 Model 2 with 32K words of core memory from IBM. He also has 28K words of add-on memory, the adapter switch and the SAC from Logicon. User B pays $450/mo rental to IBM, $815/mo for the add-on memory and $50/mo for the switch-SAC to Logicon, for a total monthly rental of $1,315.

Operationally, Users A and B have the same capability, except that User B is paying about $1,000/mo less than his all-IBM counterpart.

Logicon is at 24225 Garnier St., 90505.

Parallel Four-Bit Word Microcomputer Available for $695

IRVINE, Calif. – For $695, users can obtain a parallel 4-bit general-purpose microcomputer from Applied Computing Technology, Inc.

The microcomputer is totally self-contained on a single printed circuit board (PCB) with a cycle time of 11.8 µsec.

The unit consists of five basic elements: a central processing unit, a read-only memory (ROM) for assembled program storage, a random access memory (RAM) for data storage, an expandable universal I/O bus and a computer clock.

The CPU includes subroutine stack nesting to three levels, four program stack registers, 16 index registers, one instruction register, accumulator, accumulator buffer, adder buffer, a 4-bit adder, I/O buffer, memory and I/O address selection and control section.

The ROM program storage may be mechanized with conventional electronically controlled programmable and erasable programmable read-only memory (Prom).

Options include RAM data storage expansion in increments of 80-word RAM IC chips to a maximum of 1,280 words and ROM assembled program storage expansion in increments of 512-word preprogrammed ROM IC chips to a maximum of 8,192 words.

Applied Computing Technology, Inc. is at 17815 G Sky Park Circle, 92707.

Traffic in Stolen Credit Cards May Stop With Terminal System

WILMINGTON, Del. – Stealing credit cards may soon lose its standing as one of the most lucrative of criminal operations.

A terminal-based verification system can now read the embossed lettering used in most credit cards.

The system, from Data Source Corp., is currently being used in a joint venture by two Wilmington banks offering Master Charge credit cards.

Caught in the Act

With the new system, "it is entirely possible for a thief to rob a victim of his credit card, go to a retail store and be caught trying to make his first purchase with the card," explains Sam Grey, vice-president of the Wilmington Trust Co.

Grey's bank, in cooperation with the Farmers Bank of the State of Delaware, is currently using the system to verify credit on more than 81,000 credit cards.

Since installation in November 1972, more than 500,000 transactions have been checked by the system, and more than 1,000 improperly used cards have been detected and/or confiscated.

Not only does the terminal system detect fraudulent credit cards, but it will instruct merchants to deny credit to a cardholder who has exceeded his credit limit.

"In addition, it monitors the credit card's spending pattern, said C.J. Midione, vice-president at Farmers Bank. "If a customer's card suddenly is being used in an unusual spending spree, a merchant will be instructed to verify that the proper person is using the card."

The system consists of credit card reading terminals, a minicomputer-based controller and software for the credit center's host computer.

Presently, 266 terminals are installed in more than 180 merchant locations connected over private lines to the minicomputer-controller.

The minicomputer in turn is connected directly to the computerized credit data files at the Eastern States Bank Association.

Omnipresent Switch

This central computer is part of a computerized network (called Omniswitch) that allows the two local banks to obtain data on cardholder accounts of more than 2,900 Master Charge issuing banks across the nation.

In operation at the local level, a merchant presented with a credit inserts the card into a terminal, indicates the purchase amount and pushes a button.

Within seven seconds, he is told whether to honor or confiscate the card, or he is given other instructions.

With the Data Source 800 network being installed, the next step will be to capture data needed to prepare itemized customer bills each month and cut down the huge amounts of paperwork presently required to handle and process credit slips and prepare customer bills.

Another application under study is to have the system used for check verification to help merchants solve the problem of bad checks.

Data Source Corp. is at 2350 Alaska Ave., El Segundo, Calif. 90245.

Multi-Channel Data Acquisition System Offered Mini Users

SANTA ANA, Calif. – Data Technology is offering users a multi-channel (expandable to 1,024 channels) data acquisition system.

Designed primarily for applications such as production testing, simulation instrumentation, vibration analysis and pollution monitoring, the Milliverter II features either fixed or programmable gain track and hold amplifiers.

Low- and high-level signals are handled with a combination of five interchanged amplifier and extender cards inserted in 16 positions of the chassis. Thus, the spokesman added, when system requirements change, the cards may be repositioned.

The Milliverter II is available at a base price of $3,250 plus amplifier cards. Interfaces to most minicomputers are available with conversion timing controlled either by the CPU, by an included interval timer or from an external signal source.

Delivery is from stock from 2700 S. Fairview Ave., 92704.

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Random Access Systems

Floppy Disks Announced for Mini Users

SANTA ANA, Calif. – Standard Logic has introduced two floppy disk storage subsystems, the FD-8S and the FD-8H, that can operate with a variety of minicomputers.

Both systems incorporate an interface, a formatter and a random-access cartridge-loaded floppy disk drive.

Both systems can incorporate up to four floppy disk drives and can operate with DEC PDP-8 and PDP-11; HP 2100; Tempo II and Data General Nova 1200 computers.

Using optional plug-in modules, the systems can be adapted to any minicomputer, according to a spokesman for the firm.

The FD-8S offers 131K byte/track. There are 64 track/drive with 8 sectors of 256 byte/sector. Track-to-track access is 6 msec with a 34 msec head settling time for the last track. Transfer rate is 4,200 byte/sec with a 333 msec average latency time.

The FD-8H is a larger unit with 262K byte/drive. It has 64 track/drive with 32 sectors of 128 byte/sector. The track-to-track access is 10 msec with a 10 msec head settling time for the last track. Transfer rate is 31,200 byte/sec with an 80 msec average latency time.

Price for either floppy disk subsystem is $2,500 from 2215 S. Standard Ave., 92707.

NCR Adds Two Peripherals To 399 Series

DAYTON, Ohio – NCR has added two new peripherals for users of the firm's 399 Series computer.

New peripherals include a 300 line/min printer – previously NCR provided a 125 and 200 line/min printer for the 399 – and an automatic ledger feeder-reader.

The 314 ledger feeder-reader reads and transmits data recorded on magnetic ledger cards, serving as an auxiliary input to the system.

It can read up to 47 11-in. cards/min and is cable-connected to the 399's interface board. The unit can read magnetic cards from 6 to 16 in. in length and 8 to 15 in. in width.

The NCR 349-300 printer is priced at $17,000 and rents for $460/mo. The printer will be available in the third quarter of 1973.

The NCR 314 ledger feeder-reader is priced at $6,000 and rents for $185/mo. Availability on this unit is the second quarter of 1973.

...Moving to OCR-A

Optical Scanning Unveils New Unit

NEWTOWN, Pa. – The ability to read the full OCR-A character set plus special characters printed by a Selectric typewriter or high-speed computer printer are highlights of Optical Scanning Corp.'s OpScan 37.

The optical character recognition system has an option for reading handprint and mark reading, also.

In operation, the OpScan 37 may be used in a freestanding configuration providing records on magnetic tape or communication on-line with a central processor – remote or local.

Various output options such as magnetic tape, cassettes, printers, card punches, computers and telecommunications equipment are available.

Speed depends on the size of documents being handled, with 2 in. by 4 in. forms read at 2,500/hr. Full 8-1/2 in. by 11 in. pages are read at 270/hr.

A special program sheet for each format to be scanned is provided with the system. This sheet tells the scanner where to read, what to read and also formats the output without requiring software intervention. To change from one format to another the scanner only inserts the proper program sheet.

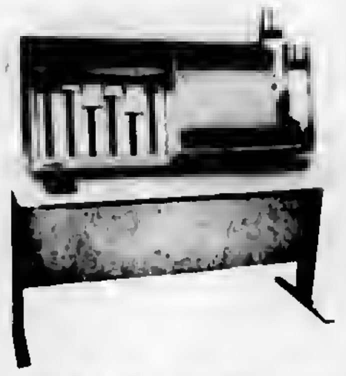
The OpScan 37 sells for $45,000. Monthly rental is $1,475 (not including maintenance). The firm is reachable through P.O. Box 40, Rt. 332-E, 18940.

NCR Adds OCR-A Font To Adding Machines

DAYTON, Ohio – NCR has added the OCR-A font as an option on its line of full-keyboard adding machines.

"The availability of this industry-standard font on our full keyboard adding machines allows them to be used simultaneously for bill validation and data entry through any variety of Optical Character Recognition (OCR) readers," a spokesman for the firm stated.

The OCR-A optical font is available immediately as a factory-only installation at $50 extra charge.



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Formatter Aids Diskette System Design

(While equipment in this column is primarily for Original Equipment Manufacturers [OEMs], in most cases it is also available in single units to interested users.

Further, the equipment that is not presently available does give some indication of techniques that may be incorporated in end-user equipment in the near future.)

BEDFORD, Mass. – Innovex Corp. has a disk formatter for its line of "diskette" moving-head storage devices to aid designers in interfacing information processing systems.

The formatter can function with 8-, 12- and 16-bit word machines and control up to eight floppy disk drives.

A 16-bit bidirectional bus is used between the formatter and central processor to transfer command words, status words and other disk-oriented data received by the central processor.

Operationally, the formatter accepts new address information and initiates the seek operation on the appropriate diskette drive. Seeks can be performed on all drives in parallel. Following a seek completion, the formatter checks that the head is on the correct cylinder.

Two-frequency encoding is used in writing operations with a parity word entered at the end of the data field.

New OEM Products

In cases where the information is unavailable or the sector cannot contain the entire record due to length, an error flag is posted and an appropriate bit is set in the status word.

Following a head command, interrupts are generated for each data word. If a parity error is detected or the processor fails to accept a data word, then an error flag is raised at the end of the record.

The command word consists of 8 bits and may be transmitted as either a single word or used individually; status words are in 12-bit format and contain three error-detecting bits to control seeking, reading and timing errors.

Price of the diskette and formatter package is $2,740 with quantity discounts available from 4 Alfred Circle, 01730.

Two 80-Col Punched Card Units Unveiled

MELBOURNE, Fla. – Documation, Inc. has a reader/punch and card reader.

The RP-100 reader/punch for 80-column cards features a side-friction picking system with positive roller-controlled transport, a cam-driven punching system and automatic verification in its punch operation.

Punch operating speed is between 100- and 250 card/min – depending on the number of columns punched. Reading speed is 400 card/min.

OEM unit price is $11,750.

The D-400 is a high-speed, table-top card reader with a reading speed of 400 card/min for standard 80-column cards.

Hopper capacity is 800 cards and stacker capacity is 1,000 cards, both of which can be loaded on the fly.

OEM unit price is $1,650. Both units are available from 371 New Haven Ave., 32901.

Tape Reader for Block Data

SANTA ANA, Calif. – The Data Loader is a punched tape reader designed for OEM applications requiring reading for sequential block data loading.

The unit operates synchronously, at up to 150 char./sec and is TTL/DTL/RTL compatible.

Options include choice of directions, bidirectional operations, run/stop and remote control relay assembly, inverted logic and optional packaging.

Price in unit quantity is $285 from Electronic Engineering Co., 1441 E. Chestnut Ave., 92701.

MOS/LSI Devices Announced

NEWPORT BEACH, Calif. – Western Digital Corp. has announced two programmable MOS/LSI devices.

The P/SAT converts variable-length parallel characters into a serial data stream, while the P/SAR converts a variable length serial data stream into parallel characters.

Prices in quantities of 100 to 999, the P/SAT is $21.70 and the P/SAR is $26.05. The firm is at 19242 Red Hill Ave., 92663.

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First ACM Committee Meeting Reveals Clear Split Between Theory and Practice

By Michael Merritt

Special to Computerworld

PALO ALTO, Calif. – The first meeting of an Association of Computing Machinery special interest committee on measurement and evaluation revealed a "town and gown" split between academics concerned with the theory of computer performance and "practitioners" finding data on real systems and trying to get computer systems to perform to specifications.

The World of Measurement

Speaking at the opening session of the three-day meeting which was attended by over 200, Peter Denning of Purdue University suggested that the whole business of performance evaluation is backwards anyway. "We put in a system," Denning said, "and then ask how it should operate. We want good performance, but we don't know what good performance is."

The appropriate procedure, Denning said, is to first define the classes of jobs a system is to do, and develop performance standards for those jobs. Then virtual machines can be designed for each class, and real machines designed to simulate the virtual machines.

The idea, according to Denning, is to move from a needed level of service to a machine, not from a machine to a level of performance – system the model, not model the system.

Denning's suggestion aroused some response from the "practitioners" in the audience, who contended that the idea was utopian, and that users have to work with what they have now.

Steven Kimbleton of the University of Michigan and chairman of the special interest committee, also pointed out the disparity between theory and practice in DP evaluation.

Most of the work now being done, he said, concerns the properties of one job or one system. What is needed, according to Kimbleton, is some measure of performance of larger computer subsystems from the viewpoint of the user organization.

The DP manager, for example, needs to know ways of determining the size and characteristics of systems to be purchased, Kimbleton said. There is just no computer system selection methodology, he added.

Erol Gelenbe of IRIA, a French research institute, delivered a paper on optimum page size in demand paging systems using drum, extended core storage, or large core storage as the secondary memory medium; the only systems, though, which permit users to select page size are the 370 Series and Multics, which only permit a choice of two sizes.

The work of Gelenbe and his colleagues showed that optimum page size depends on several factors, including the nature of the secondary memory device, how long a program spends in the CPU queue after a page fault, and the increase in the number of page faults as page size gets smaller. (A page fault occurs when code needed by the CPU is not in the page currently in primary memory.) Program size was one of the secondary factors in determining optimum page size, Gelenbe said.

The best way to hook up more than one drum memory to a computer is to dedicate an I/O channel to each drum and to use a shortest-latency-time-first (SLTF) organization, rather than a first-in-first-out organization, or multiple drums per channel, for minimum response time, according to Samuel H. Fuller of Carnegie-Mellon University.

The SLTF organization, though, practically requires positional sensing hardware and software, only available on more modern drums. A complicating problem, Fuller's work revealed, is that a computer's page size may not be an integral of the track length of the drum memory.

Jon Strauss of Washington University in St. Louis presented an analytic model of an improved Hasp execution task monitor. The Hasp ETM controls the OS/360 dispatching chain, and the current version gives execution priority to jobs showing little CPU utilization. According to Strauss, this gives I/O-bound tasks priority over CPU-bound tasks.

Strauss's model showed that the current monitor does work, but is most suited for situations where the various task classes show the same amount of CPU utilization. One improvement he suggested was the addition of a factor reflecting differing memory speeds if the system uses large core or extended core storage.

Dr. Ruth Davis of the National Bureau of Standards delivered a luncheon address to the conference, and spoke of the need for the development of measurement, evaluation and standards tools to make acquisition of computer systems a more rational process. Users have been too willing, she said, to buy systems without really knowing how they perform.

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73C

Total City Ledger System Now Possible at Hotel

By Toni Wiseman
Of the CW Staff

CHICAGO – Better control, greater efficiency and the ability to grow in the future with proportionate increases in staff are the major benefits resulting from the use of a new computer to implement a total city ledger system at the Drake Hotel.

According to Drake comptroller Henry F. Stec, "From an overall point of view, we are now collecting and processing information which we are able to efficiently and effectively use not only for accounting purposes, but as a marketing tool to promote increased business,"

The initial computer application at the hotel was made in 1966, when tip reporting requirements of the Tax Adjustment Act of 1966 and new graduated income tax regulations made the payroll application for the hotel's 1,100 employees too complex for a bookkeeping machine.

A computer program for payroll and personnel was developed and run on off-site leased equipment by Drake personnel.

At that time, accounts receivable were still being processed on four accounting machines since it was considered impractical to process them off-site because of the volume involved and the need for close coordination with other hotel records.

In April 1971, after an extensive period of investigation and experimentation, the Drake installed an NCR Century 100 system. The system includes a CPU with more than 32K of memory, two dual disk memory units each with 8.4M-character storage, a 450 line/min printer, card reader and input/output reader.

At the same time, conversion of accounts receivable was initiated, and a cutover to computer operations on this application was made in May 1972.

Today, the receivables system maintains in file 30,000 accounts.

The computer stores receivables data in five basic transaction files: Drake credit card master, non-credit card master, returned check, advance payment and Club International (a private club) dues.

Reports are produced daily on collections, payments on overdue accounts and financial transactions. Master account files are updated weekly, and at the same time a number of reports are printed out, including trial balance totals broken down in terms of percentages of credit- and non-credit-card activity.

Henry F. Stec (right), comptroller, views printout on NCR Century 100 system with B.W. Schuler; vice-president and general manager.

Dental Program May Facilitate Mass Treatment

PHILADELPHIA – A former public health department dentist working toward a doctorate in biomedical engineering at Drexel University has taught a computer how to examine teeth . . . well, not really.

Dr. Mark Shapiro's Computerized Mass Screening for Dental Decay system can examine 1,500 patients an hour and is seen as a major breakthrough in large-scale treatment programs.

"It isn't the sort of thing you'll see in your dentist's office," Shapiro said. "Its major benefit is in public health work where large populations have to be screened."

His system requires no dentists. Instead, a dental technician takes one X-ray of each patient's mouth.

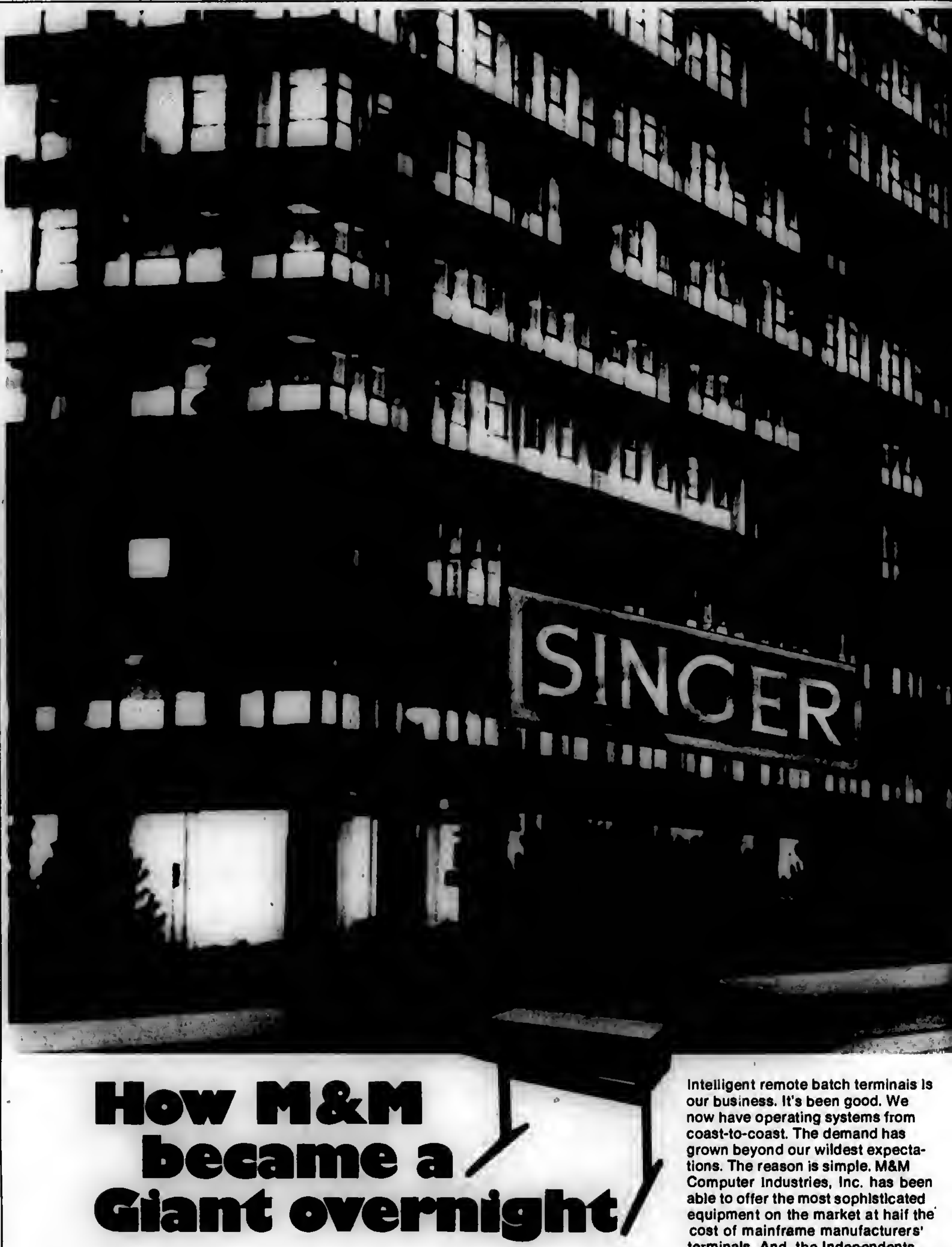
On the X-ray film, decayed, filled or missing teeth show up as varying patterns of light and dark. Shapiro's machine translates these patterns into information the computer, a DEC PDP-12, can understand. The computer then prints out what it reads from the individual X-ray film or summarizes the data from an entire group.

'Unretired' Machine Aids Satellite Tracking

ROME, N.Y. – What connoisseurs of computers would call a "vintage" machine is doing up-to-date research in developing methods to identify orbiting artificial satellites. The computer is part of an experimental system devised by the Techniques Branch of the Air Force Systems Command's Rome Air Development Center, Griffiss Air Force Base, N.Y. The system is used to control the antennas that track the satellites, helping the system to establish the elements of orbits by obtaining the coordinates (altitude, azimuth and range) or the satellites.

The research effort has been established to develop improved techniques in radar systems designed to track satellites. The investigations are aimed at developing means of obtaining positive identification of artificial satellites by their radar signal returns.

The DEC PDP-1, introduced in 1960, has been on duty here for over four years, and was acquired from another Air Force facility that was "retiring" the machine after years of service.



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Statistical ABL System Making a Big Hit

By Ken Shonk
Of the CW Staff

BOSTON – The American Baseball League is now using a computer-based system to compile team and individual statistics. The system receives information on each game from the home team through facsimile transmission of the official scorecard to Sports Information Center, the contracted company, in Boston.

"We decided to start the operation," said John Harrington, the Boston representative of the American Baseball League, "simply because many of our clubs were already involved in computer systems on their own, running nearly identical operations. We just decided to coordinate them."

The first phase of the system uses the information from the scorecard to update player and team master files, starting from the first game of this season. The program then produces daily and weekly statistical reports on player and team batting, pitching and fielding averages.

Intelligence Reports

"The system can also produce a variety of management and intelligence reports," James Scheivle of Sports Information Center reported.

"For instance, the system can compare the performance of one team against that of another, answering questions such as, how does your team or an individual player do against a particular team at night?"

In phase two the master files will be expanded to include information on previous seasons so that the system will be able to provide a complete history of each player, Scheivle added.

"The short time we had to start up the system and get it running by the time the baseball season opened was our biggest problem," Scheivle said.

Rewarding Achievement

Two Delaware Valley scientists who codeveloped one of the world's first all-electronic digital computers 27 years ago are winners of the 1972 Philadelphia Award for outstanding service. Left to right are Dr. John W. Mauchly of Ambler, a recipient; Dr. Marvin Wachman, president-elect of Temple University and chairman of the Philadelphia Award Board of Trustees; Walter Phillips, a board member; and Dr. J. Presper Eckert of Gladwyne, also a recipient.

Code, Terminal Allow Stroke Victim to 'Talk'

By Toni Wiseman
Of the CW Staff

BURLINGTON, Vt. – The mating of a computer terminal and the Morse code has enabled a stroke victim to communicate in words for the first time in nearly a year and a half.

The project was begun by four electrical engineering students at the University of Vermont who set out to solve the problem of providing a means of communications for a paralytic who had only the slightest control over the fingers of his left hand.

The finalized system uses a commercial electronic key to input information, via Morse code, into a computer terminal. There the binary information signal is processed and the output written in alphanumeric characters on a television screen.

Two-Key System

The information is input from two keys, one each for dit and dot, which send continuously at variable rates from six to 60 wpm. The student-designed system uses solid-state logic and integrated circuits to convert the electrical impulses into a language which the television device can interpret.

The students have been approached by the Vermont Crippled Children's Association which hopes the engineers will be able to apply their current knowledge to the problem of cerebral palsy victims.

low, medium and high speed models, simultaneous operation of multiple peripheral devices, multi-leaving, easy field expandability with no costly down-time and plug-to-plug compatibility with IBM, CDC, Univac, Honeywell, etc. There are many more reasons why, but we've made the point.

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Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, Including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld*'s editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.

The Staff of Dempa Computerworld Inc.

Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld*'s U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.

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IBMer Utilizes Microcode Capability And Converts 360/25 to APL Emulator

By Robert L. Glass

Special to Computerworld

SEATTLE – A member of the IBM Scientific Center in Palo Alto, Calif., has converted a 360/25 into an APL language emulator by utilizing the microcode and control store capabilities of the machine.

At a recent meeting of the Ruget Sound Chapter of the Association for Computing Machinery Dr. Tony Hassitt discussed his paper on "A High-Level Language Machine." The talk was a summary of his adventures and techniques in building an APL language computer.

Since the 25 is basically an emulator machine – even running in native mode, it is actually emulating the 360 in its microcode, according to Hassitt.

What Hassitt hoped to gain by his high-level language machine were the things a language interpreter does well – symbolic debugging, automatic bounds checking on subscripts and mode checking on arguments, automatic type conversions, dynamic storage allocation for vector and array manipulation.

What he did not expect to gain was speed. And he was right. For operations on scalar variables, the APL/25 works about two to three times slower than the 360/25 on similar operands; for vectors of more than about 10 elements, it does become a bit faster. But this still beats standard APL interpreters, which typically run at a 5-1 or 10-1 slowdown.

Microcoding is a fledgling art. The choice of what instructions to microcode had to be based on judgment and compromise. Microcode routines were developed to aid source syntax processing, space management, function calling and returning and monadic and dyadic operators.

The things microcode does best, Hassitt said, are bit testing and branching; register-to-register operations; logical manipulation; and memory-to-register operations; for these, it is eight to 42 times faster than "machine code." It is slower for things like floating point arithmetic, long string moves and I/O.

The future of the project, Hassitt said, is uncertain. He is continuing his research on another computer.

CRTs Do Have Their Captive Audience

KANSAS CITY, Mo. – Operators unfamiliar with CRTs tend to slow down initially while watching the tube, John Gray of Missouri Farmers Association told a Computer Caravan/73 data entry session here.

But once they're familiar with the scope, the benefits from using a key-to-disk system start mounting, he said.

When his shop first put in Inforex 1301s, he said he noticed a 35% slowdown in operator throughput, as they tended to get carried away watching the screen.

However, they soon concentrated on entering the data rather than watching their progress on the scope. The capabilities of the unit, such as allowing specification of a record size soon became apparent, he said.

Dick Baker of Chemagro also found an initial slowdown while his operators became accustomed to the screens of their IBM 2260s linked to his 360/30.

When You Hit 100, You'll Be Fired

LANSING, Mich. – During the processing of school bus driver records, it was discovered that about 130 of 130,000 drivers had more than six penalty points on their driving records over the past two years.

This information surfaced recently, when the Michigan Department of Education ran its bus driver records through a computer.

One driver reportedly had accumulated more than 12 traffic law violations in two years, a point at which most licenses are suspended.

Originally initiated to help develop guidelines for schools in hiring drivers, the study, according to a source, was not expected to have much effect. Courts and labor arbitrators have held that school bus drivers cannot be fired for accumulating bad driving records if their records were good when they were hired.

Mich. Land Use on Reserved Basis

LANSING, Mich. – "With nine million resident people and only the same amount of land we had thousands of years ago, [the State of Michigan] can no longer afford to tolerate every use everywhere all at the same time," according to Sam Milstein, Department of Natural Resources (DNR) official.

So Michigan is doing something to preserve and best use its limited amount of land and the computer is playing a part. This year the DNR is instituting a computerized reservation system for the state's parks.

State residents will have to tell when and where they want to go and wait for the computer to tell them what resources are available.

Such controls would avoid incompatible uses of land such as snowmobilers using the same trails as cross-country skiers, he added. Recreation taken in "small doses by prescription" will not cause great harm to the environment.

Where the Buyers Are

TROY, Mich. – K-Mart stores claims to be one of the fastest-growing discount store chains in the world, and it owes its success largely to a complex computer operation, according to the company's 1972 annual report.

A prepunched ticket is removed from each item at the time of sale and mailed to a head office. A computer analyzes the information and reports are immediately generated advising merchandise personnel of quantities, colors and sizes of garments sold in each K-Mart store. Buyers can then merchandise individual stores effectively.

And for You... 315 Credit Cards

CW West Coast Bureau

PORTLAND, Ore. – A mix-up at Standard Oil Co.'s computer center in Concord, Calif., brought Gregg Chastain a box of 315 credit cards to replace his expiring one.

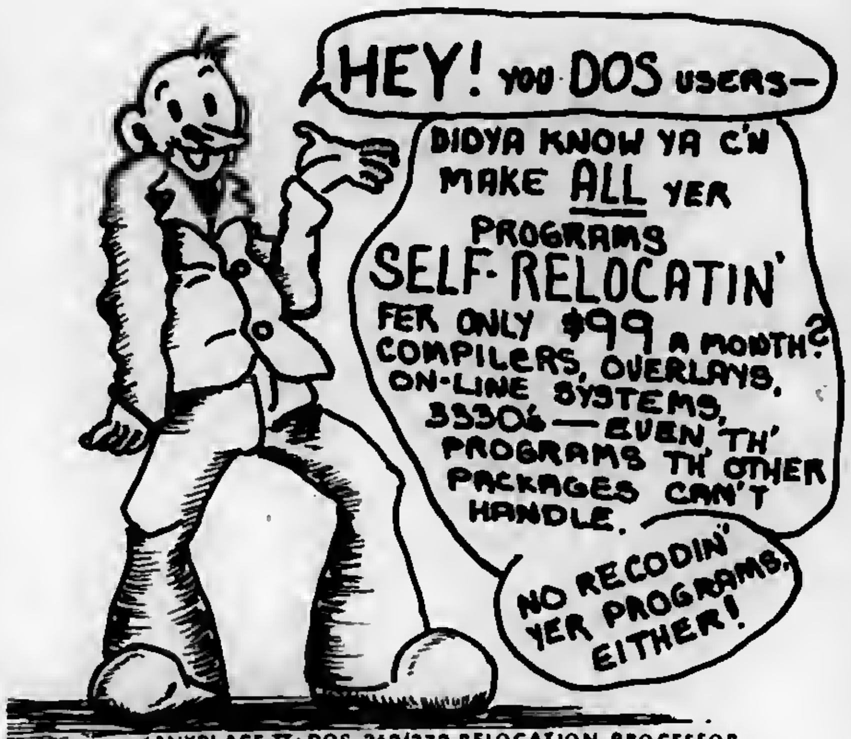
A card embosser kicked out the 315 cards in error and a clerk, thinking they were for a commercial account, sent them to the Portland man.

A Standard spokesman said it was common to send large numbers of cards to commercial customers and the embosser was programmed to print them in multiples.

After finding all the cards in the box, Chastain packed them up and sent them back to Standard Oil, where his credit rating hit a new high.

Starry Eyes

Terri Taylor is the first entrant in the "Miss Greater San Diego" pageant and potential winner of the title "Her Majesty, the Most Beautiful Girl in the World." Microdata Corp. will provide a Microdata 1600 minicomputer and the necessary software to permit immediate tabulation of 1,000 ballot/min from the audience at the pageants. A series of computerized beauty contests will start next month and the winner will go on to the world final in Las Vegas.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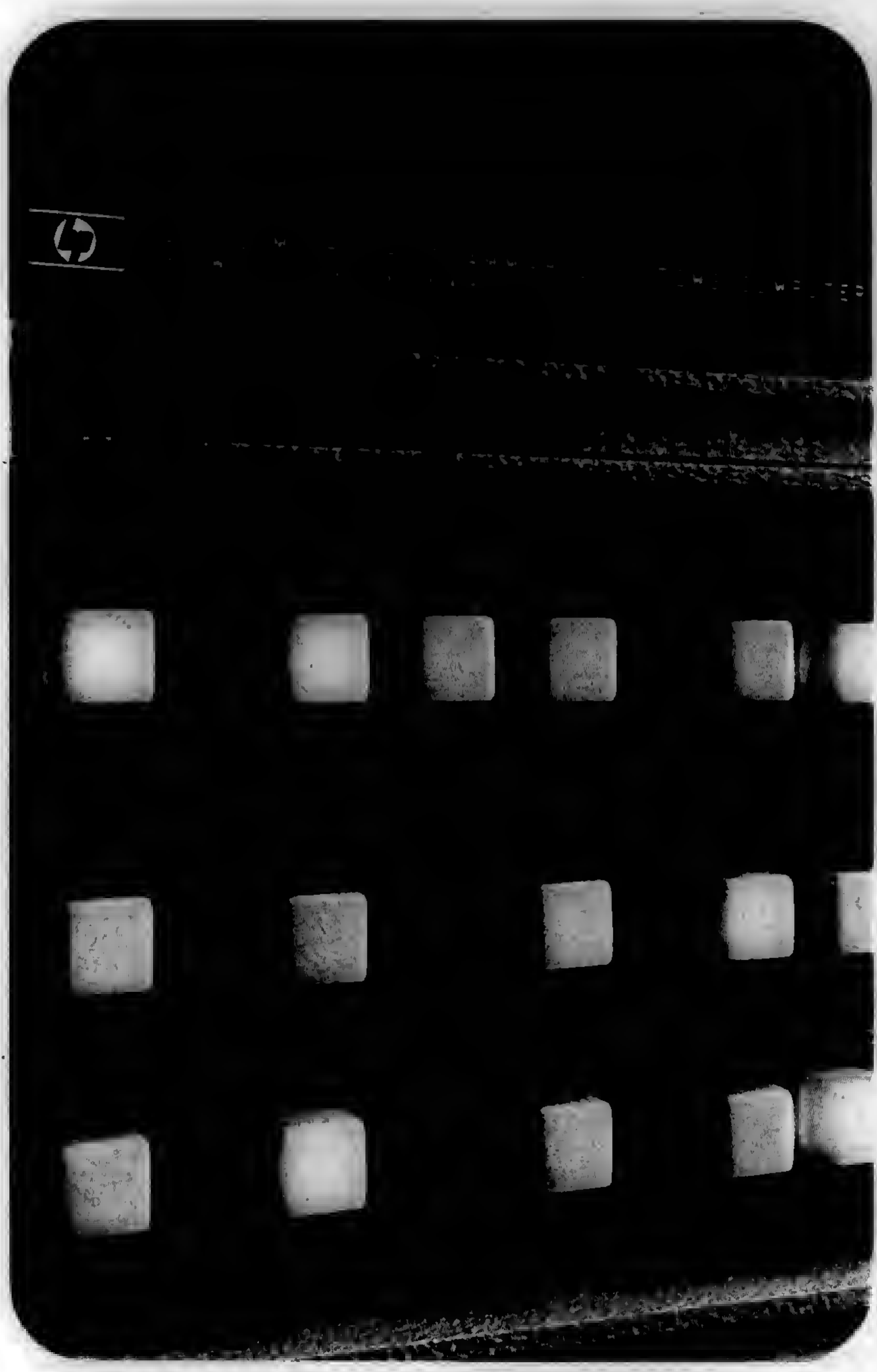

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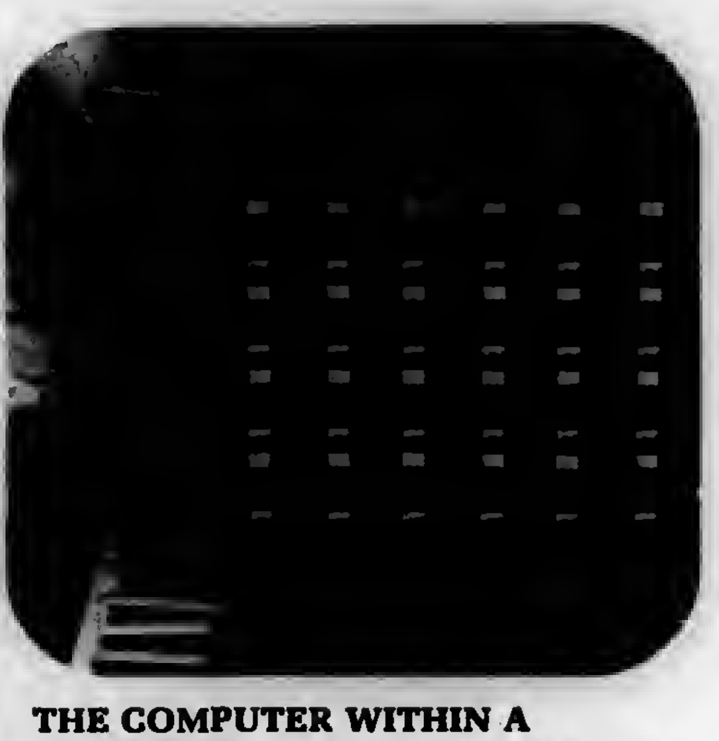

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CI Notes

U.S.-Japan Firm Based in N.J.

MOORESTOWN, N.J. – Part of the growing interest of Japanese computer firms in the U.S. marketplace and in U.S. products has been manifested here in the formation of Okidata Corp.

The firm is a joint venture of Oki Electric Industry Co. and David L. Nettleton, a U.S. industry executive.

Okidata will market Oki products in this country and will also purchase U.S. components and complete systems for incorporation into Oki products sold in Japan.

Nettleton indicated that Okidata would buy both on the OEM market and in the end-user market for some equipment that would be then used in Japan.

CA to Hang Mini on Board

NEWPORT BEACH, Calif. – Computer Automation will be announcing within the next 60 days a full-scale general-purpose LSI mini with processor and memory on a single board. It will be priced 50% lower than current prices in the OEM market, according to an industry source.

French Caravane Postponed

PARIS – The French Computer Caravan, scheduled to begin its tour in May, has been postponed until early in 1974, according to *Zero Un Informatique*, the French sponsor.

The postponement was made in response to requests from exhibitors, both committed and potential, for more time to organize their contributions toward the program and exhibits.

Circuitry Technique Patented

YORKTOWN, N.Y. – A patent has been issued to three IBM scientists for an invention to enhance the ability to make dense, high-reliability circuits.

The patent, No. 3,725,309, covers the addition of copper to the aluminum thin film interconnection lines used in microelectronic circuits.

The technique reduces electromigration which can cause breaks or shorts in the aluminum lines when subject to high current densities for long periods of time.

The patent was issued to Irving Ames, Francois M. d'Heurle and Richard E. Horstmann of the IBM Research Center in Yorktown Heights, N.Y.

Supershorts

First shipments of Interdata Corp.'s New Series Model 74 minicomputers occurred two months ahead of the forecast April schedule.

– – –

Control Data Corp. plans to build a computer terminal products manufacturing plant in Tucson, Ariz.

– – –

Computer Memorics has named Randal Data Systems as sales representatives.

Favors Public Scrutiny

CIA Backs Consent Decree Disclosure Bill

By E. Drake Lundell Jr.
CW Washington Bureau

WASHINGTON, D.C. – Two consent decrees against IBM in the last 40 years have not worked as hoped, and therefore opening up the consent decree process for public scrutiny would be "highly desirable," the Computer Industry Association informed the Senate recently.

Speaking in favor of Senate bill 782, association President Dan McGurk noted that 17 years after the 1956 Consent Decree against IBM "we can see that the decree has not removed the dominance of the leading firm in business data processing." The bill was introduced by Sen. John V. Tunney (D-Calif.).

Whose Consent?

The basic industry structure, he noted, is the same as it was at the time that consent decree was signed, and in the period since then 13 private antitrust suits have been brought against "the dominant firm" and the government "has found it necessary to institute a third major antitrust action against the company bound by the prior two decrees.

"To put the situation in modest terms, after two consent decrees, a major unresolved problem lingers in the industry," he stated.

The new bill before the Senate would require that the public be given an opportunity to comment on consent decrees before the court accepts them in future cases. It would also require the Justice Department to give the court a statement on the probable effects of the consent decree on the industry in question and the general public.

If the judge found the planned consent decree between the government and a company did not help protect the public from the alleged practices of the firm, he could refuse to sign the decree which would make the two parties either have to try the case or negotiate another settlement.

In the CIA testimony during the first round of hearings on the legislation, the group said that if the government's present antitrust action against IBM were to result in a consent decree, "that decree would do much to shape the basic architecture of the computer business for decades to come; the number and disposition of companies in it; the terms upon which sales were made; the opportunities for entry and growth; and, in some significant degree, the nature and uses of the products the industry evolves."

Noting that most antitrust suits brought by the Federal Government were settled by the consent process, the association said public scrutiny of the provisions of such decrees and the public accountability contained in the proposed law would be "a desirable objective."

"Given the importance of antitrust enforcement, significant improvement in any major feature is worth striving for," the association noted.

"Given the failure of two consent decrees to create competitive conditions in the industry," the association said, "it is possible that a solution to which the parties can agree will not solve that problem and the necessary steps can be taken only by a court order based on a full trial."

"Let us take the time and money to do a thorough and effective job in major cases where the economic stakes for the nation run into the billions of dollars," the association said, adding that "to do otherwise is to be penny-wise and pound foolish."

IBM Continues to Lose Grasp On Federal Base; Univac No. 1

By a CW Staff Writer

WASHINGTON, D.C. – The Univac acquisition of the RCA computer base enabled it to slip by IBM in the standings of installed equipment in the U.S. Government, but even more significant may be the fact that IBM's share of this huge market has been declining steadily over the past half decade.

The figures contained in the latest government inventory confirm a trend toward the use of the minicomputer as opposed to larger systems for many jobs – a trend that may be echoed in general industry as well.

The inventory shows that the number of computers in use at the end of June last year reached a peak of 6,731, up from the 5,934 total installation the year before.

However, the figures indicated, the growth in the general management classification of computers – generally what would be called general-purpose computers – was negligible.

In this category the number of systems was up by only 44, from 3,389 to 3,433. At the same time the number in special classifications, which includes most minis, jumped dramatically from 2,545 to 3,298 over the same period.

In the race to be the largest government supplier, Univac with 18.8% on its own picked up the 3% of RCA giving it a total of 21.8%, or just enough to edge out IBM's 21.2% of the installed systems at the end of the 1972 fiscal year.

However, the total for Univac – and for the Univac/RCA combine – 49,003, dropped during the year and only became number one because of an even sharper drop in the IBM share of the market.

Univac's percentage dropped from 19.2% in 1970 while the RCA base was down from 3.5% of the total computers installed.

IBM, however, dropped from 26.4% of the market to its 21.2% last year and in total has dropped from a share of 54.8% of the market since 1960.

Digital Equipment Corp., the mini king, however, has shown significant increases in the same time period. Starting from a negligible base in 1960, the firm had .9% of the market in 1965, 9.5% in 1970 and 14.5% of the computers installed in 1972.

Burroughs' share of the market held fairly even at 4% this year compared with 3.9% the year before, but is way down from the 10.4% it had in 1960.

NCR showed a drastic drop in market share, dropping from 6.1% in 1970 to only 3.6% in the latest reporting period, while Honeywell showed an increase from 5.6% of the market in 1970 to 8.2%

The costs associated with the operation of general-purpose computers increased slightly during the year, from $2.38 billion in 1971 to $2.42 billion during the next fiscal year.

The government program of reutilizing certain equipment that cannot be fully utilized by the agency that owns it appears to be working. Equipment worth $172.1 million was used by different agencies in the past year – an increase of almost $10 million over the value of equipment reutilized the previous year.

Labeling Code Chosen For Grocery Industry

NEW YORK – Some semblance of standardization may be coming to the grocery industry, and the benefits for the food concerns, as well as the point-of-sale (POS) industry, could be significant.

The Uniform Grocery Product Code Council, presented with several alternative designs by POS makers, chose a symbol of its own design as the future industry standard.

The selection of a linear bar code is said by some industry observers to give an edge to those firms that have designed equipment to operate on this principle, or suggested this type of symbol, such as Pitney Bowes-Alpex and IBM.

However, the proponents of a circular bar code, such as RCA and Litton, are expected to be ready with a product by the time the code becomes widely used.

The code, which will incorporate five digits for the manufacturer and five for the product, will be scannable by a device at the checkout counter linked to a central computer.

The grocery market for point-of-sale systems could reach $7 billion worldwide within 10 years, according to Charles S. Adams of Litton Industries.

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Honored For Software Sales

David Shefrin, president of Computer Systems and Education Corp. of East Hartford, was presented a plaque for CSEC's outstanding achievemant in software sales for 1972.

The presentation was made at the million dollar awards cocktail party hosted by International Computer Programs held in New York for 33 eastern states computer software companies whose sales for 1972 topped one million dollars.

CSEC's AR-70 accounts receivable package is used by commercial companies for processing in-house receivables as well as by banks and servica bureaus for use as a customer service.

Hierarchical Minis Expected by 1975

OCEANPORT, N.J. – The minicomputer industry by 1975 "will achieve hierarchical computer systems offering enormous power and flexibility at greatly reduced cost," according to Daniel Sinnott, Interdata president.

Such a development would be based on current developments in the semiconductor industry, including the so-called "computer-on-a-chip," he told Interdata users.

But he cautioned that the computer-on-a-chip was actually an arithmetic logic unit (ALU), "and a full-fledged computer system consists of much, much more than an ALU." That's why there will always be an opportunity for companies that offer a "broad spectrum of hardware and software capabilities."

The Interdata president listed the development of transistors and other solid state devices in 1959-60 as being "directly related to the development of the earliest minis." Similarly, the development of logic devices in packs in 1966-67 made possible the start of Interdata and its new wave of minis.

And the medium-scale integration (MSI) devices, including solid-state ROMs and RAMs of 1971-72, made possible the Interdata "New Series" processors, he added.

Now, Sinnott believes that the development of large-scale integration (LSI) devices will bring about hierarchical systems, featuring dozens of small computers working in tandem, by 1975.

3 British Firms Combine to Offer Range of Services From Single Unit

LONDON – Three British service companies have agreed to merge and form a new firm that will provide from a single source the firms' capabilities in the time-sharing, maintenance and equipment brokerage fields.

Known as Computer World Trade Ltd., the new firm will incorporate Computer Field Maintenance Ltd., Computer Resale Brokers International Ltd. and Computer Time & Hardware Brokers Ltd. The merger is set to take place as soon as possible, the firms reported.

Computer Time & Hardware Brokers will concentrate on the time-share side of its business after the merger, the firm said.

Bank's Role

The Hambros Bank, which has been involved in the development of both Computer Field Maintenance Ltd. and Computer Resale Brokers, will be an active partner in the new group, according to the bank. Revenue is expected to exceed $12 million in the first year, the firms indicated.

The new firm will offer marketing of new products on behalf of overseas companies, together with the marketing and brokering of used hardware; installation and maintenance facilities; design services for custom products and interfaces, as well as marketing of computer user's surplus time.

In the future, Computer World Trade Ltd. also plans to offer contracting services for installing DP centers, and establish commercial bureau and software facilities.

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E. Mini Computers (Business & Scientific)
F. Mainframe
G. Facilities Management

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Orders & Installations

St. John Fisher College, Rochester, N.Y., is installing a Xerox Sigma 3 system to meet increased administrative and student needs.

Harris Pine Mills of Pendleton, Ore., has ordered an NCR Century 200 for account processing and payroll preparation.

Automated Building Components, Inc., Miami, has ordered a Control Data Cyber 70 Model 72 to expand its processing capabilities.

The Southeast Bankcard Association has installed a Data Recognition Corp. Model 700 Optical Scanner/Mier Encoder.

The Dow Jones-Bunker Ramo News Retrieval Service, Inc., New York, has installed a Digital Equipment Corp. PDP-11/45 for the indexing and storage of news stories and headlines.

Southern Research Institute, Atlanta, has ordered a Batch-76 system from Digital Equipment Corp.

Arizona State University, Tempe, has ordered a Univac 1110 system, worth over $3 million, to service all educational and administrative requirements.

Manufacturers Hanover Trust Co. Inc., New York, has leased CMC 9 Key Processing Systems from Computer Machinery Corp. for use in its Manhattan data center.

The Electronics Systems Division of the Air Force Systems Command has ordered a Univac 1108 multiprocessor for installation at the Human Resources Laboratory at Lackland AFB, Texas.

Court Rules Sperry Rand Patent on Eniac Invalid

By a CW Staff Writer

MINNEAPOLIS – A Federal District Court judge here has ruled the Sperry Rand Eniac patent invalid, freeing computer companies from the necessity of obtaining a license on the patent in order to purchase computers.

The decision ends a 6-year-old case between Honeywell and Sperry Rand Corp. in which Honeywell charged antitrust violations against Sperry Rand, and Sperry Rand countersued for patent infringement.

In dismissing the Sperry Rand patent claim, the judge also dismissed the Honeywell antitrust claim. Neither firm would say last week whether appeals were planned.

Both of the firms have revealed the basic terms of the judgment, but it has not been officially filed yet with the court clerk here, and therefore its full terms are not yet on the public record. Sources said they did not know how soon the judgment would be put on file.

Full Terms Unavailable

And while the decision is said to be far-reaching, industry sources indicated only IBM was actually paying the firm for use of the patent – and that it was paying an estimated $1 million annually to use the patent.

A spokesman for Sperry Rand, however, said that IBM had made payments to Sperry of $11.1 million between 1956 and 1965 under two cross-license agreements covering items in addition to the Eniac patent. Sperry said it hadn't received royalties from any source since 1965 on the Eniac patent.

Judge Earl R. Larson ruled the patent invalid because, he said, the computer design, invented by the Sperry researchers in 1946, had been in use for more than a year before the patent claim was filed, a technicality that makes patent claims invalid.

Honeywell, the judge indicated, had failed to prove its antitrust charges which claimed that Sperry had shared information with IBM and had withheld the information from other computer manufacturers at the same time, sources close to the case said.

Little Attention

Although a significant case, the suit and countersuits have received little attention in the computer community since the original antitrust charge was filed in 1967 and the Sperry countersuit followed, seeking $20 million in damages for the alleged patent infringement.

A trial on the case started in June of 1971 and continued to March of the next year.

Several sources said last week the potential value of the patent could have reached into the hundreds of millions of dollars if Sperry Rand had won its suit against Honeywell, because it would then have been able to charge most of the other computer makers with infringement, also potentially leading to several multimillion dollar suits involving most of the firms that make – or have made – computer mainframes.

The dismissed patent claim involved a patent issued in 1964 to Illinois Scientific Development, Inc., a Sperry Rand subsidiary that actually held the Electronic Numerical Integrator and Computer (Eniac) patent.

Top 4 DP Firms Seen Losing Market Share

WASHINGTON, D.C. – A recent report from the U.S. Census Bureau on the "Value of Shipment Concentration Ratios" cites the computer industry as one segment in which the market share of the top four companies has declined.

The tables indicate the share held by the top four declined from 1967 to 1970 by 13.6%. The category of computers includes everything from small peripherals to large systems.

At issue in the Justice IBM suit, however, is whether the market itself actually considers as a whole such a wide range of products.

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Afips Reports

1971 DP Revenues Topped $10.3 Billion

MONTVALE, N.J. – Total revenues by computer firms for the U.S. market in 1971 amounted to $10.3 billion when the receipts from outright sales and rentals are combined, a recent report prepared by the American Federation of Information Processing Societies (Afips) indicated.

Incorporating opinions of four market research firms, "The State of the Computer Industry in the U.S." placed revenues of general-purpose systems at $5.3 billion in 1971, while minicomputer and dedicated application computer revenues were fixed at $250 million.

On-line peripherals from mainframe manufacturers accounted for revenues of $350 million, and from independent suppliers these devices brought in $165 million.

The makers of independent plug-compatible supplies had revenues of $180 million in the U.S., while the report estimated leasing revenues at $600 million and used computer revenues at $40 million.

In the services area, revenues from batch services were estimated at $950 million and those from on-line services at $500 million. Software was put at $750 million (including some $300 million from government contracts, some of them quite specialized).

The non-military portion of the software market should double by 1976.

Batch services are expected to double in revenues by 1976, but on-line services are expected to show an even better performance by tripling in revenues in the same time period.

Bell Honored; IBM Names Fellows

Several computer scientists have been selected for awards by their employers.

C. Gordon Bell was awarded the Carnegie-Mellon University's Mellon Institute Award for outstanding contributions to science and its application to the needs of mankind.

Bell, a professor of electrical engineering and computer science at Carnegie Mellon, was responsible for the design of Digital Equipment Corp.'s PDP-10 and the PDP-11.

IBM has named four fellows who will be free to pursue their own research interests for five years.

Robert A. Nelson was named for his work on the virtual machine, and William E. Harding, for semiconductor technology. Dr. Harlan D. Mills works with programming techniques, while Dr. Richard G. Brewer has made discoveries in the fields of nonlinear optics and laser spectroscopy.

Contracts

Sperry Rand received a $14.1 million Navy contract for computer equipment for navigation systems on Poseidon missile submarines.

Washington Scientific Industries, Inc. will supply the Defense Supply Agency with over 11,000 microfiche readers as part of a major system to be used for publication, distribution and retrieval of data in the Defense Integrated Data System.

Digilog Systems, Inc. has agreed to provide 20 custom portable video display terminals to Xonics, Inc. under a $48,000 contract.

Management Systems Corp. has signed a five-year contract with Exchange Savings & Loan Association to provide complete data processing services.

Raytheon Co. will supply up to 49 graphic display consoles for the North American Air Defense Command under a $3.3 million subcontract with System Development Corp.

A $1.9 million subcontract for preliminary work on the Space Shuttle orbiter's flight control subsystem has been awarded to Honeywell, Inc.'s Aerospace Division by North American Rockwell.

ITT Creed, a British subsidiary of ITT, has received two contracts from the British Post Office for 9,000 teleprinters and associated equipment. The contracts are valued at $17 million.

The credit bureaus of Flint, Lansing and Pontiac, Mich., have entered an automation services agreement with Chilton Corp.

Computer Products, Inc. has contracted with Bailey Meter, Canada, to provide RTP interfacing equipment which will connect an SPC-16 minicomputer to monitoring devices within a power complex in the Far East.

Logicon, Inc. will furnish technical assistance and software validation services to the U.S. Air Force on the B-1 supersonic bomber program under a $185,500 contract.

Seven motor carriers have contracted jointly with Transport Data Communications, Inc. for computerized teleprocessing services worth over $2 million.

Before
Our May 30th **Preview Issue** (B & W close May 18th. Color Close May 11th)

During
The June 6th **Show Issue** (B & W close May 25th. Color Close May 18th)

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CDC Computer Business Boosts Earnings

MINNEAPOLIS – The computer segment of Control Data Corp. has emerged as the bright star in the firm's first-quarter earnings report.

Computer business earnings rose to $5.3 million compared with a loss of $1.6 million in the same year-ago period.

Total earnings reached $17.4 million or $1.08 a share compared with $11 million or 73 cents a share in the first quarter ended March 31, 1972.

Outright sales of DP equipment rose, and rental and service revenues increased as well, President William C. Norris said. A portion of the gain in the rental and service area was attributable to the recent acquisition of Service Bureau Corp., according to Norris.

Earnings from rentals and service totaled $33,405 up from $18,773 in the year-ago period, while earnings from sales rose to $30,135 from $18,066 last year.

Commercial Credit, a wholly owned subsidiary, earned $13 million in the quarter, down slightly from $13.7 million in the same period last year.

Although the unit's outstanding receivables as of the end of the period were up about 12% from a year ago, earnings continued under pressure as a result of currently higher short-term interest rates, Norris said.

EM&M Scores Turnaround, Reports $4.9 Million Earnings for Year

LOS ANGELES – Electronic Memories & Magnetics Corp. has returned to profitability for the year ended Dec. 30, with help from a $3.5 million special credit.

Earnings for the current year totaled $4.9 million or 70 cents a share, on increased revenues of $76.4 million. In 1971, the firm lost $9.6 million or $1.76 a share on revenues of $70.5 million.

The results for 1971 have been restated to reflect the reclassification of Electroglas, Inc. as discontinued operations. For 1972, the restated results also reflect year-end adjustments, including allocation of insurance proceeds the firm expects to receive for fire damage to a Hong Kong plant in March 1972.

The firm has reduced outstanding bank loans to $3.6 million at the end of December from $8.3 million a year ago, and has established a new line of credit to meet working capital requirements for 1973, President Trude C. Taylor said.

"Order input and shipments both were up favorably from the second half of 1971 and the first six months of 1972," Taylor said.

Bank Curbs Tally Short-Term Loans

KENT, Washington – The National Bank of Commerce of Seattle has informed Tally Corp. it has limited Tally's short-term borrowings and will terminate outstanding short-term loans on May 2.

Tally currently has about $750,000 in short-term loans outstanding from the bank, according to Clarence Robinson, Tally vice-president, finance.

The firm's future short-term credit line has been limited to about $750,000 by the bank, he said.

So far, Tally has not found additional financing, the firm said. "The failure to complete a satisfactory arrangement could result in serious financial difficulties for the company," a spokesman said.

Discussions for new credit arrangements are continuing with other financial institutions, he added.

Randolph's DP Holdings Reduced by Transaction

HARTFORD, Conn. – Randolph Computer Corp.'s DP holdings have been reduced again, with the sale of about 65% of the firm's assets to Bancal Tri-State Corp.'s Bank of California subsidiary.

The sale by Travelers Corp., Randolph's parent firm, involves most of the full-payout lease portfolio for about $21.5 million.

Last fall about 70% of Randolph's assets were acquired by the First National Bank of Boston.

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NCR Returns To Profitability In First Quarter

DAYTON, Ohio – Freed from the burden of a strike that impacted last year's first quarter earnings, and aided by a 22% improvement in incoming orders, NCR returned to profitability in the first quarter of 1973 with eernings of $7.5 million or 32 cents a share.

Revenues reached $367.4 million, a new high for any first quarter and a 12% increase over revenues of $326.8 million in the first period last year.

Robert S. Oelman, chairman, and William S. Anderson, president, said all segments of the business showed improvement including international operations, which reported substantially increased shipments.

"Earnings are also beginning to benefit from the cost reduction programs undertaken throughout the company in recent months although most of this impact will be felt later in 1973," they said.

Strong Trends

The company reported strong incoming business for the first three months of 1973 with computer equipment, accounting machines and retail systems all achieving major advances.

On a consolidated basis, incoming orders were up 22% over last year's first quarter. Sales of business forms and supplies used with NCR systems also rose as did revenues from NCR's worldwide network of 85 data processing centers.

"The recovery experienced so far this year is on target," and is expected to continue, Oelman and Anderson said.

The company's effort to decentralize manufacturing and to integrate engineering with manufacturing at the plant level is nearing completion, they said.

It is anticipated that these extensive changes will result in lower production costs and faster response to changing market conditions.

Additional operational changes are being carried out in order to achieve greater productivity and further cost reductions in all areas of company activity, they said.

Foreign Orders & Installations

Honeywell has received an order from the Lanarkshire County Council in Scotland for the installation of a Model 6040 to replace an IBM 360/30. The system will be used in the financial administration of the council's projects.

Procesa, a data processing center in northeastern Spain, has ordered a Control Data SC-1700 to expand its data services.

The Compagnie Internationale de Services Informatique, a subsidiary of the French civilian Atomic Energy Commission, has installed a Control Data 7600. The system will be used for high-energy physics research.

AMP of Great Britain, Ltd., London, has ordered a Minicomm communications monitor from GTE Information Systems.

The Banco Espanol de Credito, the largest bank in Spain, has ordered a Univac 1106 for use in stock exchange recording.

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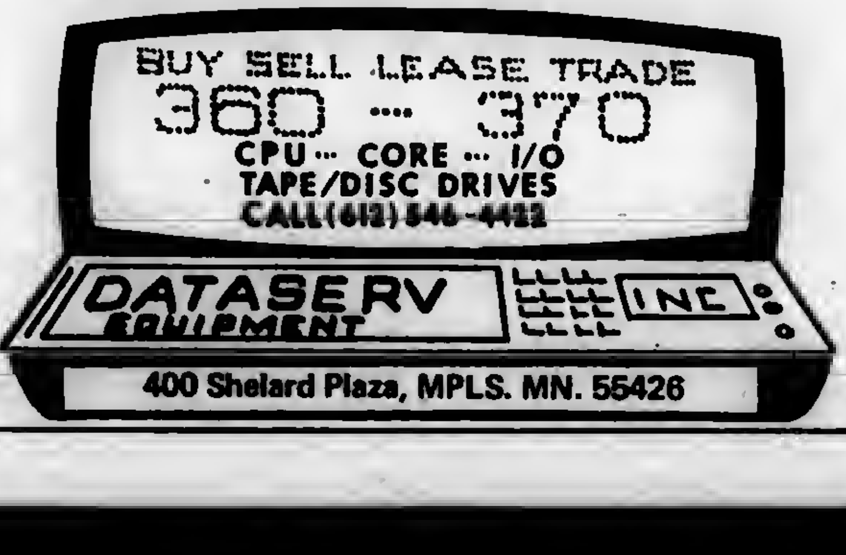

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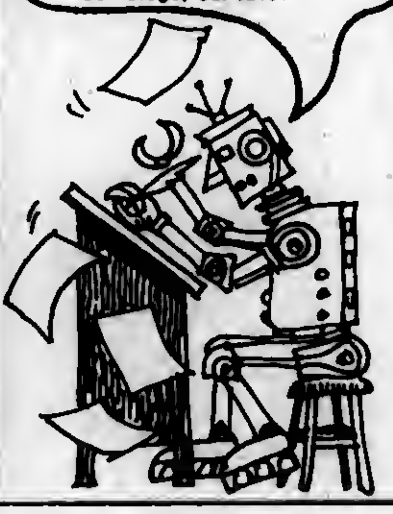

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IBM 1st Quarter Earnings Gain Outpaces Revenues 11.3% to 6%; Records Set

ARMONK, N.Y. – IBM has turned in record earnings in the first quarter ended March 31, with an 11.3% rise in earnings on a 6% gain in revenue over the same 1972 period.

Income from rentals and services alone also increased 11.3% over the same period last year. In all of 1972 the increase for this sector was 9.2%.

Outright purchases of DP equipment declined in the period compared with the year-ago quarter, President Frank T. Cary said. However, he added, "shipments for the year are expected to be at a high level, with several major newly announced System 370 products scheduled to be delivered in increasing quantities as the year progresses."

Several factors contributed to the higher rate of increase in earnings than revenue. An IBM spokesman mentioned a cost reduction program, strong performance from foreign operations, a lower tax rate and an increase to $48 million from $39 million in "other income."

Earnings for the quarter totaled $340.1 million or $2.92 a share compared with $305.7 million or $2.64 a share in the same 1972 period.

Revenues reached $2.45 billion, up from $2.31 billion a year ago.

The 11.3% growth in earnings compares with an 11.2% rise in the immediately preceding quarter; however, the rate of increase for 1972 as a whole totaled 18.6%.

The 6% gain in revenue matched the 6% increase of the preceding period, but for 1972 the rate of increase totaled 15.2%.

Burroughs Progress 'Ahead Of Plan,' Earnings Up 34%

DETROIT – Burroughs record first-quarter earnings and revenues are "somewhat ahead of plan," according to President Ray W. Macdonald.

Earnings from operations rose 34% and revenues 24% over performances in last year's first quarter.

Including a $2.4 million special credit from the sale of securities, earnings totaled $18.7 million or 99 cents a share compared with $12.2 million or 66 cents a share in the year-ago period.

Revenues rose to $274.4 million from $220.6 million in the first quarter of 1972.

Worldwide incoming orders increased 23% over the 1972 position, Macdonald said, while backlog since the beginning of the year increased 13%.

Although expectations for the full year are good, Macdonald cautioned that it was too early to determine whether the present trend would continue.

In 1972, Macdonald told shareholders recently, EDP shipments at sales value rose to $810 million, an increase of 19% over 1971. "We anticipate that these shipments will come close to, or possibly exceed, the billion dollar level in 1973," he said.

Research and development expenditures on systems, equipment and software will approximate $65 million in 1973, an increase of almost 20% over 1972, he said. Also anticipated is expansion of engineering and software staff by about 15%, he added.

Also in 1972, Burroughs reduced outstanding debt by $126 million, and a further reduction is anticipated in 1973, Macdonald reported.

"We are now in a position to satisfy fixed-asset growth needs, including an expanding rental equipment base, together with debt maturities, dividend payments and working capital requirements from funds generated within the business," he said.

"We forecast capital expenditures of approximately $180 million in 1973. Some $40 million of this will come under the heading of plant, tools and equipment, with the major portion being directed toward further reequipping our existing facilities and tooling for new products.

"The total also includes a further investment of $140 million in rental equipment and related inventories. Depreciation in 1973 will increase by approximately 12%, and amount to some $130 million," Macdonald said.

New Registrations

DATA PATHING INC., 370 San Aleso Ave., Sunnyvale, Calif., filed to register 1,095,904 shares of common to be offered by subscription to common shareholders at the rate of one share for each two shares held. Proceeds, at $2.50 per share, will be applied to the redemption of convertible notes held by the principal shareholders.

INPUT BUSINESS MACHINES, INC., 12111 Park Lawn Dr., Rockville, Md., input equipment manufacturer and marketer, filed to register 300,000 shares of common. Proceeds, at $10 per share, will be used for production and testing equipment. The underwriter is Hay, Fales & Co., Inc., 50 Broadway, New York 10004.

ITEL CORP., One Embarcadero Center, San Francisco, Calif., marketer and lessor of computer equipment, filed to register 300,000 shares of common in connection with the proposed acquisition of FNIC Investors, Inc.

HEWLETT-PACKARD CO., 1501 Page Mill Rd., Palo Alto, Calif., filed to register 62,859 shares of common. These shares are being offered in exchange for the outstanding shares of Field Emission Corp. at the rate of 6,308 Hewlett-Packard shares for each Field Emission share.

Bunker Ramo to Double Capital Expenditures

TRUMBULL, Conn. – Bunker Ramo Corp. is planning to more than double its capital spending program in 1973 over 1972, according to President George S. Trimble.

Total expenditures are expected to reach about $50 million this year, half of which will be for equipment on lease to users, such as stock market information systems.

As of Dec. 31 about 6,000 of the System/7 systems had been installed or were on order.

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TRADE*QUOTES

Computerworld Stock Trading Summary

All statistics compilad, computad and lormatted by TRADE★OUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSOAY, APRIL 19, 1973

EXCH		PRICE			
		1972-T3 RANGE (1)	CLOSE APR 19 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EOP SERVICES				
O	AOVANCEO COMP TECH	I- 3	1 1/2	0	0.0
A	APPLIEO OATA RES.	3- T	3	+ 1/8	+4.3
O	APPLIEO LOGIC	1- 4	2	- 1/8	-5.8
N	AUTOMATIC OATA PROC	65- 99	65 1/4	-6 3/4	-9.3
O	8RANOOM APPLIEO SYST	1- 2	5/8	0	0.0
O	COMPUTER OIMENSIONS	2- 14	2 5/8	+ 1/8	+5.0
O	COMPUTER OYNAMICS	1- 4	7/8	+ 1/8	+16.6
O	COMPUTER NETWORK	2- 7	1 3/4	0	0.0
N	COMPUTER SCIENCES	3- 10	3	- 1/4	-7.6
O	COMPUTER TASK GROUP	1- 2	1	- 1/2	-33.3
O	COMPUTER TECHNOLOGY	2- 8	2 5/8	+ 1/8	+5.0
O	COMPUTER USAGE	5- 14	6	+ 1/4	+4.3
O	COMRESS	1- 3	1/2	0	0.0
O	COMSHARE	5- 10	6 3/8	+ 3/8	+6.2
N	COROURA CORP	6- 28	T 3/4	-1 1/8	-12.6
O	OATATA8	3- 9	2 3/4	+ 1/4	+10.0
O	EOP RESOURCES	1- 8	1 3/8	- 1/8	-8.3
A	ELECT COMP PROG	1- 5	1 3/8	- 1/2	-26.6
N	ELECTRONIC OATA SYS.	38- 65	38	-6 1/8	-13.8
O	INFORMATICS	3- 11	3 3/8	- 1/4	-6.8
O	I.O.A. OATA CORP	1- 3	3/4	- 1/8	-14.2
O	KEANE ASSOCIATES	3- 7	3	- 1/4	-7.6
O	KEYOATA CORP	7- 13	8	+ 1/8	+1.5
O	LOGICON	4- 9	4 3/4	+ 1/8	+2.T
A	MANAGENENT OATA	2- 10	2 1/4	- 1/4	-10.0
O	NATIONAL CSS INC	8- 41	27 1/4	-1	-3.5
O	NATIONAL IMFO SRVCS	1- 5	1 1/4	0	0.0
P	ON LINE SYSTEMS INC	5- 19	14 1/8	-1 1/4	-8.1
N	PLANNING RESEARCH	3- 17	4	+ 3/8	+10.3
O	PROGRANMING METHOOS	20- 25	22 1/8	- 1/8	-0.5
O	PROGRANMING & SYS	1- 2	7/8	- 1/8	-12.5
O	RAPIOATA INC	5- 27	14 3/4	-2 1/4	-13.2
O	SCIENTIFIC COMPUTERS	1- 4	1 1/8	- 1/8	-10.0
O	SIMPLICITY COMPUTER	1- 5	2 1/8	+ 1/8	+6.2
O	T8S CONPUTER CENTERS	3- 6	3	+ 1/8	+4.3
O	TCC IMC	1- 3	1/2	0	0.0
O	TYMSHARE INC	T- 12	7 5/8	+ 1/8	+1.6
O	UNITEO OATA CENTER	5- 8	5	0	0.0
N	UNIVERSITY CONPUTING	7- 26	8	- 5/8	-7.2
A	URS SYSTEMS	5- 10	4 3/4	- 3/8	-7.3
	PERIPHERALS & SUBSYSTEMS				
N	AOORESSOGRAPH-NULT	19- 49	19 3/4	- 1/8	-0.6
O	AOVANCEO NENORY SYS	12- 23	14 3/8	- 3/4	-4.9
N	AMPEX CORP	4- 15	4	-1	-20.0
O	ANOERSON JACO8SON	4- 8	5 1/2	0	0.0
O	8EEHIVE NEOICAL ELEC	1- 10	9 3/4	- 1/4	-2.5
A	8OLT,8ERANEK & NEW	5- 21	8 7/8	- 1/8	-1.3
M	8UNKER-RAMO	6- 14	6	- 3/8	-5.8
A	CALCOMP	9- 25	10 3/4	0	0.0
O	CAM8RIOGE MENORIES	9- 15	10 5/8	+ 1/8	+1.1
O	CENTRONICS OATA CONP	6- 28	26	+6 1/4	+31.6
O	CODEX CORP	6- 25	12	- 1/2	-4.0
O	COGNITRONICS	1- 5	1 1/2	- 1/8	-T.6
O	COMPUTER COMMUN.	1- T	2 1/4	+ 1/4	+12.5
A	COMPUTER EQUIPMENT	2- 4	2 1/4	0	0.0
O	COMPUTER MACHINERY	7- 13	8 7/8	0	0.0
O	CONPUTER TRANSCEIVER	2- 9	2 1/8	- 1/8	-5.5
A	CONPUTEST	3- 9	4 3/4	- 1/8	-2.5
N	CONRAC CORP	23- 39	22 1/2	-1 1/4	-5.2
A	OATA PROOUCTS CORP	3- 7	3 1/4	+ 1/8	+4.0
O	OATA RECOGNITION	1- 5	1 1/2	-1	-40.0
O	OATA TECHNOLOGY	2- 5	2 7/8	- 1/4	-8.0
O	OI/AN CONTROLS	3- 8	2 3/4	0	0.0
N	ELECTRONIC M & M	3- 8	3 3/4	+ 1/8	+3.4
O	FA8RI-TEK	2- 5	3	- 1/8	-4.0
O	GENERAL CONPUTER SYS	6- 16	6	-1	-14.2
N	GENERAL ELECTRIC	59- 74	64 1/8	- 1/8	-0.1
N	HAZELTINE CORP	7- 13	7 5/8	+ 1/8	+1.6
O	INFOREX INC	14- 36	16 1/4	+2 5/8	+19.2
O	INFORMATION OISPLAYS	1- 5	T/8	0	0.0
O	INFORMATION INTL INC	8- 25	11 3/4	+ 1/4	+2.1
A	LUNOY ELECTRONICS	5- 14	4 5/8	- 3/4	-13.9
O	NANAGENENT ASSIST	1- 1	3/8	0	0.0
A	NILGO ELECTRONICS	15- 44	20 3/4	+1	+5.0
N	NOHAWK OATA SCI	6- 27	5 T/8	- 1/4	-4.0
O	ODEC COMPUTER SYST.	3- 12	4	+ 1/4	+6.6
O	OPTICAL SCANNING	2- 16	5 1/4	+ 1/4	+5.0
O	PERTEC CORP	5- 1T	5 1/4	0	0.0
O	PHOTON	3- 15	3 3/4	(SUSPENOEO)	
A	POTTER INSTRUMENT	5- 21	5 1/8	- 1/4	-4.6
O	PRECISION INST.	2- 13	2 1/2	0	0.0
O	RECOGNITION EQUIP	4- 15	4 1/2	- 1/4	-5.2
N	SANOERS ASSOCIATES	10- 21	9 5/8	- 7/8	-8.3
O	SCAN OATA	2- 13	2 1/2	+ 1/8	+5.2
O	STORAGE TECHNOLOGY	17- 39	21 1/2	- 1/2	-2.2
O	SYCOR INC	7- 12	13	+ 3/4	+6.1
O	TALLY CORP.	3- 15	3 1/8	- 1/8	-3.8
N	TEKTRONIX INC	34- 64	39	- 3/8	-0.9
N	TELEX	4- 15	4 3/8	+ 3/8	+9.3
O	WILTEK INC	10- 26	12 1/2	- 1/2	-3.8
	SUPPLIES & ACCESSORIES				
O	8ALTIMORE 8US FORNS	5- 9	7	- 1/2	-6.6
A	8ARRY WRIGHT	8- 14	8 3/8	- 3/4	-8.2
A	OATA DOCUMENTS	17- 26	19 7/8	+ 1/2	+2.5
O	OUPLEX PROOUCTS INC	8- 16	8	- 1/2	-5.8
N	ENNIS 8US. FORNS	6- 10	6	0	0.0
O	GRANAM MAGNETICS	15- 27	14 1/2	- 1/2	-3.3
O	GRAPHIC CONTROLS	10- 15	10 1/8	+ 1/4	+2.5
N	3M COMPANY	T6- 88	83	-1 3/8	-1.6
O	MOORE CORP LTO	42- 60	60 1/4	+1 1/4	+2.1
N	NASHUA CORP	43- 62	45 1/8	-2 3/8	-5.0
O	REYNOLOS & REYNOLO	37- 77	48 1/8	- 1/4	-0.5
O	STANDARO REGISTER	14- 20	19	+ 3/4	+4.1
O	TA8 PROOUCTS CO	14- 23	14	0	0.0
N	UARCO	19- 28	19	- 3/8	-1.9
A	WABASH MAGNETICS	6- 11	6 1/4	- 1/4	-3.8
N	WALLACE 8US FORMS	21- 26	21 3/8	- 1/8	-0.5
	COMPUTER SYSTEMS				
N	8URROUGHS CORP	14T-244	229 3/4	-4 T/8	-2.0
N	COLLINS RAOIO	14- 27	19 5/8	-1 7/8	-8.T
N	CONTROL OATA CORP	42- 78	48	-2 1/4	-4.4
O	OATA GENERAL CORP	36-131	38	-5	-11.6
O	OIGITAL COMP CONTROL	3- 25	3 1/4	- 1/8	-3.T
N	OIGITAL EQUIPMENT	72-105	82 7/8	-1 1/8	-1.3
N	ELECTRONIC ASSOC.	6- 13	6 1/4	- 1/4	-3.8
A	ELECTROMIC ENGINEER.	6- 14	10	- 3/4	-6.9
N	FOX8ORO	23- 41	26 1/8	-1 1/4	-4.5
O	GENERAL AUTOMATION	13- 55	33 3/4	- 3/4	-2.1
O	GRI COMPUTER CORP	1- 5	1 1/4	- 1/8	-9.0
N	MEWLETT-PACKARO CO	46- 94	83 3/8	-1 1/8	-1.3
N	MONEYWELL INC	106-170	11T 7/8	+ 3/4	+0.6
N	I8M	333-451	429	-3 1/4	-0.T
O	INTEROATA INC	T- 16	11 1/2	+ 1/2	+4.5
N	MEMOREX	6- 38	T	+ 1/2	+7.6
O	NICROOATA CORP	5- 10	6 3/4	0	0.0
N	NCR	2T- 38	33 1/4	+1 3/4	+5.5
N	RAYTHEOM CO	2T- 4T	29 3/4	-1	-3.2
N	SPERRY RAMO	30- 50	41 1/2	+1 1/2	+3.7
A	SYSTEMS EMG. LA8S	4- 16	4	- 1/4	-5.8
N	VARIAN ASSOCIATES	14- 22	14	0	0.0
N	WANG LA8S.	18- 61	20	0	0.0
N	XEROX CORP	121-172	154 3/4	+1 3/8	+0.8
	LEASING COMPANIES				
A	8OOTME COMPUTER	2- 18	2 3/8	0	0.0
O	8RESNAHAN COMP.	1- 3	2	+ 7/8	+7T.T
O	CONOISCO IMC	3- 18	10 1/4	-1	-8.8
O	CONMERCE GROUP CORP	3- 11	3 T/8	+ 5/8	+19.2
O	CONPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	3 3/4	- 1/4	-6.2
O	CONP. INSTALLATIONS	2- 5	2	0	0.0
N	OPF INC	5- 13	6 1/2	+ 1/2	+8.3
N	OATRONIC RENTAL	2- 4	2 3/8	+ 3/8	+18.7
A	DCL INC	2- 10	1 5/8	0	0.0
A	OEAR8ORN-STORM	15- 26	17 1/4	- 1/8	-0.7
A	OPA, INC.	5- 8	5 1/2	+ 3/8	+7.3
A	GRANITE-NGT	3- 11	3 1/2	0	0.0
A	GREYHOUNO CONPUTER	4- 11	4 1/2	- 1/8	-2.T
A	ITEL	7- 12	7 3/8	0	0.0
N	LEASCO CORP	9- 24	10 1/2	+ 3/4	+7.6
O	LEASPAC CORP	6- 15	T	- 3/8	-5.0
O	LECTRO NGT INC	1- 4	1	- 1/8	-11.1
A	ROCKWOOO CONPUTER	2- T	1 1/2	- 3/8	-20.0
O	SYSTEMS CAPITAL	3- 20	8 3/8	+ 1/8	+1.5
N	U.S. LEASING	19- 35	26 1/4	+ 5/8	+2.4

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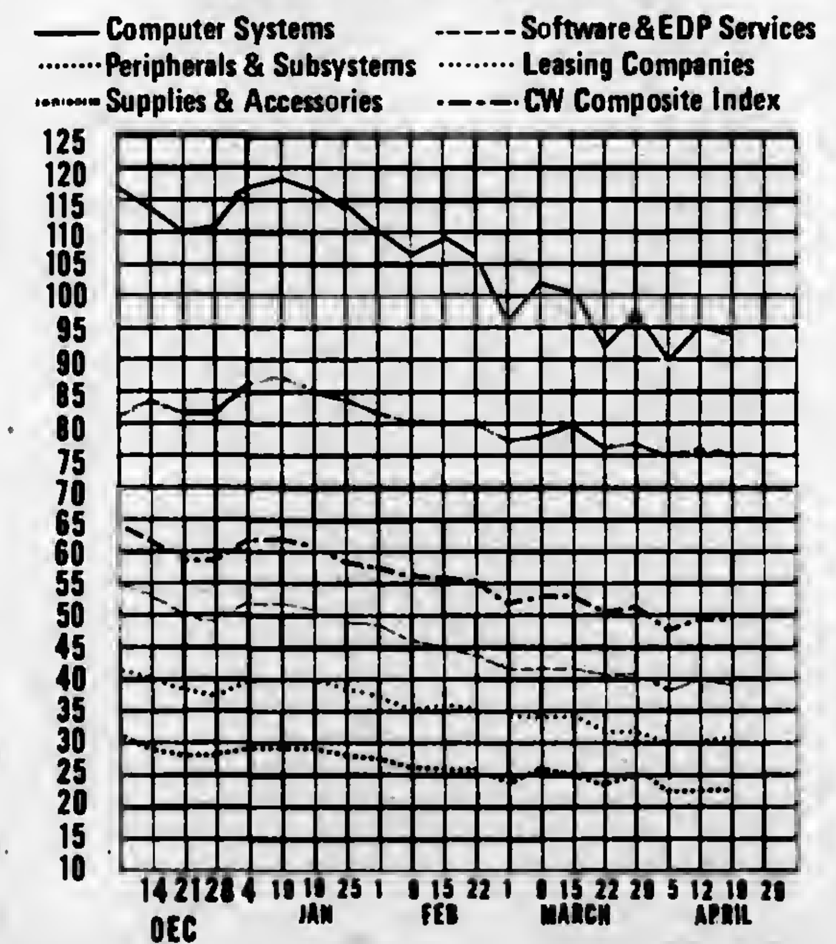

Earnings Reports

HEWLETT-PACKARO

Three Months Ended Jan. 31

	19T3	19T2
Shr Ernd	a$.33	$.25
Revenue	126,966,000	9T,964,000
Spec Cred	.....	b42T,000
Earnings	a8,685,000	6,629,000

a-Revised by company. b-Gain from revaluation of currencies.

COMPUTING & SOFTWARE

Three Months Ended Jan. 31

	19T3	a19T2
Shr Ernd	$.30	$.27
Revenue	26,2T8,000	22,696,000
Disc Op	.....	(48,000)
Earnings	1,819,000	1,695,000

a-Restated.

WUI

Year Ended Dec. 31

	19T2	19T1
Shr Ernd	$1.72	$2.00
Revenue	63,641,000	57,634,000
Spec Cred	.....	a2,392,000
Earnings	5,282,000	5,980,000

a-Primarily from sale of foreign real estate leasehold.

RECOGNITION EQUIPMENT

Three Months Ended Jan. 31

	19T3	a19T2
Shr Ernd	$.10	$.02
Revenue	T,517,000	8,66T,000
bSpec Cred	1,205,000	220,000
Earnings	480,000	9T,000

a-Restated to reflect 49.T% investment in Corporation S, based on equity method of accounting. b-In 19T3, tax credit and gain from sale of stock; in 19T2, tax credit.

BALTIMORE BUSINESS FORMS

Year Ended Dec. 31

	1972	1971
Shr Ernd	$.02	$.4T
Revenue	18,273,T08	1T,224,278
Spec Cred	a23,881	.....
Earnings	57,T04	366,520

a-Gain from sale of property.

INFORMATION MAGNETICS

Year Ended Dec. 30

	1972	19T1
Shr Ernd	$.21	$.21
Revenue	5,805,938	3,613,9T5
Earnings	232,092	154,890

TERMINAL EQUIPMENT

Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.06	.....
Revenue	341,438	$6T,20T
Earnings	30,563	(134,52T)

RAPID OATA SYSTEMS & EQUIPMENT

Six Months Ended Dec. 31

	19T2	1971
Shr Ernd	$.46	$.18
Revenue	14,322,476	5,498,028
Tax Credit	325,000	194,000
Earnings	804,T25	294,532

UNIVERSITY COMPUTING

Year Ended Dec. 31

	19T2 (000)	a1971 (000)
Shr Ernd	.....	$.31
bRevenue	$101,031	109,T32
Disc Op	(1T,413,000)	1,649,000)
Spec Chg	d51,032,000	.....
Earnings	($2,781,000)	2,312,000

a-Restated. b-From continuing operations. d-Loss related to sale of computer terminal manufacturing business, sale of life insurance subsidiary and writedown of goodwill.

ANALOG OEVICES

Three Months Ended Feb. 3

	19T3	1972
Shr Ernd	$.22	$.14
Revenue	4,553,538	3,379,989
Earnings	293,454	17T,134

ELOORADO ELECTRODATA

Three Months Ended Jan. 31

	1973	19T2
Shr Ernd	$.20	$.12
Revenue	2,918,324	1,677,61T
Earnings	208,99T	112,530
9 Mo Shr	.60	.12
Revenue	T,959,037	3,609,06T
Earnings	621,720	114,094

ALANTHUS

Six Months Ended Feb. 28

	1973	a19T2
Shr Ernd	$.64	$.63
Revenue	3,656,459	1,391,T38
Spec Cred	160,218	68,321
Earnings	66T,204	43T,300

a-Restated.

OATAPOINT

Three Months Ended Jan. 31

	1973	1972
Shr Ernd	a$.23	.....
Revenue	4,085,000	$1,105,000
Spec Cred	b190,000	.....
Earnings	389,000	(600,000)
6 Mo Shr	a.33	.....
Revenue	6,917,000	1,825,000
Spec Cred	b26T,000	.....
Earnings	545,000	(1,226,000)

a-Adjusted for a one-for-two and one-half reverse stock split in February 1973. b-From tax-loss carryforward.

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COMPANY____________________
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PHONE____________________

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NEWSPAPER

NEWS IN BRIEF

Caravan Winds Up Tour, 30,000 Attend

CLEVELAND The 1973 edition of the Computer Caravan ended its 10-city tour here last week after attracting about 30,000 attendees.

The typical Caravan attendee, if such a user existed, had a 360/40 or 50 and was seriously considering a switch to a 370 mainframe. As part of his equipment evaluation process, the user was running benchmarks, usually at an IBM data center.

Independent peripherals figured heavily in most users' systems evaluations. In many cases these were tied in with third-party leasing proposals and their many financial options.

Many of the attendees at the sessions on data communications admitted that more extensive planning might have forestalled their network operating problems. And users now planning communications additions to their DP operations said it was difficult to justify the costs to management of implementing a data network.

Ampex Files Counterclaim To L.A. County Damage Suit

CW West Coast Bureau

LOS ANGELES Ampex Corp has filed a $25.5 million counterclaim against Los Angeles County for termination of its contract for a sheriff's video-file system.

Charles Steinberg, Ampex vice-president and general manager of the audio-visual systems division, said the company is seeking $13.5 million in actual and $12 million in general damages.

Los Angeles County supervisors had cancelled an $8.1 million contract and filed a civil suit in Superior Court against Ampex [CW, April 25].

Their suit now seeks $4.25 million in damages and charges that Ampex did not live up to its contract to provide a usable sheriff's video-file system.

The video-file system was to be used as part of a $19.5 million system for record storage and retrieval, communications dispatch and microwave transmission.

On the Inside This Week

360/50 Users Offered 3330-Type Disk Storage —Page 25
Foreigners Increase Share Of Japanese DP Market —Page 32

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Professional Viewpoint 14
Software/Services 17
Systems/Peripherals 25

'Improve DP Efficiency, Professionalism'

UK Publishes Good Practice Code...

By Joseph Hanlon

Special to Computerworld

LONDON In an attempt to improve both the image and practice of data processing, the British Computer Society has published a computer code of good practice.

The code has two purposes: "to improve the efficiency and profitability of a computing operation and to increase the level of DP professionalism." The code is a set of 42 checklists designed to aid medium-size users in tightening procedures, reducing cost overruns and improving security.

> *A major purpose . . . is to "reassure the public that we have a social conscience." – committee member David Coan*

But the two purposes do apparently conflict. As code committee chairman Dick Waller explained: "One thing runs through the code money." In the words of the code itself, any part of the code may be rejected "as a normal business risk."

For example, one item suggests that operations personnel should not be allowed to smoke or bring food or drink into the computer room, and that a special room should be provided for this purpose. For night-shift personnel, the code suggests the provision of cooking facilities.

'Reassure Public'

A major purpose in publishing the code is to "reassure the public that we have a social conscience," according to code committee member David Coan. But some critics have charged that any code which can be ignored will not be very reassuring.

Three additions to the code since it was circulated in draft form last year should help pacify, if not reassure, the public.

(Continued on Page 2)

Guide to Output for Non-DPers

The British Computer Society Code of Good Practice suggests the following guidelines on output for non-computer-oriented individuals:

- **Documents should be readable with satisfactory print quality.**
- **Documents should contain both data date and processing date.**
- **Pages should be numbered.**
- **Headings should be clear and informative.**
- **Put carry-forward totals at top and bottom of continuation sheets to assist spot checks of additions.**
- **Print all factors so that calculation can be checked.**
- **Identify items.**
- **Subtotals should add up to document total.**
- **Reason for charges should be clearly identified.**
- **Avoid unfamiliar codes and abbreviations.**
- **Reference information to be quoted should be highlighted for easy identification.**
- **Reference numbers to be quoted should be as brief as possible.**
- **Address for reply should be as brief as possible with instructions for personal visitors shown separately.**
- **In case of query, show a contact with function title, address and telephone number.**
- **Industry and trade standards should be followed.**

...And U.S. Proposes One

By E. Drake Lundell Jr.

CW Washington Bureau

WASHINGTON, D.C. – A "code of ethics" should be implemented for all state and local government data centers, particularly those handling sensitive police information, according to the Government Management Information Sciences Users' Group, which will recommend such a code at its next annual meeting May 12.

In a report now being reviewed by the FBI and other law enforcement organizations here, the group recommended the code of ethics "in order to insure the security, confidentiality and integrity of information sources and resources, especially where criminal justice information system files are maintained."

The proposed code is one of several recommendations contained in a report entitled "An Administrative Guideline: Security and Confidentiality for Government Data Centers" that will be voted on at the group's annual meeting.

To date, the FBI and other government agencies have not commented on the proposals, which are designed to be adopted nationally and to eliminate the FBI requirement that all computers tied into the Computerized Criminal History system be under the control of law enforcement personnel.

> *A code of ethics would "insure the security, confidentiality and integrity of information sources . . . especially where criminal justice information system files are maintained." – government users' group report*

Some state officials have balked at the law enforcement control over computer

(Continued on Page 2)

IBM Built Task Force to Fight 'User Lib'

Telex Suit Documents Tell of 1970 Strategy Against Independents

By E. Drake Lundell Jr.

Of the CW Staff

TULSA, Okla. Because computer users were turning to independent equipment at an ever-increasing rate in 1969 and 1970, IBM was forced to assemble a special, secret task force to try to find how to stem the tide and keep users in the fold, testimony in the Telex-IBM antitrust suit here last week revealed.

Computerworld has assigned its Washington Bureau Chief, E. Drake Lundell Jr., to cover the IBM/Telex suit. This on-site coverage of the trial continues on Pages 4, 8, 9 and 29.

Earlier in the trial IBM used its time in cross-examination to try to cast doubt on the reliability of the first two witnesses presented by Telex both Telex employees.

Because of the willingness of users to use the independent equipment, IBM identified the peripherals area as a "key corporate strategic issue," Richard Whitcomb, a member of that peripherals task force, testified.

Going to Battle

The objectives of the task force were to examine the potential impact of the plug-compatible manufacturers and recommend changes in IBM pricing, policy and product plans to meet the competition, Whitcomb, now with Itel, indicated.

One of the major recommendations of that task force in the product area was to add "mid-life kickers" to products, Whitcomb said.

In other words, he indicated, IBM would withhold certain developments or features on certain products until they had been in the market for a while and then introduce them – both to confuse the independents' marketing plans and make the users wary of going to the independent devices which the users would feel might soon be outdated by new IBM announcements.

Another policy adopted from task group recommendations concerned reconfiguring products slightly and reducing their prices drastically, Whitcomb claimed.

For example, he said, the 2319 disk drive configuration of the 2314 disk system was "functionally no different" from other members of the system but its price was dropped by about 50%.

In another area, he noted, the 3420 tape drive had a very high commonality of parts with the 2420 and the 2420s coming off lease could be made into 3420s with little trouble or expense. Thus virtually the same product could be sold to the users at a lower price, he said.

In neither case would IBM have to reduce the prices of the earlier units

(Continued on Page 2)

IBM Assembled Force to Fight 'User Lib' in 1970

(Continued from Page 1)

installed in the field since the price reductions were only for the newer models – even though those models were basically the same as the earlier ones in the field.

At the same time, Whitcomb indicated that one of the reasons so many users were turning to the independent 2314-type disk drives was the long lead time in IBM delivery since it had a large order backlog.

In addition, Whitcomb testified, IBM had designed a product known internally as the 284X, which was to have been a controller for the 2319B system. It would let users configure a system of from one to nine drives instead of the 2319 system which came in increments of three drives.

This development was apparently made to ensure that users would come back to IBM, if, after the 2319 introduction, it was found users were still turning to the independents for their disk units.

At first, Whitcomb said, it appeared that users would still turn to the independents and the 284X would be introduced, but when the fixed-term plan was introduced, the tide was stemmed and IBM apparently shelved the 284X controller, leaving users with only the choice of 3-spindle, 6-spindle or 9-spindle 2319s.

That users were increasingly turning to the independents, Whitcomb related, could be seen by internal IBM projections showing almost three times as many users had turned to the independents in 1970 as did in 1969. This meant, he said, that IBM has lost almost three times as much business in 1970 to the competition as the year before.

Losses in the disk area were particularly worrisome, the documents referred to by Whitcomb detailed, since those losses were almost seven times greater in 1970 than in 1969.

Whitcomb said IBM followed a policy of unique, or non-standard, interfacing in the disk drive area partially to cut down the user's choices in equipment when he was looking for new or replacement devices.

Whitcomb also testified that at the beginning of 1971 IBM was generating revenues of $25 million monthly in the tape drive area and the independents had 7% of the market compared with IBM's 93%.

In the disk area IBM's monthly revenues amounted to $52 million, and it had 86% of the market, he said. The firm was apparently worried, he stated, because the forecasts made by the task group found disk revenues would drop to $33 million/mo by 1976 if no actions were taken to improve its position and keep the users.

Earlier in the trial IBM got its chance to cross-examine Harry Ashbridge, product planning vice-president at Telex, and Edward L. Grant, senior Telex vice-president.

Thomas Barr, the IBM trial attorney, hit hard on the sources of Telex information on IBM planned product announcements as revealed in Telex memoranda.

Ashbridge, however, indicated that much of the material in the Telex documents was common knowledge in the computer industry. He cited, as an example, *Computerworld* articles –giving some of the details of the system 370 before it was announced – articles, he said, which were remarkably accurate.

Barr also questioned Ashbridge about a meeting held by Telex officials on April 16, 1970, and about the source of information handed out at the meeting by Telex President Jack James.

While Barr admitted later he was trying to indicate the information had come from IBM documents, Ashbridge said he did not recall the documents or the specific meeting cited by Barr.

Barr also claimed the problems experienced by Telex were caused by internal manufacturing problems and not by competition during the time discussed by Grant.

Although Whitcomb testified on direct examination that in pricing the 3330 disk drive IBM had just considered the independents as competition, Barr on cross-examination got him to admit that in fact the firm had considered the products of the other mainframe makers as well.

Using a document that was challenged by Telex attorney Floyd Walker as being unavailable to Telex during its preparation of the case, Barr got Whitcomb to admit there was a mixture of competition in the business.

Want to Be a Technical Journalist?

BOSTON – If you want to write for a technical publication, but don't really know the ins and outs of getting into print, a one-day seminar, sponsored by Boston University Science Communication Division of the Graduate School of Journalism May 25 may be of help.

Editors of 14 national technical publications headquartered here will explain what they're looking for and how to get stories into the news and feature sections of their publications.

Participants can have lunch with one editor and dinner with another.

Among the topics to be discussed are:

- Which publications are interested in what kinds of articles.
- How to deal with editors.
- What kind of help and guidance is to be expected.
- How to start a book with a series of published articles.
- How to become a newsmaker.
- How to become an occasional staff columnist or guest editorialist.
- How to get different versions of an article in two or more publications as "in-field exclusives."

Publications participating in this seminar include *Circuits Manufacturing, Computer Design, Computerworld, Data and Communications Design, Design News, Digital Design, Electrical Design News, Electromechanical Design, Laser Focus, Microwave Journal, Modern Data, Modern Materials Handling, Plastics World* and *Telecommunications.*

The seminar, "How to Write for Publication," will be held here, and the registration fee of $75 includes lunch, dinner and cocktails.

Checks should be made payable to Boston University – SPC and sent to Shirley Coyne, Boston University School of Public Communication, 640 Commonwealth Ave., 02215.

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U.S. Group Proposes Code for Government Use

(Continued from Page 1)

systems tied into CCH, claiming it wasted resources when such systems could not be shared with other state and local agencies.

The report is aimed at developing guidelines that would free the states from that regulation and still provide adequate security for such files.

The proposed code of ethics would apply to "all personnel employed by a DP center – in management, systems, programming or operations – and shall be applicable to personnel not directly employed by the center but responsible for terminal interaction with on-line accessibility to center files," according to the report.

The code, the report said, would be administered by a special board of control which would give specific members of a criminal justice agency the responsibility to review a center's personnel and procedures.

"The code of ethics is probably the most unique concept in the administrative guideline and offers the most conclusive deterrent to invasion of privacy since it establishes management authority and appropriate disciplinary action associated with the misuse of government information," the group said.

In an appendix, the report noted the code of ethics in use in Hamilton County (Cincinnati), Ohio, as the possible guideline for the proposed code.

The Hamilton code states that security and confidentiality of information "is a matter of concern of all personnel of the regional computer center and not just of management."

An employee of a government data center with confidential information "holds a position of trust relative to these files and recognizes the responsibilities entrusted to the center and to its employees in preserving the security and confidentiality of these files.

"Therefore," the Hamilton code continues:

- "He does not submit to or permit unauthorized use of any information in these files.
- "He does not seek to benefit personally or permit others to benefit personally by any confidential information which has come to him by virtue of work assignment.
- "He does not exhibit or divulge the contents of any record except in conduct or his work assignment.
- "He does not knowingly include or cause to be included in any record or report a false, inaccurate or misleading entry.
- "He does not remove or cause to be removed copies or any official record or report from any file from the office where it is kept except in the performance of his duties.
- "He does not operate or request others to operate any [center] equipment unless he is qualified and authorized to do so.
- "He does not use or request others to use any [center] equipment for purely personal business.
- "If he becomes aware of any violation of this section by any [center] personnel, he shall report such conduct to his supervisor immediately."

"Rigid adherence," to the code is required by all employees and any infraction will be construed as misconduct on the part of the employee.

The employee's off-work life is also under the jurisdiction of the code. Any criminal conviction, "conduct prejudicial to the good order of the center, or irresponsibility in meeting financial obligations" might constitute misconduct.

If any infractions are found, the center director is given the authority to investigate them and then report his findings to the law enforcement officials overseeing the center who may either accept his recommendations or overrule them.

However, under the code, the violations apparently do not require any other disciplinary action than what is already on the rule books for violation of the local civil service regulations.

UK Prints Good Practice Code

(Continued from Page 1)

The code now includes guidelines on computer output "which will be received by people who are not computer-oriented." The code also incorporates the 10 principles for handling personal information proposed last year by the government committee on privacy headed by Kenneth Younger.

And the code now stresses that for each system, specific individuals should be given responsibility, in advance, for correcting errors, maintaining and updating programs, maintaining data bases and for the overall performance of the system.

The code is written for three different DP audiences. For the computer professionals, it provides checklists to insure that proper actions have been taken. It will also help the user to ask the right questions of the DP manager. And the code will be included in courses, such as those run by the UK National Computing Center, for both users and would-be professionals.

One section of the code covers dealings with outside suppliers. It gives rules for setting specifications and writing contracts and lists in detail what should be considered when evaluating suppliers' proposals.

A useful appendix to the code details documentation procedure.

The code is available in the U.S. for $3 from International Publishing Services, 114 E. 22 St., New York 10016. In the UK, it is available from the National Computing Center, Quay House, Quay St., Manchester M3 3HU.

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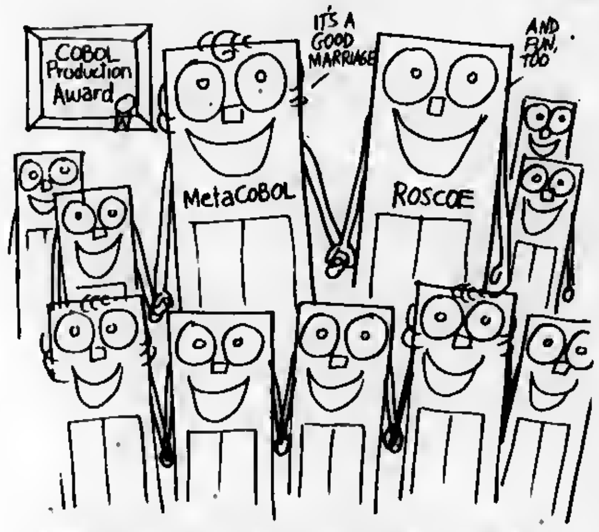

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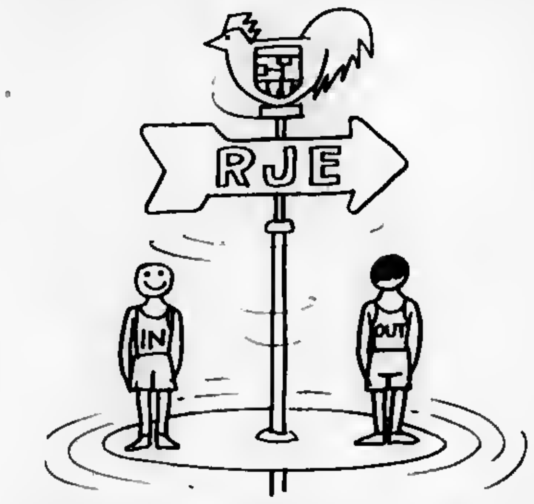

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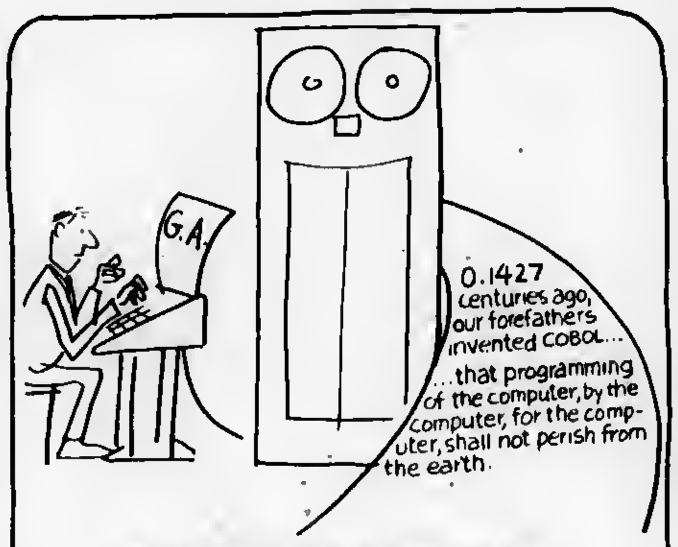
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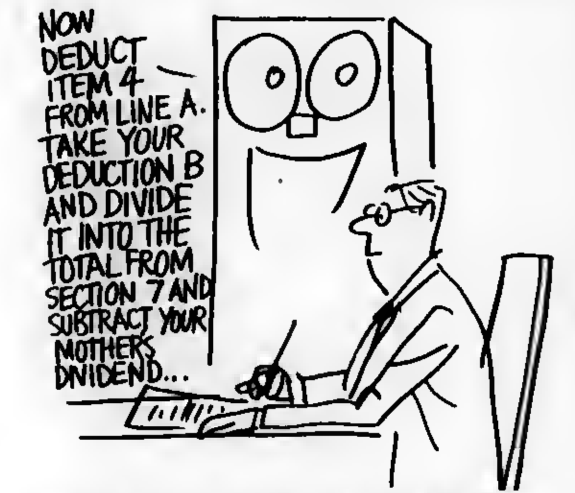
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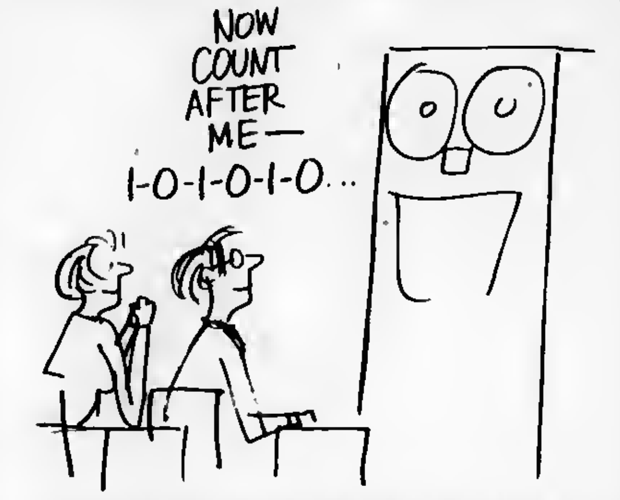
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Customized by Applications

Peripherals Competition Hot

IBM New Products Should Flow Fast in Next Few Years

TULSA, Okla. – IBM computer users are in for a period of rapid product announcements over the next few years and can possibly expect to see more products designed for only specific applications.

In order to compete with the independent peripheral suppliers IBM plans to step up the rate of product changes and to customize products by applications, according to documents introduced at the IBM-Telex antitrust trial here.

IBM is particularly worried about the competition from the independent peripheral suppliers, because, the documents indicated, peripherals presently account for almost 70% of the value of some typical IBM systems, up from the 20% in 1955 and 58% in 1965.

What's Ahead?

And while the value has risen, the competition in the peripherals area has also jumped dramatically and "the plug-compatible phenomenon is accelerating in volume and scope."

According to the same untitled IBM confidential document, "plug-compatible peripherals represent a serious threat to IBM's potential for growth" since peripherals represent such a large part of the systems.

In addition, the document revealed that IBM feels that "defending against" the plug-compatible makers "is difficult once the plug-compatible manufacturer has proven his competence.

"Plug-compatible manufacturers," the document continued, "market on the basis of lower price and generally improved performance . . . The natural result is that the IBM technological leadership, that translates into price performance, is short-lived."

In "order to compete in this new environment," the document recommended that IBM pursue two philosophies.

"First, more frequent advances in technology utilizing mid-life kickers if possible. Second, pricing should take maximum advantage of our lead, however shortlived.

"In addition," the document went on, "we (IBM) should explore the possibility of reducing the exposure of large quantities of a single peripheral by:

- Customizing devices for narrower ranges of applications.
- Providing wide ranges of price/performance and capability for device families."

In a survey of more than 10,000 user sites IBM found that plug-compatible firms had "contaminated" 13% of them and that the measure was expected to increase rapidly.

In only a few cases did IBM "win" an installation based on superior technology, the survey found. Other reasons given for beating the independents included "account control, rapport, salesmanship" and "dependence upon IBM FE service," it was found.

IBM "loses," however, based on price, performance and functional differences, IBM said.

In the new environment, IBM found that any of its devices could be marketed at under the IBM price for the units and that peripherals must compete on a box-for-box basis.

To meet the competition, the research group recommended that IBM allow 24-hour use on all I/O devices without extra charges and that it adopt "competitive margins" in pricing its products.

In addition, it recommended that the firm reevaluate its planned programs and begin offering mid-life enhancements to products in the field.

In the past, the researchers told top management, "IBM has waited too long to take action in product after product . . . In a price war we cannot follow down fast enough to remain competitive. Reactive pricing is a poor strategy. It's time to recognize the new environment, modify our policies accordingly, and reassert IBM's market leadership."

In both the tape and disk areas, the IBM study group found that losses to the plug-compatible manufacturers were continuing into the projected future and that the IBM "planned program was not adequate" to meet the increased competition.

What Profit From a Product?

TULSA, Okla. – How much profit does IBM plan to make when it introduces a new product?

A lot, according to documents released here in the Telex-IBM antitrust suit.

For example, the profit expected from the 3330 disk drive over its life span was expected to be 33.8% before taxes, with the profit on leased machines put at 32.1% and 41.4% on purchased, which might indicate that the profit levels were set to get users to lease rather than buy the units.

This could be particularly true now that the leasing companies are primarily out of the market for new IBM equipment and tend to purchase most peripherals from independents as part of third-party package deals.

On the 3830 storage control unit, however, the situation is a little different. The total profit from the product was set at 40.8% of the revenue over its expected life, with 41.8% of the lease revenue being profit and 37.2% of the purchase revenues going into the pre-tax profit column.

Of course, those profit levels were for the expected life of the product, estimated to be 58 months for the 3330 and 57 months for the 3830.

But IBM prices the units on a shorter time span – in other words, it still expects to make substantial profits after 48 months on both products.

For example, the 3830 would produce a 37.8% profit if only in use for 48 months – or $314.5 million over the four-year period from introduction. The 3330, however – if in the field only four years – would only give a profit of 28.8% of the total revenues, or $406.3 million over the four-year period.

System 375 in 1975?

TULSA, Okla. – The IBM System 375 is on course.

Documents disclosed here in the IBM/Telex antitrust suit showed that the announcement of the new family of computer systems should come in 1975, although no details have been uncovered as yet on the structure of the systems.

It will have a new disk unit, however, known internally in IBM as the Apollo, which will be a significant improvement over the present 3330 devices.

The capacity of the device will be 10^7 bytes per drive and it will have a data rate of 1.6 kbyte/sec and an average access time of between 10 msec and 20 msec.

The unit will have 400 track/in. and will store 8,000 bit/in. and will rotate at 3,600 rpm, the documents showed.

But there is some bad news for the users – the media for the unit will be non-interchangeable, presumably with any earlier devices. In addition, it will have a new control unit, which was not named at the time the documents were prepared.

Also, the Durango tape drive, of which little is now known, is scheduled for release a year after the 375 System is announced and will probably be designed solely for its use.

The designation of 375 found in the IBM documents seems to indicate the unit will not be a radical departure from the present 370 generation of systems. In fact, some observers indicated it could be a true interim generation.

Task Force Found Independents Making Vital Inroads

TULSA, Okla. – The Peripherals Task Force of IBM found that the situation in the tape market in 1970 was serious, even though it estimated that the independent peripherals makers had a small share of the market at that time.

The group found that IBM customers were buying tape and other plug-compatible products from the independents based largely on price, but it noted the equipment from these suppliers was "equal or better" on a functional basis than the IBM devices being replaced.

The Tape Competition

The task group estimated that with the present market plans the tape suppliers would be able to grab 11% of the units shipped by 1976 and that would account for about 10% of the revenues of the business as counted in IBM "points" at that time.

However, while the independents would only account for around 10% of the total market, the IBM planners felt this would be approximately 22% of the lease base of units in the field in 1973 and 16% of the total lease base by 1976. IBM usually tries to protect the important lease base.

The IBM planners found the independents would aim their marketing at the "broad IBM tape market," and their particular target in the 1970-73 time period would be 7- and 9-track NRZI, 9-track Phase Encoded, the 2420 and the 2803 control unit.

In the 1972 to 1975 period the target, the IBM planners said, would be the Aspen-type drives and the Aspen control units, the code names for devices that later became the 3420 system.

In the 1973 to 1976 period, however, it was found the independents would switch their emphasis to the "Eldora," "Winter Park" and "Monarch" units that IBM was then developing.

IBM's Strategy

The overall strategy IBM should develop, therefore, was to "move users to on-line storage devices" and "at the same time protect the half-inch tape market," the IBM researchers recommended.

Ultimately, according to the documents, IBM planned to move most tape users to a product called the "Durango" by the 1976 time span. In other words, all the planned products in the tape market led to Durango.

One step in this upgrading program set for introduction in the second half of this year will be the Aspen II unit which will be a follow-on to the 3420 with a higher density, the documents revealed. The unit is scheduled to be shipped a year later.

The Durango unit itself, which is only briefly touched on in these documents, is slated for announcement sometime in 1976 and will be delivered in 1977.

The intermediate step seems to be the "Kiowa" family of drives, which will include, in addition to the already announced 3420, the Eldora drive, Winter Park drive and the Monarch drive.

Basically, the units will have a 6400 bit/in. basic density, and will feature 1,600 bit/in. Phase-Encoded, 800 bit/in. NRZI and 7-track NRZI (in the Aspen models only).

The units will be field-installable so present devices can be upgraded and will he "present library-compatible."

By accelerating the Kiowa family of announcements, IBM estimated it could add revenues of $500,000 in 1973, $1.1 million in 1974, $1.4 million in 1975 and $1.6 million in 1976.

At the same time the task group recommended accelerating IBM Commanche development programs, the programs leading to completely automated tape libraries.

Two Better Than One

The original product in this line was to be Commanche I, for large installations, but the planners recommended accelerating the Commanche II which would be a "low-cost automated tape library."

With this unit the drive could be used as a stand-alone device, and since it would be compatible with the earlier unit, it would "accelerate conversion to Commanche," the planners said.

This speedup would add $700,000 to revenues in 1974, $2.4 million the next year, and $5.6 million the year after, above the amount predicted by the IBM seven-year plan covering the 1970 to 1976 period.

(All the above figures are estimated in IBM "points" in the documents, but IBM in other documents has defined a point as a revenue dollar per month.)

A Serious Situation in 1970

In 1970 IBM was worried because the conditions in the plug-compatible peripherals market had reached a "serious but not runaway situation," according to secret IBM documents introduced in the Telex antitrust suit against IBM.

A secretly assembled "Peripherals Task Force" was then put together by IBM to recommend programs that could be accelerated in order to meet the competition and keep it off balance.

The programs recommended by the task force "will reduce (IBM's) risk and improve our quantities," the report's conclusion indicated.

To meet the competition and retain a larger share of the revenues in the business, the plan drawn up by this task force was divided into two parts – one on disk and one on tape.

What follows is a look at both of those markets as seen by IBM during 1970 and the recommended actions, most of which seem to have been followed until now.

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- Air Transportation
- Pipe Line Transportation
- Transportation Services
- Communication
- Electric, Gas, and Sanitary Services
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- Food Stores
- Auto Dealers and Gasoline Service Stations
- Apparel and Accessory Stores
- Furniture and Home Furnishings Stores
- Eating and Drinking Places
- Banking
- Credit Agencies Other Than Banks
- Security and Commodity Brokers and Exchanges
- Insurance Carriers
- Insurance Agents and Brokers
- Real Estate
- Combination Real Estate, Insurance, and Law Offices
- Holding and Other Investment Companies
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The Plan: Enlarge Product Line, Protect Installed Base

TULSA, Okla. – If the IBM planners saw a potentially serious situation in the tape market, there was even more serious competition on the disk side.

By 1976, the planners predicted the plug-compatible manufacturers would account for 16% of the 2311, 2314, 3330 and Winchester-type disk units in the field. But even more significant, in the important lease market area of the field inventory, the planners estimated the independents would control 30% of that segment by the same date.

'More, More, More'

The very large growth in the market for direct access storage devices itself would assure the acceptance of the independents, the planners said, and they determined that a "product development strategy" was the "best answer" since "accelerated product development enhances IBM acceptances."

The planned strategy in 1970, therefore, was to enlarge the product line and at the same time protect the installed inventory of equipment at user sites.

The Disk Competition

The plan shown at that time was to take 2311 users to a new product called the "Colt" in the 1974 time frame or to Winchester or to the 2314. The 2314 users were expected to go to the 3330 or through "IBM Leos" to the Winchester.

The 3330 users were expected to upgrade to an "Iceberg" device in 1974 and then move to Apollo in 1976 or to "Weatherby" in the same period.

The Iceberg unit described in the papers is thought to be the increased capacity 3330 since it was scheduled for the first half of 1973 and a "desirable" feature included a new disk pack and servo modifications.

The enhancements to the "Winchester" disk were to be the Colt line. Colt itself is expected to be announced any day with a 15 M/B (Mbyte?) cartridge, but a 45 to 60 M/B cartridge will be unveiled later.

There will also be fixed-head options with the device and the latency time will be reduced as product enhancements are announced over six-month periods, the IBM documents showed.

The Weatherby unit will replace the 3330 and will have 250 track/in., and 6,000- to 8,000 bit/in., and 100 to 200 MB/pack. It will be one-half to two-thirds of the Merlin or 3330 cost and will be announced in the first quarter of 1975 if not accelerated.

The "Mallard" program on the drawing board in 1970 has already reached fruition in the 2319 drive.

In this program, the firm, according to the documents, just removed one drive from the 2313 four-drive box and added a native attachment adapter board so it could hook up with integrated controllers in certain 370 models.

After playing around with different prices, it was apparently decided to go with the middle price in the range which gave the device a price tag of $333/drive.

3330 Maintenance Pricing Differed

TULSA, Okla. – Previously secret IBM documents indicated that the firm, in certain instances, agreed to take greater than normal profits on some maintenance agreements.

On the 3330 controller, the 3830, for example, the firm took a normal profit level, charging $170 with the costs set at $166.19 for services. This, the firm said, was a "normal" profit.

On the 3330, however, the firm announced the monthly maintenance at $200, even though the costs were only $177.57 and the "normal" profit level would have been $180.

The document does not explain the reasons for the discrepancy, but noted it was "agreed to announce a greater than normal profit at $200/mo."

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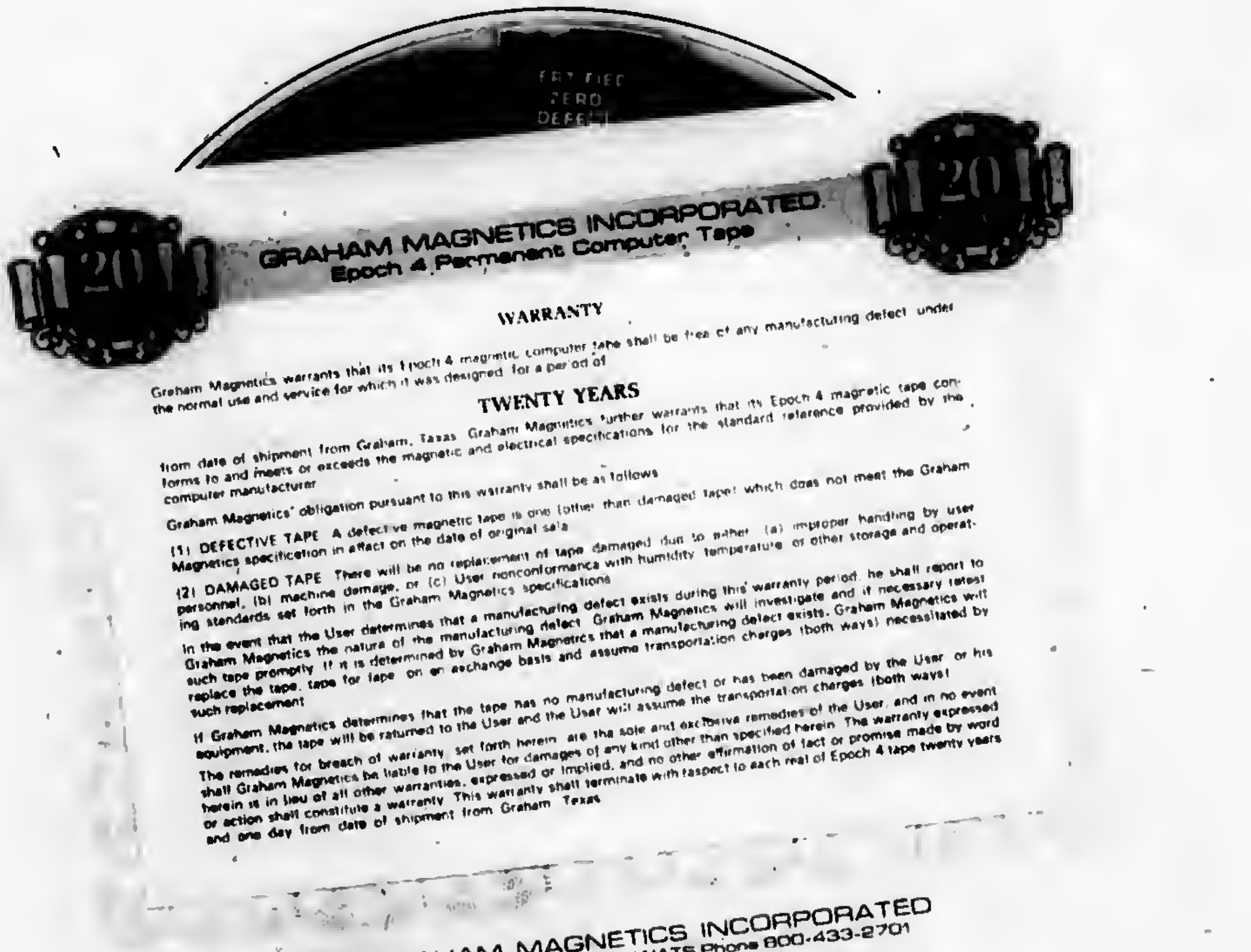

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If Graham Magnetics determines that the tape has no manufacturing defect or has been damaged by the User or his equipment, the tape will be returned to the User and the User will assume the transportation charges (both ways).

The remedies for breach of warranty set forth herein are the sole and exclusive remedies of the User, and in no event shall Graham Magnetics be liable to the User for damages of any kind other than specified herein. The warranty expressed herein is in lieu of all other warranties, expressed or implied, and no other affirmation of fact or promise made by word or action shall constitute a warranty. This warranty shall terminate with respect to each reel of Epoch 4 tape twenty years and one day from date of shipment from Graham, Texas.

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IBM Had Problems Pricing 3211 Printer

How to Price a Product

TULSA, Okla. – How does IBM price a product?

A look at the 3211 printer gives an insight.

The IBM planners noted the 3211 consisted of several different boxes but could be sold only as a system. They decided to price each part of the subsystem separately to "achieve satisfactory profit."

Another way to maximize profits was to rebuild used units as they became available from the field, the suit documents showed. In the case of the 3211 it was determined it would cost the company only 35% of the original manufacturing cost to rebuild a unit, thus increasing the profits on the "rebuilds" rented to customers for the same prices as the new units.

Solving a Problem

IBM had a problem pricing the 3216 print train for the 3211, the documents revealed.

"For a 40-pound piece of metal, the 3216 is an extremely precise and expensive item," the research said.

"The very fine tolerance requirements and high maintenance costs made it difficult to price at a profit. Yet the 3211 would not function unless a 3216 was mounted in it.

"This begs the question: Why not bury the cartridge in the price of the printer and avoid the financial and marketing problems of renting it at $350/mo?

"The decision to announce it as a separate type was based on inventory control reasons. Since the customer can physically remove the cartridge from his printer and insert other 3216s, it was felt that serial numbers were necessary to keep tabs on the whereabouts of the inventory and protect against violations of IBM policy (such as lease of purchase).

"The $350 price of the 3216 wasn't high enough to return but minimal profit and yet seemed outlandishly high in comparison to the $97 charged for the 1416 cartridge mounted in the 1403N1. Pricing recommended a price increase on the 1416 to restore some balance to the 3216 price comparison and put the 1416 on profitable footing. But the decision was deferred."

Overall, the 3211 program, according to the IBM documents, was "intended to retain IBM's leadership position in printers until a newer, non-impact concept can be introduced."

"Financially, the 3211 program should be a profitable one," they said.

'New Technology' Printer Planned

TULSA, Okla. – When IBM originally introduced the 3211 2,000 line/min printer, it expected to have a 1,600 line/min follow-on unit with OCR capability code named the "Altair" soon on the market.

The Altair device was to be identical to the 3211 except for a change in the printer hammer drive cards in the 3211 controller. That would give it the 1,600 line/min speed. Essentially it was to be a slowed-down 3211 at a cost reduction.

But neither this product nor a planned upgrade of the 1403N1 printer (called the 1403N2), with a capacity of 1,050 line/min, was the most exciting product the IBM engineers were working on.

The Jubilee printer was.

This device, to quote the documents, would be "a 10,000 line/min non-impact printer, named Jubilee, representing a completely new technology."

Early Bird

This device is – or was in 1970 – in the early development stages, so the market planners could not outline its features in any detail.

The documents also showed that IBM was working on a replacement for the 2540 card reader punch, to be called the "Redlake/Pikelake" system.

3211 Maintenance Listed

TULSA, Okla. – There has been some confusion in the user community over the IBM markups for its maintenance services, but one of the documents introduced in the Telex-IBM case indicated the range of markups for such service – at least for the 3211 printer.

In a document, the firm estimated that the parts markup factor for maintenance parts would be 64% of the gross cost to make the parts – in other words, the parts would cost 64% more for the user than they did for IBM to make.

The hours markup factor was listed at 9% – i.e., the user would be charged 9% more for a serviceman's time than IBM paid him.

And the costs are going up rapidly.

In 1971 the service cost per hour, according to the documents, was $24.29, but by this year it was placed at $27.93. By 1975 the hourly cost will be $32.95 and this should rise to $50.70 by 1980 and $55.26 by 1981, the documents revealed.

The Documents...

The source documents used in writing these stories as identified in the Federal District Court for Oklahoma are listed as: Plaintiff (Telex) exhibits 12a, 52, 89, 121, 122, 140, 152 and 162. They are among the 664 exhibits offered as evidence by Telex at this time.

Most of the documents are internal IBM documents supplied to Telex by IBM during the discovery process. IBM had tried to prevent the introduction of almost all of the internal IBM documents into the case, but was only allowed to keep 10 of the documents out of the public record.

Framingham Picks Honeywell 2020

FRAMINGHAM, Mass. – The Keefe Vocational Technical High School Committee has voted to lease a Honeywell 2020 computer for use in its data processing program after several months of committee conflicts over the computer selection [CW, Jan. 17].

The Honeywell unit and related equipment will be leased for three years at $4,729/mo including maintenance. This represents a savings of $2,346/mo over the original figure budgeted for this expense, officials said.

In comparing various systems, the school committee had narrowed its choice to two vendors – IBM and Honeywell. While some committee members felt the IBM unit would have been a better choice because it is more widely used, it apparently would have cost an additional $2,000/mo.

Chris Cassidy, Keefe computer program coordinator, recommended the Honeywell 2020 because Honeywell will supply curriculum materials and staff education, as well as support for student scheduling, payroll and attendance, all at no cost. The firm also will allow cancellation of the lease, should funds not be appropriated on a yearly basis by the town.

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Editorials

Informing the Public

Computerworld congretuletes Judge A. Sherman Christensen, who is presiding over the IBM-Telex trial, for allowing certain IBM documents to become public knowledge.

In the long term both the computer industry and the computer user will benefit from knowing the results of these internal decisions which affect the way the computer community does business and pays for its computer systems.

The Computer Industry Association should also get a hand for its persistence in asking the various courts now hearing IBM cases to make the public aware of the contents of various documents.

We do not pretend that the judge was influenced by the association, but only thet its efforts to try to ensure full and fair disclosure of non-trade secret IBM information are valuable to the computer community.

This community can not – and should not – stand for another incident like the IBM and Control Data settlement where an important index was destroyed. Full disclosure of the documents can prevent a similar recurrence.

Only an informed public can keep pressure on the Justice Department and the White House to make sure that the government's suit is seen through to the rightful conclusion and that no deals are made before it is heard in court.

New Penalties Needed

An honor code for employees in data centers which handle sensitive governmental information is a good idea, but the one used as an example by the Government Management Information Sciences Users' Group in e soon-to-be-released report is only a partial answer.

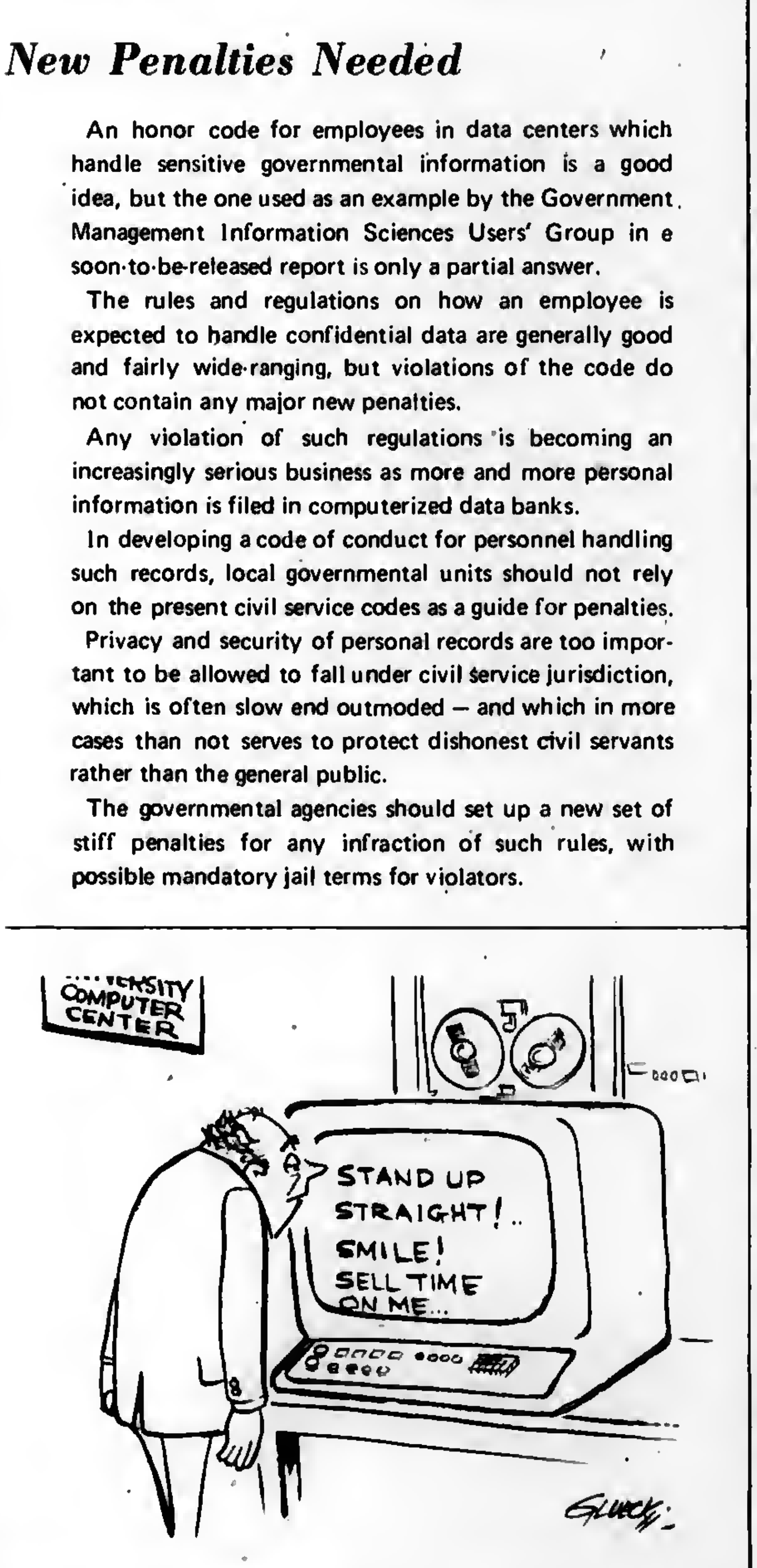
The rules and regulations on how an employee is expected to handle confidential data are generally good and fairly wide-ranging, but violations of the code do not contain any major new penalties.

Any violation of such regulations is becoming an increasingly serious business as more and more personal information is filed in computerized data banks.

In developing a code of conduct for personnel handling such records, local governmental units should not rely on the present civil service codes as a guide for penalties.

Privacy and security of personal records are too important to be allowed to fall under civil service jurisdiction, which is often slow end outmoded – and which in more cases than not serves to protect dishonest civil servants rather than the general public.

The governmental agencies should set up a new set of stiff penalties for any infraction of such rules, with possible mandatory jail terms for violators.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'...And If the Programs Weren't Rigged, You Should Have Written Them to Catch the Crooks!'

Letters to the Editor

Programmers Wanted Who Code Smart

Undoubtedly there are applications that code faster in RPG than in Cobol. The same applications will probably code even faster in a commercial report writer and file manager package.

There are good reasons why Cobol is the most popular programming language for commercial applications, but speed in coding a program from scratch certainly isn't one of them.

Any programming language represents a compromise between various characteristics, including machine efficiency, maintainability, range of available features and so on. For those who never get beyond sort and tab, RPG is first rate.

Unfortunately the RPG shop will have trouble getting beyond sort and tab. The logic of RPG resembles a 407 more than a 370 so that RPG programmers will have difficulty in understanding (and utilizing) the advanced capabilities of modern computing systems.

More to the point, the ordinary programmer raised on RPG won't even have the conceptual knowledge of such features as segmentation, subroutine calls, subscripting and message analysis needed to conceive such an application.

If we are to make intelligent use of the power of the computer we need programmers who code smart rather than programmers who code fast. RPG is interesting, unique and within a limited range of applications quick to code. As a programming language it represents a dead-end street.

The number of more sophisticated customers who remain underwhelmed by RPG describes the language's limitations better than I can.

John Culleton Jr.
Sykesville, Md.

Adequate Means To Compare Needed

Re: "RPG Produces Profits," April 11 Letter to the Edilor by John R. Thomas Jr.

Advice which ignores such important factors as program maintenance, relative execution times and total executions expected during a program's useful life could quickly lead to a "penny-wise, pound-foolish" operation.

Checking programmers' and analysts' work for profitability is reasonable if the checker is given adequate means of comparison and rating.

Lack of comprehensive, objective means of comparison and rating is a significant barrier to professionalism in data processing and we only compound the situation by ignoring some of the factors which we already recognize as important.

Daniel P. Reeves
Yucaipa, Calif.

The Name Game... Consult a Librarian

The recent series of letters relating to Robert M. D'Unger's difficulties in getting his name used properly by computer systems [CW, April 21] prompts me to mention a considerable body of experience regarding this problem with which most of the letter writers are apparently unfamiliar.

Those of us engaged in "bibliographic data processing," having files on the order of half a million names or so, have had to deal with this problem strictly from the user's point of view. Bibliographies, catalogs and indexes for the library profession must be arranged in sequences meaningful to the user.

Hence, sorting methods must be developed, for example, to sort the surname St. Claire as though spelled out – Saint Claire; to sort McNerny as MacNerny; etc.

In addition, it is necessary to ignore some elements such as articles and prepositions in all of several languages. One does not want *Das Kapital* to file in the D's.

There has been a number of programs developed to sequence names and titles in meaningful order.

Most depend on the construction of a dummy field in which a sort key is constructed by applying the appropriate conversion algorithms to the original fields. The file is then sorted on the dummy field, but only the original field is printed.

One problem ignored in this area so far, because of the size of the conversion algorithm, is the filing rule that titles beginning with a number are to be filed as though the number were spelled out, in the language of the text; i.e., *3 Short Stories* sorts in the T's while *3 (Drei) Novellen* sorts in the D's.

In short, if one is seriously interested in the accurate processing of proper names, one should consult a librarian who has some experience in computer systems.

Allan D. Pratt
Assistant Professor
Indiana University
Graduate Library School
Bloomington, Ind.

IBM Findeth a Way Out

James P. Fraser's "Last Word on IBM and Individuality" [CW. April 11] prompted me to write the following:

> IBM is my standard,
> I shall not lie awake nights,
> It leadeth me through the jungle of the computing world
> And helpeth me to avoid bobbles.
> Yea, though I agonize over lower cost equipment
> I shall not be screwed
> For GEs and RCAs do trouble me
> And insecurity rotteth my soul.
> While IBM doth betimes lead me to rocky ground,
> It findeth a way out and comforts me,
> I shall cleave to my standard forever
> And get on with the bloody job.

L.B. Moore,
Director
Computing Centre
Ryerson Polytechnic Institute
Ontario, Canada

(other letters, viewpoints on Pages 11, 14 and 16)

Computerworld welcomes comments from its readers. Preference wdl be given to letters of 150 words or less.

Anticipate 'Wrong' Places

How Do We Find 'Right' Place for D'Unger's Name?

The Taylor Report

By

Alan Taylor, CDP

During the past few weeks *Computerworld* has received a number of letters about the case of Robert D'Unger. As most readers by now know, D'Unger found that computers do not treat his name properly and consequently his accounts get confused.

As readers also know, the grass roots computer professionals feel D'Unger's name should not be confused, but they don't agree on exactly what should be done to correct the problem.

The problem is where to put D'Unger in various collating sequences. Many different and logically good suggestions have been made to put him in one place or another. Others have argued that it does not really matter where he is put, as long as it is always in the same place. Sooner or later, they say, the outside world will catch up with computers, and then will automatically bow down to accepting whatever the computer has decided.

Saving Computer Time?

Sometimes the existence of outside standards – such as those used by librarians – have been acknowledged, but in general have been dismissed as not worthy for serious consideration. After all, the important thing is to save computer processing time, isn't it?

From what I have seen of the usage of central computer time, and from what I know of the frequency of people with problem names like D'Unger, I just do not buy this argument. Little central processor time need be used to stop the confusion. It is programming, not processor time that has been saved.

I suggest we need an alternative goal. I suggest we put D'Unger in the *right* place, rather than in the computer's most *convenient* place. By "right" I mean whatever will maximize the efficiency of the function which involves putting D'Unger on a list in the first place.

I do not really believe in the divine right of computer collating sequences to define correctness. I believe data processors should see that the user job is done correctly, rather than conforming the job to some idiosyncrasies of computerized thinking.

What Is 'Right' Place?

All of which leads to the problem as to just what is the "right" place.

For in-house systems, such as those which exist entirely within government agencies or firms, one definite place is as good as any other. Moreover, in view of the investment in the systems' current methods I suspect the correct place for such closed systems is wherever it happens to be at the moment.

For open systems, which impact sections of the public, other functions have to be taken into account. In particular there are two functions – obtaining fast access without retraining people or asking them to change their look-up habits; and minimizing errors.

> *"Indeed, it may be that computer people have been ignoring the possibility that there is no right position in general. To solve matters for D'Unger, data processors must take the more sophisticated approach of searching for ways of achieving the right result instead of looking for a nonexistent right position."*

To achieve such a goal, I would give the task of putting D'Unger's name into a list to 20 secretaries, 20 office boys and 20 housewives picked at random, without any of them seeing what the others do.

At the end of this exercise we would have a number of reasonable positions for D'Unger's name within the alphabet, with probably three or four positions predominating. This would provide valuable information, including where to put D'Unger's name so it could be found quickly.

Doing it in this way, however, we would also obtain a list of the other places where people would look for the name D'Unger. To be precise, they would have listed the possible error positions.

Once the error positions are known it is quite simple to put up flags pointing out where the action should go. A very typical and generally useful system of this nature is in the telephone directories, with phrases like "MC-see also MAC."

Telephone people have worked on this problem for years. They, of course, have a vested interest in *solving* the problem (rather than winning theoretical arguments). The telephone people want us to use the telephone directories, instead of calling information.

Ma Bell researches these matters carefully and knows these signposts are working. They know that people are particularly careful about the spelling of their own names, but don't have the same cautiousness about spelling other individuals' names.

One objection to this approach might be that if you took the sample of how people look up "D'Unger" in the middle of New York, you would probably get a different set of responses to the same question in, say, Quebec or Paris.

Indeed, it may be that computer people have been ignoring the possibility that there is no right position in general. To solve matters, DP must take the more sophisticated approach of searching for the right result.

As stated before, telephone companies have been successfully lifting much of the load from their information services by providing signposts in likely wrong positions.

Why then can't computers simulate such a simple system? It is obvious from the letters that have come in about D'Unger that the moment his name crops up in a North American file, there is a high probability that a computerized transaction is going to be mismatched at some stage. It is also easy to see what the likely "wrong" character strings are going to be.

Why then can we not have redirecting entries put into the file to avoid such forecastable mistakes? Must we really continue to try to train the world to do things in exactly our way, instead of us organizing our work so the result comes out right?

So this is my suggestion for Robert D'Unger and others with problem names. I suggest that D'Unger make a list of the 12 or so variations upon his name that he has found computers use. Then he should duplicate the list, and send it to each of the people he does business with, and ask them to include in their records entries under these various versions, redirecting any transaction that comes in to whichever one they happen to like – provided it is spelled reasonably.

While he is doing it, he could send the concept to the SCDP Cobol Coordinating Committee, which is currently in the midst of trying to decide what to do with its collating sequences. I think having a *functional* collating sequence, which allows names to work properly, would make an excellent Cobol standard. And an unprecedented one at that.

Wouldn't it be nice to have a standard for doing things right for a change, instead of just doing them in some uniform manner which is "nearly" right?

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CDP Exam Tests for Knowledge, Not Ability to Act Professionally

By Susan H. Lewis

Special to Computerworld

As I understand it, the CDP exam tests for the existence of a reasonably well-defined body of knowledge thought to be necessary for a professional data processor.

Since the bar exam, the medical and engineering certification exams, the CPA and actuarial exams all follow this pattern I do not really see the cause of the current debate. Nor do I understand what would constitute "verification" of the exam.

> *"An exam can only test whether an examinee has the minimum qualifications of professionalism: knowledge in the field."*

The CDP exam is not like the PAT, which is an estimate of aptitude or a predictor of probably future performance. It certifies that CDP holders actually *know* something, know specific things they ought to know to be professional.

No exam can test if someone is professional; that is for the ethics committees of the professional organizations. An exam can only test whether an examinee has the minimum qualifications of professionalism: knowledge of the field.

No medical exam tests doctors for patient empathy, no bar exam tests lawyers for ability to preserve client confidences, though these things are clearly required in practice. A certification exam is a statement by a professional society of what its minimum knowledge requirements are. It does not predict success in the field and it does not attempt to discover the examinee's ability or desire to behave in the ethical manner considered professional.

I am currently studying for the CDP exam and it seems to be a reasonable statement of the knowledge a professional DPer should have. I am not at all sure that an exam which correctly predicted "success" would do much to promote professionalism. There are too many successful "unprofessional" tactics for making money.

Also, this takes the decision of what a DPer should be out of the hands of the DPers and puts it in the marketplace. The reason other professions are considered "professional" is that they do not allow the marketplace to rule their notion of what they are.

True professionals decide that they will be something in addition to what the market demands in the short term – doctors must know medicine as well as having a good bedside manner, lawyers must know law as well as keeping clients' confidences.

Viewpoint

Of course, in the long term the marketplace also wants professionals to know their profession, but success is usually determined in the short term. As professionals, we look to the long term, though our current salaries are paid in the short term, and decide that we will cultivate the expertise to make good decisions and the ethics to resist other considerations which would influence us to make bad ones. Clearly, the first requirement is knowledge. Without that, there is no way to act either responsibly or irresponsibly.

Knowledge is what the CDP is about and what it should be about. If we are going to debate on the CDP exam we should focus on the relevance of the knowledge the exam requires.

Susan Lewis is a systems analyst for Arthur D. Little, Inc., Cambridge, Mass.

Readers Respond

The March 7 Taylor Report, "Misforwarded Letter Sets Off Billing Controversy," was about a Massachusetts woman, Marilyn Evans, who received a bill incorrectly addressed to her. When she returned it to the sender, Singer Sewing Machines, she sparked a series of inappropriate dunning letters.

The following responses from two readers indicate the responsibility for solving this sort of problem rests with the data processing profession, but that the profession may be shirking its responsibility.

Writing to the President May Get Desired Result

I read the Taylor Report article, "Misforwarded Letter Sets Off Billing Controversy," and I see Singer Sewing Machines, Inc. has not changed. I experienced a similar problem over three years ago but I was more fortunate. After the usual no response from Singer, I looked up the name and business address of the president and wrote to him. This cleared the matter up in no time.

I would suggest such a technique to Marilyn Evans. But the problem is not hers; it is, as you stated, ours and our profession. – Ballinger B. Moore Jr., Dallas, Texas

It's a Wonderful World Of Credit and Computers

Re: "Misforwarded Letter Sets Off Billing Controversy," you said Marilyn Evans "does not think that the fact that no L. Evans is at the address will stop the credit rating computers."

The October 1972 issue of *Retail Control* published by the Financial Executives Division of the National Retail Merchants Association contained the following statement from an article by a representative of TRW:

"Generally, the problems involve a failure to report correctly, disputed transactions or previously delinquent or problem accounts that have been paid. Along with the problem of initially receiving information which is not accurate, agencies are faced with the additional problem of getting prompt responses when they attempt to verify data. Our basic philosophy is that the information supplied by retailers is correct until such time that the retailer informs TRW to make a change."

There you have the wonderful world of collection, credit bureas and dunning – brought to you by a company deeply involved in developing the "science" of computers. – Robert Kahn, Lafayette, Calif.

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The Professional's Viewpoint

More Description Needed in Descriptive Billing Uses

Joseph T. Rigo, New York ACM ombudsman, recently compiled a report on descriptive billing practices, including recommendations for future action.

The following extracts from the report detail his conclusions.

By Joseph T. Rigo

Special to Computerworld

An ACM NYC Chapter member last fall received a monthly bill from a credit card company including a $15 charge identified only as "FL MT LAMONT," and a $40 charge as "RETAIL PURCHASE."

On inquiry, signed receipts were obtained, and FL MT LAMONT turned out to be the Florence Motel in Missoula, Mont., where the ACMer had stayed one night on vacation three months earlier. The bill was paid.

However, the question of whether the bill, although accurate, was adequate remained, particularly since the dates next to each charge had no connection with the date of purchase.

Trend of the Future?

The bill was handled by the technique known as "descriptive billing" where signed receipts are not returned with the bill. It is known that many firms in many industries are anxious to move into this form of billing, getting away from having to return receipts with bills (country club billing).

Descriptive billing was considered a valid matter for ombudsman inquiry since it seems likely to be a potential source of complaints against computers and computer professionals. People who get bills they can't understand will tend to blame the computer.

The following conclusions and findings come from the initial inquiry into descriptive billing:

- A descriptive bill should be sufficiently detailed so that the person receiving it knows what he or she is being billed for.
- It may be reasonable, but it is not realistic, to expect consumers to keep their copies of their signed receipts so they can be matched against their monthly bills when they arrive.
- If charges are dated, the date should be the date of purchase. It does not help the customer's memory to know what date his charge entered the credit card firm's computer system. In fact, this is a source of confusion.
- More identification is required for small or routine purchases than for major or unique expenses (such as air flights or hotel stays).
- Mere firm identification is not enough, even when the date of the purchase is given. If a firm description is added, e.g., "Jones & Co., Florist," specific details of the purchase may not be necessary.
- Present technology may not support further development of descriptive billing at this time. It is currently prohibitively expensive for a credit card company to specify exactly what was purchased at a large department store.

Given improvements in optical character reading, it may soon be possible to narrow the gap somewhat.

- Billing firms must provide adequate information to support tax and business requirements. Internal Revenue regulations require that purchases be specifically identified. Firm names are not enough.
- Credit card firms generally allow customers 25 days to pay a bill before finance charges are applied. If a customer must send for receipts to verify a purchase and the legitimacy of a charge, this should be considered in determining the length of the grace period.

Letters to the Editor

Lack of Trained DPers: Is It Myth or Reality?

Re: the April 11 front page story on trained DP personnel.

Formal college training may provide in the future a fair labor market from which industry can draw, but many colleges can't afford a sophisticated enough program to equal what industry expects and demands.

For years, institutions of higher learning have been pleading poverty for budget dollars just to run their schools, due to steadily rising administrative costs, so how can they justify a large-scale computer operation?

Second-generation computers and experience do not particularly appeal to employers or smart students these days. On the other hand, many colleges are fortunate enough to be able to afford hardware configurations equal to those found in industry, but employers are still reluctant to hire the new graduate as an experienced programmer, without first putting him through their own rigorous training program. Reviewing this in retrospect, what good, if any, did the college programming course do?

Another significant factor is that during the recent business recession industry did very little if any hiring in the category we'll call programmer trainees.

So consequently when one examines the help wanted sections of any of today's major city newspapers, there are a significant number of opportunities for qualified programmers and analysts who have had one to five years of experience. If there wasn't the shortage, as Afips claimed, maybe that organization has an answer to the statement made by the Advertising Council that the lineage of help wanted advertising for data processing personnel is practically back at the highest level attained during the late 1960s.

The crunch for qualified DP personnel in such areas as real-time teleprocessing, communications networks, data base design, report generation techniques, software development and virtual memory is more evident today than it ever has been before.

Corporations seek and demand people with specific skills in their own industry, i.e., banking, insurance, etc., and these trained individuals are just not available.

Steven R. Weber
Hartford, Conn.

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Contact Between PLC, User Lacking

By Christopher Coddington

Special to Computerworld

Fred L. Forman's "Viewpoint" [Make "Suggestion Direct to PLC," CW, April 11] strikes me as a carefully contrived attempt at discrediting Alan Taylor by ignoring the basic problem.

Like Forman, I do not agree with putting another committee between the user and PLC — but then I do not think, as Forman apparently does, that Taylor ever intended such an insertion.

What he is suggesting is a medium for making public the proposals to PLC, and for making known the desires of the Cobol community. Providing this medium is the basic problem that I see, and that Forman ignores.

Viewpoint

PLC proposals need to be made public at the time they are initially distributed to PLC members. PLC, having no financial backing, cannot provide such a service. Lack of funding, therefore, prevents PLC from being able to notify the user community of pending actions. Taylor is offering a self-supporting method. So much for that basic area.

At the same time I cannot pass over the somewhat irrelevant Forman defenses of PLC against charges of secrecy and lack of user involvement.

Forman's pointing to the *Journal of Development* and the minutes to prove lack of secrecy is absurd. These are both after-the-fact documents, as far as the details of what is contemplated are concerned.

Forman's labeling of 45% of the proposals considered as "non-PLC" is, in my opinion, a corruption of statistics to support a point of view. The figures do not defend PLC from the secrecy charge, but might show just how much (or how little) PLC is in contact with the user.

	Jan.-Oct. 1972	Jan.-Feb. 1973
PLC-member proposals	90	26
PLC-affiliated organizations:		
Ansi	26	12
Eema	11	1
PLC-Task Groups	10	2
Japan	1	—
Share	—	2
Non-PLC organizations	4	4
The Actual Non-PLC Organization Number	4 out of 138 or 3%	4 out of 47 or 9%

Figure 1. The proposals considered by PLC in two recent periods analyzed by their source connection with PLC. (Source: October 1972 and February 1973 PLC Minutes)

After analyzing the details in the minutes of two recent PLC meetings (Figure 1), I find that under 10% of the proposals considered were from really non-PLC sources as against Forman's claimed 45%.

The reason for the difference between my figures and the ones given by Forman is that I exclude from the "non-PLC" category proposals made by PLC members who have since resigned, proposals from PLC-affiliated organizations and comments addressed to PLC task groups that are not valid PLC proposals.

Regretfully, I must note that the results do indicate a lack of real contact between PLC and the user.

Methinks Forman protested too much. Rather than being so defensive of PLC, Forman would do well to work toward more involvement of the Cobol community.

Coddington is a former member of PLC.

Letters to the Editor

The Name Game

I submit that Robert M. D'Unger's problem [CW, March 21] is not his apostrophe but his vanity. I know whereof I speak because I have had a similar problem. The solution is to be flexible. Although I normally sign my last name with a space and two capital letters, when I fill in my name on data forms I omit the space and use all caps.

Robert La Fara
Robert Lafara
Robert LAFARA
Indianapolis, Ind.

Hidden Factors

I would like to continue the discussion started by Marvin S. Ruth [Letters to the Editor, CW, March 28] regarding programming languages, and continued in the April 11 issue by John R. Thomas.

It should always be remembered that cost of programming must always be considered, but this consideration must not only contemplate the hours of programming coding time. Other factors that must be considered are: computer time used in compiling, memory size of the compiled program, operating efficiency of object program and ease of maintenance and modification.

Marvin Blumenfeld
New York, N.Y.

Women's Rights, Now

I would like to call attention to the editorial cartoon in the April 11 issue of *Computerworld*. In view of CW's concern for the rights of individuals with past criminal records it might also take into account women's rights.

The cartoon admittedly is not glaring in its discrimination, but is rather an example of the more insidious form of prejudice.

It is true that "nosey-bodies" can be of either sex; however, I must call into question the use of men for the professional characters and the women for the personality-traits. If CW's editorial position is one of people's rights, please let it extend this to all people.

Susan Wachtel
New York, N.Y.

Salem Does It Twice!

The article on Page 3 of the March 21 issue on Salem's selection of hardware clearly illustrates not only ambitious salesmen, but stupidity on the part of the government or council.

I would bet my last dollar the city had no formal plan, no time-table established, no description of the applications to be run, etc. Let's face it — it costs money to install computers — and small firms and local governments do not have the expertise (generally) to isolate these prior to making a commitment. It's clearly a poor business decision — and Salem rectified it by doing it twice!

T.J. Decker
Fort Lauderdale, Fla.

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Random Notes

Nova Users Gain Mag Tape, Cassette Support With SOS

SOUTHBORO, Mass. – The Stand-Alone Operating System (SOS) has been enhanced by Data General Corp. to allow Nova users to store and retrieve data and programs from 9-channel magnetic tape units and Nova Cassettes. Previously the only media supported by SOS were paper tape or punched cards.

SOS was created for Nova users who do not need a disk-based operating system. The new additions mean a user can store, edit, assemble and do relocatable loading of programs under SOS without being tied to relatively slow-speed paper tape. Programs written under Data General's Real-Time Disk Operating System (RDOS) can run under SOS.

Security Data Bases, Portfolio Management All Part of 'Fiss'

PARAMUS, N.J. – Users in the investment community can access fundamental and technical data bases on securities, and account for and evaluate securities in the portfolios under their management, through the newly inaugurated Financial Information System Services (Fiss) on the ITT Data Services network.

Fiss includes the Start financial system of stock exchange data bases, and the "financial language" needed to access the Start data files. The Asset portfolio accounting system and the Bid Municipal Bond Management System are also part of the overall Fiss operation.

ITT Data Services is at P.O. Box 402, 07652.

Sabretalk Trimmed by 100K

MIAMI – A new version of Sahretalk, the high-level language used in conjunction with the Airline Control Program (ACP) compiler, has been released by American and Eastern Airlines, which developed it jointly. The enhanced version requires only 140K bytes of core, the airlines said.

Although ACP was originally developed for use in the airline reservation field, it has been adapted by other users to serve financial companies, a metropolitan police department and a large car rental company.

The new Sabretalk may be purchased for $95,000, but lease plans are available. Eastern's Computer Science Division is at Miami International Airport, 33148.

Correction

Output from the Plotter option of Boole & Babbage's Configuration Utilization Evaluator (CUE) package [CW, April 18], is produced directly on a line printer along with the more conventional tabular-style CUE reports. Special plotting equipment is not required, a company spokesman emphasized.

Purchases Can Hurt Morale

Source Code Must Accompany Packages

By Don Leavitt
Of the CW Staff

CHICAGO – Bringing a software package into an installation from an outside source can have some psychological impact on the user's programming staff, but good management should be able to minimize an undesired effect, all three speakers on the software evaluation panel agreed at a Computer Caravan/73 session here.

They also agreed that availability of source code, during the evaluation period, after the software is purchased or leased, is an absolute essential.

Review of source code is one way to determine how efficient the programming is during evaluation, and availability of the code after the system has been brought in is vital to proper maintenance, they said.

Even though all three had acquired software outside, they differed sharply on whether outside vendors should be considered "as a matter of course" whenever any new project was being contemplated.

Both Jack Driscoll of International Harvester Co. and Paul Weininger of Washington National Insurance Co. said they considered outside sources as natural extensions of their in-house staff capabilities.

Howard Gielow of Alberto Culver Co. disagreed, explaining that "no one has exactly what you want; the in-house staff should be capable of building any applications you need; and they need the self-assurance that management looks to them first."

Evaluation Procedures

While they were generally inclined towards considering outside sources, both Driscoll and Weininger had developed fairly hard-nosed evaluation methods.

Driscoll said he follows several steps.

Triggered by a request for a new application, he attempts first to determine both the actual immediate needs and the possible future extensions of the proposed system. He then estimates the in-house costs of developing the system and its potential life-cycle.

Only then does he begin to make a survey of the available packages. "Unless I know how much my in-house costs might be," he explained, "I have no means of knowing whether proposed package costs are reasonable."

Weininger had developed a more elaborate evaluation structure at Washington National, but it also starts with an evaluation of whether the in-house staff can do the job, at what cost and in what time-frame. If those parameters are acceptable to the requesting department, the work is done in-house.

Otherwise Weininger prepares a request for proposal which he sends to all software houses that appear to have products appropriate to his needs. In his solicitation, Weininger requires all potential vendors to tell him specifically how their packages will meet his needs.

The various proposed packages are posted to a "payoff matrix," which Weininger admits is a very personal procedure, but it does provide an orderly way of assigning weights to various elements in a desired system.

Only after all the screening is done in-house are the remaining potential vendors allowed to make their presentations, Weininger said.

Multiple Data Lists Controlled In Single Disk Area With 'LMS'

CHICAGO – IBM 360 and 370 users can eliminate much of wasted space normally encountered with disk-based sequential or partitioned data sets by sharing a single disk extent area among many independent lists, all controlled by the List Management System (LMS) from Jefferson Financial System, Inc.

Part of LMS's efficiency lies in the fact that, unlike other chain-file techniques, it does not use logical record address pointers. Records are connected at the block level only, a Jefferson spokesman explained, and a single list requires a minimum of one data block but may be expanded to utilize any available space.

Application programs utilizing LMS can read, write, update, insert and delete records beginning at either end of a list, and can also direct changes in processing direction at any point.

The records within a given list must be fixed length, but the lengths may differ from list to list. Users may process an unlimited number of lists within a given program and LMS manages all buffering and deblocking. The system can control 10 buffer areas under one program but nothing within LMS prevents any of these buffers from being used by several different lists during the running of a single program, a Jefferson source noted.

Under LMS, users can connect lists into hierarchical structures such as trees; product structure files; outstanding order files; and other business-oriented relationships. This facility to link lists together logically makes LMS a "powerful tool for state-of-the-art data base design," he added.

LMS is available in both a DOS and an OS version and can be called from a Cobol, Fortran, PL/I or BAL "host program."

The program structure enables LMS to execute in as little as 6K bytes of storage, exclusive of buffer space and user program "list tables"

The system is available under three pricing schemes: leases of $500/mo, $5,000/yr or outright purchase for $20,000 including a maintenance agreement. All three policies include system documentation and availability of a free two-day seminar at Jefferson's office, 177 N. Franklin St., 60606.

CDC 3000 Series to Be Enhanced By MSOS 5 and Related Hardware

MINNEAPOLIS – Users of CDC 3000 medium-scale CPUs will be able to run four on-line jobs, batch processing and I/O operations simultaneously when a new multipartition mass storage operating system (MSOS 5) becomes available – for a price – early next year.

A handful of hardware modifications scheduled to be released and used with MSOS 5 will also increase the processing capabilities and the size of several of the CPUs in the series.

Availability of the separately priced MSOS 5 will not affect the availability and continuing development of the current, single partition MSOS 4, a CDC spokesman stressed. The new operating system is more powerful than many 3000 Series users need and there is no reason for them to shift to it from the free system, the company continued.

For those who do use it, MSOS 5 will provide faster interrupt responsiveness, expanded job control and reduced core requirements for the operating system itself. At the same time, a hardware change will allow memories on the 3100, 3150 and 3200 CPUs to be extended to 262K alphanumeric characters, or 65K words – twice the maximum size previously available.

Other hardware modifications that should be ready with MSOS 5 in the first quarter of 1974 include logic to handle ANS Cobol and to expand channel capabilities on the 3100 and 3150 systems.

Although the general policy of charging for the hardware and software facilities related to MSOS 5 has been acknowledged by the company, no specific prices have yet been announced.

For MMS General Ledger Users 1973 Will Be A Healthy Year.

Since January, 15 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the billion dollar class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

So they chose the MMS General Ledger. A software package – for companies who need the best financial systems to give them the strength to grow.

The reasoning is simple: it costs less to use a proven package (more than 65 users have installed it in the past three years). And it fits your needs rather than the other way around.

For MMS General Ledger users, 1973 will be a healthy year. Call or send in the coupon today. Here's to your health!

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Geared to Worker Reports

Package Aids Project Simulation, Control, Analysis

CHATSWORTH, Calif. – A generalized project planning and control system, Procon 3, includes a forecasting process that is simpler to use and more comprehensive than Pert, according to the developer, Craig & Nichols.

The system, which requires 100K bytes on a 360 or 370, also supports a simulation facility to test the effect of proposed changes, a two-way channel of communication between workers and managers, and project analyses in either bar chart or graph form.

The system starts with the entry of an experimental plan using just as much detail as the planner can provide. Through simulation he refines the plan, taking into account schedule, budget, cost and availability of personnel to work on the project.

Once the plan is formalized, it is used to prepare assignment sheets for each employee at the start of each reporting period. These sheets outline specifically what portions of particular projects are to be done and how much time these efforts should require.

At the end of the reporting period, the employees report hack to Procon 3 what they actually accomplished and how long it required. If actual progress fails to match projected progress, the type of work and hours assigned will be modified in the next round of assignment sheets to reflect the slippage.

A project analysis report serves as the project leader's basic planning and control tool. It generates a schedule and a budget for a proposed project, and aids in identifying problem areas and forecasting the impact of slippages on remaining segments of the project.

As part of its support for planning, Procon 3 includes a user-defined "dictionary" of resources available and costs. This forms the first checkpoint on any proposed plan and the system immediately warns the user of any basic omissions in his specifications.

The system operates under either DOS or OS/360. It is currently available for $11,500 which includes source code, reasonable supplies of various manuals, five days of on-site guidance and one year's maintenance.

Craig & Nichols is at 20061 Hiawatha St., 91311.

BCS Creates Network to Link CTS and Mainstream Services

DOVER, N.J. – The BCS Network, recently implemented by Boeing Computer Services Inc., provides low- and medium-speed terminal users in 15 metropolitan areas local phone connection to either Conversational Time Sharing (CTS) or Mainstream remote computing service.

CTS, based on a 360/67 in Wichita, Kan., enables users to work interactively on problems that require large amounts of core. The service supports what BCS calls "the most powerful editor available" from any time-sharing vendor, and two or more variations each of Basic, Fortran IV, PL/1, ANS Cobol and Assembly language processors.

Mainstream installed on a 370/165 in McLean, Va., is BCS's "production mode" service but it too supports conversational editing of data. This facility can be extended, a spokesman noted, to allow conversational modification of source decks on file before they are submitted for compilation.

Mainstream accepts hoth low- and medium-speed transaction-type data entry, and the loading of batched data at medium-speed. The low-speed service (up to 120 char./sec) is supported under a BCS-modified version of TSO; the medium-speed work is handled by Hasp.

Key to the effectiveness of Mainstream, BCS said, is the Job Stream Manager (JSM) software that works in conjunction with OS/360 to process jobs in accordance with the service time period required by the user. It also sorts jobs by type and priority to establish an optimum processing schedule, the company said.

Low-speed service is currently handled directly through user-initiated local phone calls to BCS branch offices. For the present, medium-speed service is provided through a "call-back" arrangement; BCS places a call over its Out-Wats lines to the user who needs the faster service.

The BCS Network includes more than 200,000 "channel miles" of AT&T leased lines, and is available effectively from coast-to-coast. BCS headquarters is at P.O. Box 708, 07801.

ISA Issues Standard For Fortran Usage In Process Control

PITTSBURGH – The Instrument Society of America (ISA) has recently released a specialized Fortran standard for industrial computer or process control systems, so that users in that area of DP can have a common way of handling operations.

The new standard, ISA-S61.1, includes Fortran statements that conform with the American National Standard Fortran, and no changes in standard Fortran syntax are intended, according to ISA.

The new documents presents external-procedure references for use in the process control area. These references, a spokesman explained, should permit interface with hoth executive programs and process I/O functions, and support manipulation of bit strings in ways that are perhaps unique to the industrial environment.

Both that environment and the ANS Fortran standard may change, the society noted in a preface to its standard, and ISA-S61.1 can reasonably be expected to be updated to keep pace with any such changes. The move to metric measures was cited as one area in particular that could be expected to impact the standard in the near future.

Requests for copies of the standard ($3 each) and comments should be addressed to ISA at 400 Stanwix St., 15222.

Before
Our May 30th **Preview Issue** (B & W close May 18th. Color Close May 11th)

During
The June 6th **Show Issue** (B & W close May 25th. Color Close May 18th)

After
Our June 13th **Wrap-up Issue** (B & W close June 1st. Color Close May 25th)

Whether or not you're going to The National Computer Conference, *Computerworld's* last-minute, complete coverage of the new, consolidated show is must reading–including the latest information on the wide variety of new products which will be displayed. Only a weekly newspaper can give you such complete and up-to-date coverage. And *Computerworld* is the only newsweekly for the computer community.

NCC is not a protest group.

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How a lot of different people are cleaning up with Honeywell's Series 2000 computers.

Honeywell's Series 2000 computers are a family of high-performance systems in the small-to-medium-scale range – from the entry-level 2020 system (with monthly rental about $1,900) to the large 2070 system (with monthly rental about $30,000). They're a family with unusual strengths in important areas like operating system software, data communications hardware and software, peripherals capability, and data base management techniques.

What really makes Series 2000 special and so popular, is its dramatic cost-effectiveness. As a result, more and more companies and institutions in just about every industry, and of just about any size, are discovering that Honeywell's Series 2000 offers the most practical and economical answers to their data processing needs.

Here are eight examples:

An auto manufacturer relies on Honeywell computers at manufacturing and assembly plants.

A major automobile manufacturer uses Honeywell 2050 and 2060 systems at manufacturing and assembly plants to handle production-related applications. These include accounts receivable, accounts payable, order processing, invoice processing and product material inventory reports. The systems are also tied to a Honeywell communications network that keeps a central computer supplied with information for inventory updating, parts ordering and shortage reporting. A number of applications handled by the Series 2000 systems are critical to continued production, so proven reliability was vital in the company's decision to move to Series 2000.

Big savings bank puts ten branches on-line for improved customer service.

A large-city mutual savings bank (Metropolitan Savings Bank, Brooklyn, New York) uses two Model 2060 systems to provide better service to its approximately 180,000 customers. One computer is dedicated to an on-line teller system that provides instant two-way communications between the customer files and 45 teller terminals at ten branch locations. The system was installed to speed up the processing of customer deposits, withdrawals and related transactions, and to allow the opening of accounts and changes of names and addresses on-line, through video display terminals.

The second system is used for batch processing of reports, mortgage loan accounts and general ledger, as well as for new program development. A separate foreground partition of memory is used to access on-line mortgage inquiry files through CRTs located in the mortgage department. Peripherals and communication controllers can be switched between systems, providing complete back-up for the on-line teller system.

Fastener manufacturer centralizes multiplant operation for improved management information and control.

A multidivision manufacturer of industrial and aerospace fasteners (The Lamson & Sessions Company, Brooklyn, Ohio) employs two Series 2000 systems – a Model 2040 and a Model 2050 – for factory and business applications. Currently the firm uses remote data entry terminals at its major manufacturing centers for off-line data transmission to the computer center. The customer plans to evolve to an on-line information network. The computerized systems provide the company with improved production and inventory controls which are translated into improved customer service and reduced capital investment plus financial tools to more effectively manage daily operations.

Big firms, and not-so-big firms... just about any company or organization can profit from Honeywell's Series 2000.

State department of education uses computer to handle large volume of school data.

A state department of education (State of Ohio, Columbus) keeps its Model 2050 system working on three shifts to process a heavy load of statistical and recordkeeping chores. A major share of this workload involves accounting applications such as funding, tax base computation, student population, personnel and salaries for the state's 621 school districts. In addition, extensive files, such as teacher certification records, are maintained on the computer. To speed its workflow, the department makes use of data communications under control of OS/2000. CRT and teleprinter terminals are used for data collection at critical locations. A pilot project has also been started by the department to make available the power of its 2050 system to school districts in rural areas unable to afford their own systems. A remote Model 5 intelligent terminal communicates with the state's computer for processing the traditional accounting requirements plus student scheduling, grade reporting and student attendance.

Southern newspaper uses computers for production efficiency and quality control

A large Southern daily newspaper (*St. Petersburg Times* and *Evening Independent*, St. Petersburg, Florida) uses two Model 2050 systems. One handles the paper's business tasks such as advertising billings, maintenance of circulation files and payroll. The second is dedicated to newspaper production assignments. It operates in tandem with two Honeywell minicomputers and performs copy hyphenation and justification and related work. The paper is currently converting its production work from off-line terminals to special CRT terminals that will handle both editorial and advertising copy composition on-line. A *Times*-developed programming technique enables the operator of already installed terminals to precompose display ads on the terminal's CRT. After composition by the terminal operator, the ad is computer-processed for hyphenation, justification and insertion of the function codes necessary to drive the photocomposition machines. The Honeywell 2000 computers are an important part of the paper's program to completely convert to cold-type composition and offset printing by 1975.

Distributor depends on computers to achieve inventory control and provide customer service.

A large wholesale tobacco and candy distributor on the West Coast (Glaser Bros., Vernon, California) has attained its leading position through emphasis on superior customer service and effective inventory management. Recently the firm installed dual 2040 systems to keep pace with its fast-growing business and increase its computer management capabilities. A newly implemented sales order processing system validates customer and item information, checks and allocates inventory, computes discounts and taxes for invoicing, and prints a combined warehouse pick-list and total customer invoice.

In addition, the system provides customer sales analysis; salesman analysis; commodity and brand movement analysis; inventory status; purchasing information; credit analysis; accounts receivable aging and statements; and daily sales, cost and profit by item, commodity group, branch and company.

Paperless system is goal of progressive hospital

A 592-bed hospital (Parkview Memorial, Fort Wayne, Indiana) is using a Model 2050 system as it builds toward the ideal of a paperless hospital. By eliminating the redundant writing and recording of patient services that occur throughout the institution, the hospital plans to relieve doctors, nurses and other professional medical personnel of unnecessary clerical work, thereby making possible an improvement in productivity. A real-time data base management system is being implemented, with the data base to be accessed through remote CRT terminals for applications such as patient accounting, payroll, personnel, payables, inventory, general ledger, property ledger, census, medical records, pathology, patient charts and results reports.

Commercial bank provides broad spectrum of services to branch and subscriber banks.

A 14-branch commercial bank (Framingham Trust, Framingham, Massachusetts) uses a 2050 system to provide comprehensive on-line and batch processing services to its branches and subscriber banks. Bank personnel use CRT terminals to communicate over leased telephone lines with central information files. The video system provides demand deposit, savings, certificate loan and general ledger processing. Inquiries on customer accounts produce cross-referenced information from the central information file, showing the customer's total relationship with its bank for these applications. Complete hard-copy backup is generated automatically for all transmitted information. Many expensive and bulky reports are no longer produced, having been replaced by video displays. The on-line system frees bank personnel from many time-consuming procedures that are necessary with batch operations and conventional data preparation methods.

Seven ways Series 2000 computers are trained to respond.

1. *On-site changes give the user a low-cost way to increase power and performance without replacing his current processor.* Purchase-only versions of Series 2000 central processors can be easily modified at a user's site by augmenting memory and adding memory-speed and input/output power modules.

2. *The DATANET 2000 front-end network processor off-loads the central processor of its communications overhead and maximizes information throughput.* This advanced miniprocessor offers an extremely simplified, low-cost way to expand the computer into an information network, thereby increasing information processing capability dramatically.

3. *Honeywell's new cost-effective 7000 Series terminals get more kinds of communicating done faster at lower cost.* Featuring microprocessor-based designs, the new line includes a low-cost, high-performance CRT terminal, and a passbook banking teller terminal.

4. *Dual disk access gives users big throughput gains and increased availability of data and programs.* A new dual-access technique allows two transfers to take place at the same time on a single disk subsystem. This can make a significant difference where multiprogramming is heavily used and continued concurrent access to at least two spindles on a disk subsystem is required.

5. *Series 2000 includes a full complement of cost-effective peripherals, with special emphasis on disk drive flexibility and performance.* Several types of drives offer two or three spindles per control, and are expandable to eight per control. Fast access times and high data transfer rates make these devices especially well suited to Series 2000 systems.

6. *The OS/2000 operating system provides for as many as ten job operations plus five transcription routines to be processed concurrently.* In addition to dynamic partition management (shifting) and scheduling priorities, a user-selectable dispatching priority scheme governs the amount of processor time received by jobs and allows for maximum system control and throughput.

7. *Series 2000 relates specifically to the user's business environment.* Honeywell's industry-specific system design and pre-coded application packages for a variety of industries have enjoyed wide acceptance due to their emphasis on helping to meet business needs.

A Computer Company You Can Believe In

Honeywell Information Systems is itself a success story. We have grown, because we know our growth depends upon our ability to help you grow. Series 2000 is a good example of how we're helping businesses grow.

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COMMUNICATIONS

ata Briefs

e-Only Teleprinter ile on RCA Lease

Y HILL, N.J. – RCA Service introduced a receive-only patible teleprinter for $47/mo. by Extel, the unit operates at 00 word/min and prints with ensitive paper that can generate ec copies. The teleprinter can ve-level Baudot code and an Ascii model is also available at price, a spokesman said.

minal is compatible with Bell equivalent data sets. A ribbon-model will be available in May o, a spokesman said.

el unit is a direct replacement Model 28 RO TTY which costs rom RCA and up to $67/mo, or m Bell operating companies, the esman said.

d-state terminal is available in ee weeks. Higher-speed models receive versions will be available A said. Monthly prices include e maintenance.

-Type Terminals for Mini

O, Texas – Z-Com Electronics, dded machine-type terminals to ced with a minicomputer.

del R100P can print out infor- n an adding machine tape, while D has an electronic display out- g the conventional numeric keys with calculator functions such as tion and division, an operator te accounts on-line with the

minals are supplied as part of a ystem that includes the mini, a 314-type disk storage unit and a sport for entering mag tape to a host computer system.

cal" system including 40 R100D , mini and disk storage for 25K of 20 characters each) would ut $31,300 or $940/mo, a n estimated. The display unit ut $10.50/mo and the printing costs $15/mo.

is at 7700 Alabama, 79904.

Data Sets?

WASHINGTON, Pa. – The Tele- Division of Ambac Industries a set tester that can be used with nchronous or nonsynchronous

the 7914A, the unit is com- with the Western Electric 914B erates a 63-bit pseudo-random n addition, the tester can gener- hold, space hold or dotting for performance evaluation. Bit unt is indicated by a two-digit nd overflow indicator.

14A costs $495. Tele-Dynamics Virginia Drive, 19034.

'Health Care Utility'

Dial-Up Net Cares For 'Sick' Hospitals

By Ronald A. Frank
Of the CW Staff

CEDAR RAPIDS, Iowa – Smaller hospitals suffering from deficiencies in in-house DP capabilities can receive good care from a "health care computing utility" called Executive Data Systems (EDS).

In addition to being a service bureau for its hospital customers, EDS operates a distributed computer/communications network that provides the medical facilities with on-line administrative, financial and some medical processing.

National Network

The heart of the EDS network includes dual Burroughs B3500s with 322M bytes of disk storage and an EMR 6135 front-end processor. The 6135 accepts inquiries and other messages from a national network of more than 60 Datapoint 2200 intelligent terminal systems.

The 6135 polls the network of terminals using Wats lines. Incoming data to the Cedar Rapids DP center is transmitted at 1,200 bit/sec and inquiries, according to priority, are entered into a "mailbox exchange area" in disk storage, according to Ray Fergus, EDS vice-president.

The B3500s "watch" the disk area and dynamically reallocate job priorities depending on the incoming traffic.

Each hospital joining the EDS network receives a complete turnkey capability including software for the 2200s, operator training, documentation and anything else required to give the institution a remote DP capability.

"We treat each 2200 as a remote mainframe," Fergus said, adding that most hospitals batch their non-priority data during the work day. The terminals are then polled at night in unattended auto-answer modes. The B3500s at the EDS DP site update accounting records, billing, payroll, medical records and any other data files maintained by the host CPUs.

Although some medical processing is already on the network, Fergus plans real-time patient monitoring and related critical functions in the future. Most of the hospitals build up their DP capabilities with more routine administrative and clerical recordkeeping functions.

The health care utility services hospitals from coast-to-coast in 15 states.

As an EMR user, the company wondered what would happen when Univac took over the front-end supplier. But any fears were unfounded, Fergus said. If anything, Univac has "more muscle," and support has continued without problems, he added.

Although each hospital becomes a part of the same EDS network, its terminal-oriented DP capability is custom-tailored to meet specific demands. A typical program written for a hospital might tell an operator how to admit a new patient. This would include instructions on filling out the patient admission forms on the CRT included with the 2200 terminal.

Each hospital is constantly refining its DP capabilities as it adds new functions or changes its requirements, Fergus said.

Before going to its present hardware, EDS had a 360/30 and later a Model 40 connected to a network of IBM 1050 terminals.

One of the advantages of the 2200s and the EMR 6135 is that either system can poll the other depending on the priority of data. The result is a network that combines the advantages of remote batch polling with interactive inquiry/response when necessary.

Each 2200 has a built-in modem that communicates with the 6135 through phone company DAAs. The dial-up net replaced a private line system that was used with the 1050s.

Hazeltine $49/Mo CRT Terminal Can Transmit up to 9,600 Bit /Sec

GREENLAWN, N.Y. – A low-cost interactive CRT unit designed to replace TTYs has been introduced by Hazeltine Corp.

The Model 1000 terminal will cost $49/mo on a 12-month lease with maintenance included. Although described as teletypewriter-compatible, the CRT can transmit at higher speeds ranging from 110- to 9,600 bit/sec. Any two of the 10 possible data transmission speeds can be included into an individual display, and either of these two speeds are switch-selectable from the keyboard.

The 1000 handles 64 Ascii alphanumerics and symbols and has an optional lower-case character set of 31 characters. The 960-character screen generates a 5 by 9 dot matrix character instead of the smaller 5 by 7 matrix to allow for certain characters normally "written below the line," such as a "J," a spokesman said.

Parity generation and checking are included in the 1000 and a parity error will cause an indicator to light and a question mark to be generated in the character position on the screen.

Designed primarily for conversational applications, the display will also be cost-effective in mini-based systems which now utilize a higher-priced TTY as the console "typewriter," the spokesman said. The 1000 will include an optional RS-232 interface for peripherals such as a printer and a tape cassette unit. The tape unit will be introduced soon, the spokesman said.

The CRT can operate in either half- or full-duplex mode and is compatible with Bell 103A-type data sets or independent equivalents. An optional Bell 202C data set capability will be available.

First deliveries of the 1000 are scheduled for June. Purchase price for the unit is $1,790 from Greenlawn, 11740.

Honeywell Provides 600/6000s With Remote Network Processor

WELLESLEY HILLS, Mass. – Honeywell has introduced a remote network processor, the Datanet 700, designed for use with Series 600/6000 CPUs.

The 700 can service up to 128 lines operating at speeds up to 50 kbit/sec. With input/output interleaving, the 700 can handle multiple data streams. The processor has a cycle time of 775 nsec for a 16-bit word consisting of two eight-bit characters. Memory is expandable in 8K increments to 131K characters. Up to eight peripherals can be attached including card systems, mag tape or line printers.

Load Cobol, Fortran

The 700 will enable a host CPU to "deploy" high-performance remote batch, remote job entry and remote message concentration capabilities as part of a 600/6000 system. Users will be able to load Cobol and Fortran programs at the central site, compile and run them on the mainframe, and print out the program listings at a remote site equipped with a 700.

An RCP-702 configuration, including 4K-word processor for remote batch and remote job entry, will be available in the third quarter of 1973. It includes a teleprinter, card equipment and a single-line communications controller.

The RCP-707 multifunction system with "remote network processing capabilities" will be available in the second quarter of 1974. It will include remote-message concentration, concurrent remote batch, remote file maintenance and OS/700 features.

Prices will range from $1,000 to $2,800/mo on a five-year lease or $40,000 to $120,000 on purchase.

he AJ 630 was designed for the time- g user who needs a full 132-char- line width and wants quiet, reliable ion. Actually we offer 140 charac- id a number of other features which perienced user appreciates. ”
Gerard W. Schoenwald, Director of Marketing

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Bits & Pieces

Punched Tape Reader Used With Minicomputers

WORCESTER, Mass. – A high-speed punched tape reader and interface package for minicomputer users is available from Decitek.

The Decitek universal reader handles 300 char./sec step-at-a-time asynchronously, and 600 char./sec stop-on-character.

Paper metallized polyester or paper-polyester tapes of 5-, 6-, 7- or 8 levels – with either advanced or center feed hole – can be read interchangeably.

Prices vary around $1,100 – depending on the minicomputer – from 15 Sagamore Road, 01605.

Contact Printer Uses Film

GLENDALE, Calif. – PSC Technology, Inc. has unveiled a high-speed contact printer, Model CP70, for 16mm, 35mm and 70mm black and white film.

Printing speeds up to 12 ft/sec for 70mm, and 24 ft/sec for 16- and 35mm are provided.

A wide variety of film formats can be accommodated through the use of interchangeable film transports, the firm's spokesman said.

Cost of the CP70 starts at $8,000 from 1200 Grand Central Ave., 91201.

Stereo, Digitized Table Combined

OGDENSBURG, N.Y. – Users with both stereo plotter and digitized table applications are offered the Gradicon Model GDC/5000 from Instronics, Inc.

The GDC/5000 is a digitizer electronics console which combines in a single cabinet a full alphanumeric keyboard, verifier, 3-axis display, fixed address, 3 axes preset, O modes of operation, utility counter and magnetic tape unit.

This unit is specifically designed to facilitate the digitizing of three-dimensional photographs, using the stereo plotter. However, through a switch the user can convert the unit to operate with a standard Gradicon digitizing table, the firm said.

The GDC/5000 is available for $16,000 from Suite 204, Bridge Plaza, 13669.

Graf/Pen Users Go Remote

SOUTHPORT, Conn. – A remote operations buffer, which enables signal output from the Graf/Pen sonic digitizer and other devices generating output signals in binary codes at TTL levels, to be transmitted over cables up to 100 ft in length, is available from Science Accessories Corp.

Functionally, the buffer amplifies each of the output-signal lines individually to overcome cable capacitance and to preserve the original waveforms.

The 1371 Remote Operations Buffer is priced at $650 from 65 Station St., 06490.

Triple Capacity of 2319

360/50 Users Offered 3330-Type Disks

By Michael Weinstein

Of the CW Staff

SAN FRANCISCO – IBM 360/50 users can attain 370-like performance through a modified 3330-type disk storage subsystem from Itel Corp. The disk system gives 360/50 users more than three times the storage presently available.

The difficulty in providing a 3330-type capability to Model 50 users stems from the 806 kbyte/sec data transfer rate which is standard for 3330s. As this rate is too fast for the 50 central processor to handle, Itel redesigned its 7330-2 drives down to a 625 kbyte/sec transfer rate.

Operationally this means Itel's 7330-2 drives have a slower rotational speed than the standard 3330s. Despite the slower rotational speed, access time for the drives is 2.7 msec compared with the 3330's 3 msec access time and 60 msec for 2319s.

In terms of storage capacity, the Itel subsystem offers Model 50 users more than three times the volume presently possible with 2319s. For example, a Model 50 with 16 2319s gives the user 466M bytes of on-line storage while the same 50 with 16 7330-2s provides 1.6 billion bytes of storage.

In addition, a user with a Model 50 with eight 7330-2 drives would have 800M bytes of storage. The cheapest IBM standard configuration offering about the same amount of storage and throughput is a 370/145 with eight 3330s. The 145 is about 50% more expensive than the enhanced 50, Itel said.

According to tests run by Itel, a 50 with Itel's additions is about 10% to 15% slower than the 145.

The other portion of the disk subsystem is the 7830-2, which is necessary to attach the drives. It is essentially a controller mechanism that makes the 50's selector channel act as if it were a block multiplexer channel, a spokesman said. This process allows the 50 user to take advantage of rotational position sensing, command retry and data capacity, he added.

Architecturally, the 7830-2 is a modified Itel 7830, used for attaching Itel's 3330-type disks to a Model 65.

On a two-year lease the controller costs $3,645/mo. Up to 16 drives can be attached to one controller at $490/mo/drive.

Itel is at One Embarcadero Center, 94111.

Telex Adds High-Density Tape Drives

TARPON SPRINGS, Fla. – Telex has added four new models to its 6420 magnetic tape series and announced a new control unit.

Three of the models – 6420-44, 6420-66 and 6420-88 – have a 6,250 byte/in. recording density. With the Telex offering, users of the higher end of the 360 series and 370 users – from the 135 up – now have a choice of IBM, Storage Technology and Telex for drives with 6,250 byte/in. density.

The fourth drive is a 1,600 byte/in. unit with increased tape speed.

The Telex drives (like IBM and STC) feature increased data rates and faster access time. Data can be transferred to the host CPU at speeds up to 1.25 Mbyte/sec compared with data transfer rates in the 300 kbyte/sec range for 1,600 byte/in. density drives.

Read/write time is about twice as fast as the earlier 1,600 byte/in. models.

As an optional feature, the Telex drives can be equipped with dual-speed capability. This feature allows users to switch from the higher 6,250 byte/in. density to the standard 1,600 byte/in.

Of the three sources for the higher density tape drives only STC is offering units that allow the user to also switch the data transfer rate [CW, March 21].

To use the Telex drives, users must also obtain the Telex 6803-11 controller which is a replacement unit for IBM's 3803-2 controller, Telex said.

Prices for the Telex models range from $540- to $680/mo on a one-year lease, about 15% cheaper than the IBM models and about the same as the STC units.

The three 6,250 byte/in. density drives are slated for delivery in the second quarter of 1974. The 1600 byte/in. drive with a tape speed of 225 in./sec and data rate of 360 kbyte/sec will be available this June.

Tape Drive Model	Cost/mo	Density	Data Rate kbyte/sec
IBM			
3420-4	$635	6,250 byte/in.	470
3420-6	$722		780
3420-8	$801		1,250
Telex			
6420-44	$540	1,600 byte/in.	470
6420-66	$615		780
6420-88	$575		1,250
6420-8	$575		360
Controller			
IBM 3803-2	$1,040	**	
Telex 6803-11	$940		

**For about $20/mo more, both IBM and Telex will provide the capability to switch between the two densities.

Comparison of Telex, IBM Tape Drives

Two Printers Support Medium, High Speeds

ANN ARBOR, Mich. – Sycor has two printers for use with its Model 340 intelligent terminal to support medium- and high-speed print needs.

The Sycor Model 3486 printer can handle 300 line/min on a 132-char. line or 600 line/min for a 72-char. line.

The Model 3481 is an 80 char./sec printer for medium-speed applications.

Both models are capable of printing one original and five copies in either batch or unattended communications mode.

The 3486 is available on a yearly lease arrangement for $470/mo, including maintenance. The 3481 is available for $175/mo from any Sycor branch office or 100 Phoenix Drive, 48104.

Firm Takes Good 'Stock' of COM

NEW YORK – The installation of a computer-output-microfilm system has brought considerable savings – in time, money and space – to Pershing & Co. here.

Pershing provides trading, clearing, research and communications support for over 50 stockbrokers and uses the COM unit to produce stock records and transaction reports. Connected on-line to two 360/50s, the unit is about eight to 10 times faster than the printers used previously, according to Harry Buonocorri, vice-president of the firm.

In addition, the COM unit was less expensive than acquiring another impact printer which would have been necessary to handle the firm's growth, he said.

The rental for the Memorex 1600 system, used to produce four reports daily, is less than that required for former service bureau microfilming of only one of the reports, he claimed.

The firm now stores six years of records in a space formerly occupied by only nine months of less voluminous records, Buonocorri said.

Pershing has been running the 1600 for about three years and is quite satisfied, he said, adding that conversion was relatively simple.

"We changed one card in our program deck, directing the CPU to the COM unit in lieu of an impact printer, and we were ready to run."

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Power Service Inadequate for DP

By Michael Weinstein
Of the CW Staff

Several times a year, especially in cold weather, Hi-Pro Feeds, Inc.'s computer goes down.

There is no warning and no way to determine when the next crash will occur as the cause may be with the power company ten miles away.

This problem is not unique to this Friona, Texas, firm. A large portion of the computer user community faces the same type of power problem.

In Hi-Pro's case the difficulties arose from an especially severe ice storm. Ice collected on the power wires causing them to hang lower to the ground. The winds kicked the wires around, contact between two wires was made and randomly-timed shorts occurred.

For the power company, these shorts were uncomfortable but not considered a major problem for the average user of electricity.

Even if a feeder wire goes completely down, the other feeder wires from the main cable are only down about 500 msec, the time needed for the circuit breaker to reset itself, explained Don French of South West Public Utility.

Five hundred msec makes very little difference in normal customer use as lights will hardly flicker and an electric coffee maker will not even miss a perk. But for computer users 500 msec can be fatal.

Sci-Data, Atlanta, supplier to Hi-Pro, conjectured that users in southern areas were more likely to be hit with line problems because the local power companies did not expect cold weather problems and thus it was not worth the added expense to build more solid poles and use thicker wire.

French denied these allegations, however, stating that there were conventions that guided all power companies throughout the U.S. as to the type of poles and guage of wire used.

But a spokesman for the Boston Edison Co. said he knew of no universal standards. "Power companies are like everyone else," he said, "they use the equipment they have."

He explained that power companies buy wire in great quantities and the wire not used is stored. If a line breaks they go to the storehouse and use the wire nearest at hand.

High Reliability Users

The real problem, is that power companies are not set up to support the needs of the computer and other users who need high reliability.

One new improvement that is beginning to take hold in the power companies is triplex wire. Triplex wire is actually three wires wrapped around each other, the Boston Edison spokesman explained.

The advantage of this approach is that the wire is much stronger and less likely to break under the pressure of falling trees. But, he concluded, it will be some time before this wire is used uniformly throughout the country and even now the major criteria for its use is the incidence of falling trees and not the potential damage a fallen wire might cause a sensitive user.

Users Don't Make Their Case Heard

There are no uniform standards for utility companies that cover safeguards against environmental problems, according to Everette Kreeger of the National Association of Regulatory Utilities Commission (Naruc).

This means computer users have no official recourse if they feel the local power company is providing inferior service.

There is no standard which states poles must be so far apart or wire must be so thick. Each state is governed by its own power commission, Kreeger added.

But, he said, Naruc is aware of the problem for the computer user and has set up a subcommittee, the Staff Committee on Computers, to study the problem.

Unfortunately, the committee has had only two meetings in the past year and as yet does not have an organizational plan, according to committee chairman Harold Howie.

Spokesmen from several state power companies indicated that the utilities companies have lobbies which make their views known while the computer users are not really represented. This means legislation requiring power lines to be put underground, for example, can be opposed by the power companies on the basis of cost with no rebuttal from computer users.

While the state power commissions say they would welcome testimony from local computer users it appears the users have not taken the trouble or do not know of the existence of these bodies.

In a few local regions where concerned users have tried to make their needs recognized they have been successful.

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DUCS-VI will be available during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goran.

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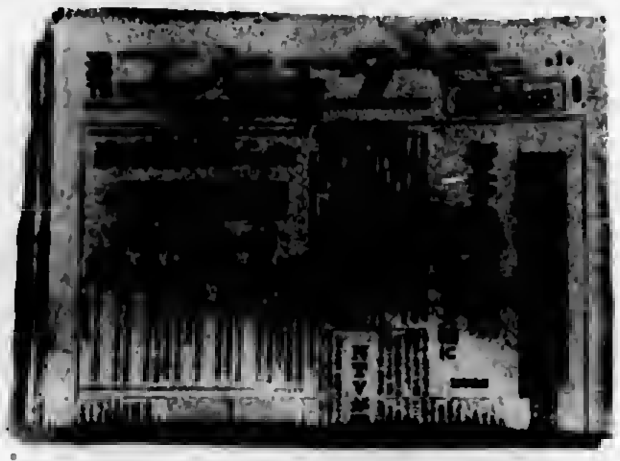
Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld*'s editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.

The Staff of Dempa Computerworld Inc.



Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld*'s U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld*'s President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

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Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Telex Suit Documents Reveal:

How IBM Sized Up Independents, Projected Market

Plug-Compatible Growth Seen

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – At year-end 1970, plug-compatible manufacturers had installed 5,350 tape drives on IBM systems and 2,415 disk drives and the curve for the growth of such installations was clearly up, according to confidential IBM documents released here in the IBM-Telex antitrust suit.

According to the IBM market research, the installation of independent tape drives had begun in 1967 when 200 such units had been installed.

By the next year, users had installed 1,100 of the devices and the figure rose to 2,926 in 1969 and then hit the 5,350 figure the next year.

IBM said the independents had installed 4,000 of the 2400-type tape drives by the beginning of 1971, with the remainder made up of the older 729-type drives made by the independents.

Activity in the disk area started in 1968 when 150 of the 2311-type drives were installed by independents, increasing to 968 independently made units by the next year and reaching 2,060 of the 2311-type drives installed by the independents at the beginning of 1971.

Activity in the 2314-type drive area started in early 1970, the figures showed, and has been an almost straight line since then, according to the charts.

Starting from nothing in early 1970, the independents had installed 2,355 of the 2314-type units by Jan. 22, 1971, and the figure hit 3,006 independent installations by Feb. 12, 1971, according to the IBM charts.

The figures are compiled from weekly activity reports that the market researchers receive from the field.

Competitors' Share

In the tape drive area, IBM indicated Telex was responsible for 50% of all the independent tape installations at the end of 1970, followed by Potter with 40% of the independent units.

The document claimed that IBM had 29,742 of the 2400-type tape drives installed at the end of 1970, and said that the independents' share of the market was 13%.

At the beginning of 1970 IBM said it had 47,298 of the 2314 spindles installed in the field compared with the 3,006 installed by the independents in early February of the next year.

Of this independent portion of the installed base, IBM said Telex had 40% and Memorex 45%.

At the Feb. 12 point, the IBM figures indicated the independents – or "other equipment manufacturers" as IBM likes to call them – had orders of 3,780 of the 2314-type spindles and that Memorex and Telex each had a 37% share of the on-order spindles.

No Blockades Seen

"All the major PCM's (IBM jargon for plug-compatible manufacturers) are moving quickly in this fast-growing market," the IBM document went on.

"There appear to be no substantial engineering, manufacturing, marketing or servicing constraints to prevent rapid growth of their installed base."

However, the document noted that the financing and management of the companies might be the only areas of weakness, even though it could not assess these factors at the time the report was prepared.

Profit Margins

The independents could attain profit margins of 25% to 30% even after cutting prices of various products below those of IBM, the report noted, but added that the independents' chances for profits "will ultimately be determined by the impact of new product and price announcements."

The chances are, the document continued, that "permanent capital to support a rapidly growing level of business may not be available when it is needed."

In the management area, continued growth of the independents "will in itself produce success or failure, dependent totally upon the direction given by PCM management," the document said.

"Management of resource will be the key to product line profitability while attaining forecasted installations, and as a constraint should be considered as critical to success as finance," the report said.

IBM Appraises Competition

TULSA, Okla. – The documents released in the Telex-IBM case last week contain an analysis of how IBM viewed the strengths and weaknesses of its competition in the peripherals area in early 1971.

What follows is a capsule summary of huw IBM estimated the strengths and weaknesses of four of the major firms.

The strengths of Telex were seen to be "broad product line, large customer base, proven sales and service, adequate financing, competent management," while the weakness of the firm was seen to be "engineering dependence, ISS."

Potter's strengths were listed as "engineering, OEM contracts, broad product line," while the IBM planners found its weaknesses to be "marketing, new end-user market, MAI debt,"

The Memorex strengths were seen to be "large sales/service, aggressive management, substantial R&D, customer base," while the one weakness listed was "inadequate financing."

Century Data was seen to have only one strength, "OEM contracts," while three weaknesses were found, "finance, late, marketing," the last referring to the Calcomp (parent company of Century) "sales engineering approach" which IBM estimated to be the firm's "key drawback at this time."

IBM Charted Market Shares

TULSA, Okla. – Industry marketing executives are now getting a chance to compare their marketing projections with those made by IBM. The figures were released in previously secret IBM documents in the Telex antitrust suit.

For example, the IBM plug-compatible forecast for April 1970 indicated rapid penetration of the IBM lease base by the independents in both the tape and disk areas – if IBM were to do nothing to slow the penetration.

Even though the 2400-type tape drives were soon to be outdated by the 3200-type drives, the forecast predicted a rising market for 2400-type units, calling for the market to almost double between 1969 and 1976.

These IBM charts do not contain a reference to the basis for the figures, which could stand for either IBM points (which equate to revenue dollars per month) or number of units.

The charts, however, show that starting from a base of 5% in 1969 the independents were expected to go to 10% of the market in 1970 and then to 16% of the market in each of the next four years.

Those percentages are for the percent of the lease market held by the plug-compatible makers for each of those years, according to the document.

The 2311 disk drive market was seen as declining rapidly over the 1969 to 1976 time period, hut the independents' share was expected to rise.

Given a value of 16.3 in 1969, the market was expected to decline to 1.3 by 1976 but the independents' share was expected to rise from 6.3% to 28% in the same time span.

Peak in 1972

The market for 2314 files was estimated at 20.6 in 1969 and was expected to peak at 46.8 in 1972 and then decline to 22.8 by 1976.

For the 1969-1976 time frame, IBM estimated that in 1969 the plug-compatible manufacturers would have none of the market, they would have 2% in 1970, 6% in 1971, 11% in 1972, 21% in 1973 and a 34% market share in 1975 and 1976.

In the area of Merlin files, which later became the 3330, IBM predicted that the independents would have 0.5% of the market in 1972, 3.2% in 1973, 11% in 1974 and a 27.9% share of the lease inventory hy 1976, if IBM took no actions to slow the penetration of the IBM base.

In total, IBM estimated the 3330 or Merlin market to be worth 9.9 in 1972, 21.2 in 1973 and to peak at 34.2 in 1975,

UCC Hit With Class Action Suit

WILMINGTON, Del. – A class action suit against University Computing Co. was filed in Federal District Court here by W. Henry DuPont on behalf of himself and all other stockholders who have bought stock since Jan. 1, 1971.

The suit charges that UCC and its officers "conspired for the purpose of fraudulently inducing the class to purchase shares of common stock of UCC for a grossly excessive consideration."

UCC had no comment.

DuPont is a familiar figure to UCC since he and his firm, Sci-Tech, of Wilmington, have been embroiled in other suits with UCC in the past.

The suit claims UCC failed to disclose, even though it was known, that the firm would suffer losses in excess of $135 million and that the firm and its officers tried to hide evidence of the losses.

Most of the allegations involve the UCC decision to get into the data communications business. The suit alleges that the formation of Data Transmission Co. (Datran) "was totally unnecessary to the proper function of UCC's computer utility business" and that UCC failed to inform the public that services similar to Datran would be available from AT&T, Western Union and MCI at lower rates than possible for Datran.

The suit alleges UCC and its officers decided to put every available resource of the company hehind the Datran effort "to the serious detriment of and at the expense of existing UCC operations."

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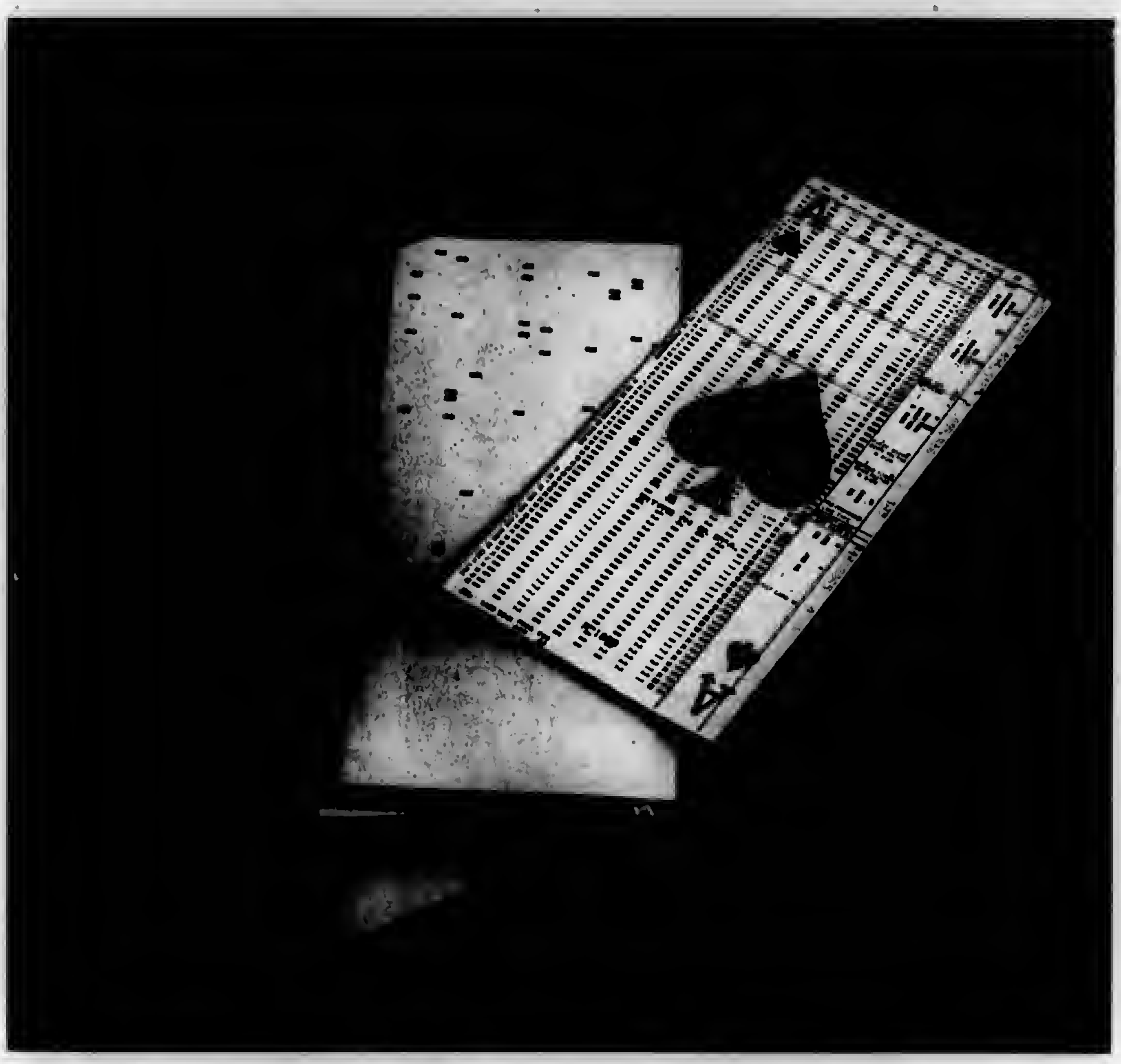

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Company

Alphanumeric CRTs May Lead Display Market's 24% Growth

PALO ALTO, Calif. – The information display market will grow at a "dramatic" rate of over 24% annually with total sales more than doubling from $310 million to $737 million by 1976, according to a recent report from Quantum Sciences Corp. here.

The computer industry market research firm indicated the trend may lead to the domination of the advanced technology display market by the semiconductor manufacturers because of the integration of display, decoder and drive electronics.

The report found that alphanumeric CRTs will be the largest segment of the market in 1976 with a 75.7% share of the sales, up from its 64.5% share of the total market in 1972.

Graphic CRTs will show a decrease in market share from the 14.1% of the market held in 1972 to 9.6% in 1976.

Light-emitting diodes will also decrease in popularity slightly from the 1972 figure of 7.9% of the market to a 1976 figure of 6.6% of the overall display market.

Liquid crystal displays are expected to show an increase in market share, however, the firm noted, going from .8% of the market in 1972 to 2.1% of the total market in 1976.

Three Minority Firms, Informatics Sign

COLLEGE PARK, Md. – Informatics, Inc., contractor for the Nasa Scientific and Technical Information Facility, has awarded subcontracts totaling $410,000 to minority business enterprises.

The three black-owned firms were awarded a total of four subcontracts. Reliable Engineering Associates, Inc., Philadelphia, was awarded two subcontracts – one of $98,385 to catalog technical information, and one of $92,900 to reproduce and photograph microfilm.

Automated Typographics, Inc., Arlington, Va., was awarded a $134,000 contract to abstract and index technical information.

The final contract, for $92,000, went to Plato Systems, Inc., Silver Springs, to perform computer data entry work.

Inforex Reorganizes Market Operations Into 6 Regions

BURLINGTON, Mass. – Inforex, Inc. is reorganizing its marketing operations into six regions and a Federal Business Operation.

Three new marketing regions have been established. The East Central region, based in Cincinnati, will be headed by William G. Moore Jr. Jerry T. Kendall will supervise the Southeastern region, and Richard L. Moser the Dallas-based Southwestern region.

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BEFORE
Our May 30 Preview Issue (Color close is May 11. B&W close is May 18.)

DURING
Our June 6 Show Issue (Color close is May 18. B&W close is May 25.)

AFTER
Our June 13 Wrap-Up Issue (Color closes May 25. B&W closes June 1.)

Whether or not you're going to The National Computer Conference, *Computerworld's* last-minute, complete coverage of the new, consolidated show is must reading – including the latest information on the wide variety of new products which will be displayed. Only a weekly newspaper can give you such complete and up-to-date coverage. And *Computerworld* is the only newsweekly for the computer community.

Manufacturing Process

Testing 'Best' Start Point for Automation

By E. Drake Lundell Jr.
CW Washington Bureau

NEW YORK – The test function in the manufacturing process has the "greatest potential" as the starting point for computerization "because it can help in setting priorities for automation of the remaining functions."

In addition, automation of the test function can also "point up problems in the other areas that aren't even related to automation," according to Stan Reese of General Automation at a recent conference here.

Noting that the "computer will be the brains of the automation revolution" that is coming for factories, Reese pointed out that factory automation will be justified "by our need for increased productivity."

For every dollar achieved, he noted, by reducing the cost of manufacturing a product, a company can realize as much as 50 cents of it in profit, therefore making reduction in manufacturing cost more profitable than increases in sales.

In the past, he said, it had been hard to justify the use of computers in the manufacturing process because of their size and cost, but, he noted, the advent of the mini and its lower price tag had made their use practical.

In addition, he stressed that the minicomputer had made it possible for companies to take a "bottom up" or evolutionary approach often used with large systems.

While he said the top-down approach was a legitimate one, he indicated it was extremely expensive and took a great deal of effort to accomplish correctly.

The bottom up approach, however, "is more cost-justifiable in the long run," he said. because it takes "the processes in use already and improves on them by automating from the worker level on up to the executive level. This means that every responsible person in a manufacturing environment can improve his productivity at his own level," Reese stated.

Faster Equipment

The introduction of the computer to the production test stand resulted in test equipment that was faster and more thorough than its hardwired counterpart," he noted.

But in the early days, he said, "it also was more expensive" and it shared some of the undesirable aspects of the hardwired test equipment that had been in use earlier.

However, he said, the advent of the minicomputer permitted the development of programs that were easy to understand and change by production personnel.

"The language is considered easy to learn because it's written in terms that relate to the product being tested – not to the computer doing the testing.

"This important concept is the key to putting the ability to write, change or modify test programs and procedures where it belongs – with the manufacturer, not with the test equipment vendor or the computer vendor," he stated.

Soviet Computer Has 'Home-Grown' ICs

Novosti Press Agency
Special to Computerworld

MINSK, USSR – The production of a new EC-1020 computer utilizing integrated circuits is now under way at the Ordzhonikidze plant here. This machine is the first of the Ryad Series.

The emergence of this machine and its serial production indicate advances in semiconductor.

Soviet integrated circuits were displayed in 1969, 1970 and 1972 at many international exhibitions, including those in Paris and Scandinavian countries.

The USSR presently turns out a wide range of standard integrated circuits.

Automatic equipment has been designed for specialized enterprises turning out microelectronic equipment, which has made it possible to start mass-scale production of Integrated circuits.

Foreign Orders & Installations

U.C.E. Linalux, a Belgian electric utility, has ordered a Systems 85 computer from Systems Engineering Laboratories, S.A., France, to keep plant operators informed on current and forecast network status.

Compagnie Generale de Geophysique, Paris, is installing a Control Data Corp. 6400 computer system to handle seismic data processing applications.

Dai-Ei Co., a retail chain store company in Japan, has ordered multiple electronic data processing systems from Takachiho Burroughs Co., Ltd. The systems, including three B 4700s and ten B 1700s, will be used in a large-scale, on-line merchandise distribution control system.

The Nationwide Building Society, a large British mortgage loan institution, has ordered a Univac 1110 system to administer a data-collection system and provide on-line inquiry facilities.

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Foreigners Increase Share of Japanese DP Market; Total Deliveries Decline

By E. Drake Lundell Jr.
Of the CW Staff

TOKYO – Total computer equipment deliveries in Japan for the six-month period ending last September were down slightly over the previous six months, but the foreign share of that market was up dramatically in the same period, according to figures compiled by International Data Research here.

Total deliveries were valued at $634.7 million, down 0.5% from the $638 million worth of equipment delivered in the previous six months.

The foreign share of the deliveries, however, was put at $321 million, up 39.4% from the $230.3 million reported in the previous six-month period. The figures for foreign manufacturers include the shipments from firms manufacturing in Japan which are controlled by non-Japanese, such as IBM, the research firm said.

Systems deliveries, excluding minicomputers, were valued at $522.3 million for the period, a gain of 2.4% over the $510 million delivered in the previous six months.

The foreign share of this market segment was $256.7 million, a substantial 49% jump over the $172.3 million reported in the previous half-year period.

Deliveries of peripheral equipment were down 12.2% at $112.3 million from $128 million, the firm said.

However, the foreign share of these deliveries was up by 10.9% from $58 million to $64.3 million, International Data Research said in its report.

A breakdown of the figures showed the shipments of large computers was up 16.1% during the period, but that foreign firms outpaced this growth with shipments of large systems up 60.1%.

In the area of medium-scale systems, the entire market was down 24.8% in deliveries, and the foreign share of this segment also dropped slightly, from $30.7 million to $30.3 million in shipments.

Small Systems Segment

While deliveries of small systems were down 10.6%, the foreign share of this market climbed, increasing 50% from $6 million to $9 million between the two time periods, International Data Research said.

Japanese manufacturers showed their best performance in the area of very small systems, the figures indicated, showing the total market for these devices up 113.6% while the foreign share of this market was up only 67.9%, according to the study.

The figures indicate that at least statistically the Japanese government has been "very quick" to permit foreign sources to increase their share of the current hardware deliveries in Japan to the 50% level promised in mid-1972, the firm said.

The speed of the change is evident from the figures which show that foreign sources supplied only 3.1% of the deliveries in the October to March 1972 time period and 50.6% of the market during the next six months, after the protective regulations were eased, according to the report.

The deliveries of general-purpose computer hardware coming from foreign sources (which includes IBM Japan) during the last six months enabled the foreign firms to install $551.3 million worth of equipment for the entire year ending last September, the report noted.

Entrex Founder Dies

BURLINGTON, Mass. – Barry M. Harder, chairman of the board of directors of Entrex, Inc., and a founder of the firm, drowned last week in a boating accident.

He served as the key-to-disk company's first president, from June 1969 to February 1973. His recent responsibilities included international marketing arrangements and major business development.

CI Shorts

Univac Wins GSA Pact

WASHINGTON, D.C. – The General Services Administration has awarded Sperry Rand Corp. a $30 million lease contract for 15 Univac Model 1108s for the Army personnel center in Alexandria, Va. The agency also has a purchase option on the equipment, which could reduce the total value of the contract.

Antitrust Helpers Named

NEW YORK – Three men have been appointed by Federal Judge David N. Edelstein to evaluate whether documents submitted in the government's antitrust suit against IBM are "privileged."

Prof. A. Leo Levin, University of Pennsylvania Law School; Dean Joseph M. McLaughlin, Fordham University Law School; and Bernard S. Meyer, former State Supreme Court Justice for Nassau County, N.Y., were named by Edelstein.

IBM Lands British Air Pact

LONDON – British Airways' bid to purchase dual IBM 370/168s has been approved by the Department of Trade and Industry. The other bidders were reportedly Univac and ICL. The British firm withdrew early in the bidding process.

The equipment replaces BOAC's dual IBM 65s and Univac equipment at BEA.

Correction

Figures on Control Data Corp. earnings from rentals and sales [CW, April 25] were erroneous. Revenues from rentals and service totaled $95.6 million up from $62.4 million in the year-ago quarter ended March 31. Sales rose to almost $105 million from $65.3 million in the same 1972 period.

Fletcher Jones Estate Contested

CW West Coast Bureau

LOS ANGELES – Actress Sherry Jackson has filed Superior Court claims totaling more than $1 million against the estate of the late Fletcher Jones, former chairman and chief executive officer of Computer Sciences Corp.

Jackson's attorneys, Marvin Mitchelson and Donald Woldman, said she lived with Jones for five years prior to his death in a private plane crash Nov. 7.

The attorneys said Jones had promised to provide at least $25,000 annually for her during her lifetime and had not repaid a loan of $77,000 made by Jackson.

Varian Unit Sold

CW West Coast Bureau

SANTA ANA, Calif. – Micrographic Technology Corp., manufacturer of an automatic microfiche camera processor, has been acquired from Varian Associates, Palo Alto, by Bruning Division of Addressograph Multigraph Corp. for an undisclosed sum.

A Micrographic spokesman said the purchase is expected to broaden the company's marketing base. The firm's product line includes the Model 750 processor, and an automated retrieval display device.

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DP Firms Sought For Madrid Fair

WASHINGTON, D.C. – The U.S. Department of Commerce is sponsoring participation of 12 exhibitors in Simo, the International Office Equipment Fair, Nov. 9-18 in Madrid, Spain.

The Commerce Department plans to have 50% of the exhibit devoted to computers and related equipment, with special emphasis on minicomputers, and the other half on business equipment and systems, featuring micrographics equipment.

The purpose of the exhibit is to introduce new-to-market firms and to find Spanish agents and distributors for them, according to the department.

Although U.S.-based firms currently hold 80% of the Spanish large computer market, foreign firms hold the major sector of the minicomputer market, Commerce said. Projections call for the fastest growth to occur in the minicomputer field, the department added.

Overall Spanish imports are expected to grow by about 15% annually, according to Commerce estimates.

The American Embassy at Madrid has ranked computers and business equipment and systems second among those product categories which it believes to have the highest potential for incremental export sales and which would bring maximum results if promoted in fiscal year 1974.

It cited estimates by the Spanish Ministry of Industry that the business and data processing equipment market will grow by 25% annually.

Executive Corner

- Herbert V. Boshea has been promoted to the post of vice-president, material, in the Sperry Univac Division of Sperry Rand Corp. Boshea joined Univac in 1965 and was most recently the firm's director of materials.
- James Murdakes has been named vice-president, marketing operations, for Control Data Corp. He was formerly general manager, computer systems marketing.
- Albert Francis has been elected vice-president, systems development, at Greenwich Data Systems, Inc. He is in charge of all contracts and development in the New York area.
- Arthur M. Randall, former director of marketing for Kidde Computer Services Co., has been appointed vice-president, marketing.
- Hayden E. Williams has been named vice-president, marketing, for Computer Leasing Co. and Ward T. Shields was named vice-president, equipment and traffic management.
- William P. Flics has been promoted from corporate staff member to vice-president, special systems, for Technalysis Corp.
- Robert H. Grant has been appointed vice-president, systems sales and consulting, for Centurex Corp. (formerly Systems Associates, Inc.).
- B.F. Powers, formerly manager for government systems, has been named vice-president, equipment acquisitions, of Computer Leasing Co.

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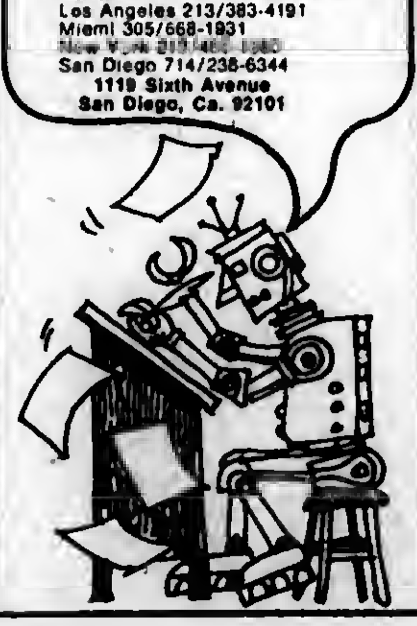

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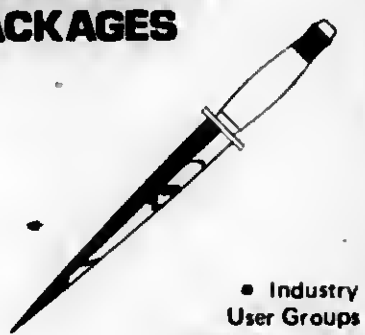

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Comten Up, Wiltek Down

2 Communications Firms' Earnings Vary

Two communications equipment makers registered mixed results in recent periods, with Comten, Inc. marking its first year of profitable operation and Wiltek, Inc. showing reduced earnings for the first quarter.

Although Comten's 1972 revenues were down to $6.5 million from $8.2 million last year, earnings, after a $108,000 tax credit, totaled $219,177 or 11 cents a share compared with a loss of $66,509 a year ago.

The value of shipments in 1972 exceeded the 1971 figure by 65%, and included a substantial number of installations for the Comten 3670s, President Donald J. Herman said. These were made under two-year leases and recorded under the operating method of accounting, which contributed to the decline in revenues, Herman said.

Wiltek's first-quarter earnings dropped to $38,000 or 3 cents a share compared with $107,000 or 8 cents a share in the same period last year. Revenues grew to almost $2 million from $1.2 million in the 1972 period.

Maintenance Costs

A significant increase in expenditure associated with the establishment of Wiltek's system maintenance capability contributed to the earnings decrease, President Robert J. Amman said.

The cost of providing nationwide system maintenance has grown from an insignificant amount a year ago to a level of approximately $260,000 or 13% of sales revenue during the first quarter of 1973, he said.

But with anticipated economies of scale, the impact of these costs will begin to decrease throughout the remainder of 1973 and 1974, he added.

Sycor's First Quarter Earnings Approach Those for All of 1972

ANN ARBOR, Mich. – Sycor, Inc. has turned in a record first quarter, with earnings approaching those of entire 1972.

Revenues rose to $6.5 million from $2.9 million in the year-ago period, and earnings turned around to $1 million or 37 cents a share, including a $470,000 tax credit, compared with a loss of $35,700 in the year-ago quarter.

In 1972, Sycor earned $1.2 million, in its first profitable year.

"It is gratifying to note that performance during these three months roughly equals that of the full year of 1972," President Samuel N. Irwin commented.

"Moreover, the latest increases in revenues and profitability were attained at a time when Sycor has begun to establish a lease base . . . " At the beginning of the year, the firm obtained a $3 million credit line from the First National Bank of Boston, which it is using to build its lease portfolio.

"As the year progresses, we expect to utilize Sycor's improved position to expand our product base while increasing market penetration," Irwin added.

Datapoint Scores Record Earnings

SAN ANTONIO, Texas – Datapoint Corp. has reported record earnings for the second quarter and first half ended Jan. 31:

In the quarter, earnings reached $389,000 or 22 cents a share compared with a loss of $600,000 or 46 cents a share for the year-ago period. Revenues rose to $4 million from $1.1 million.

For the half year, earnings totaled $545,000 or 32 cents a share compared with a loss of $1.2 million or 93 cents a share for the restated first half of fiscal 1972. Revenues rose to $6.9 million from $1.8 million a year ago.

Shipments Up

The purchase value of equipment shipped to customers for sale or lease increased to $10.3 million from $2.7 million a year earlier, the firm said.

In addition, the monthly shipment rate of Datapoint 2200s rose to 129 systems during the first half, up from 46 systems in the previous year.

Shipments averaged 200 systems per month during January and February, the firm added.

Computer Automation Quarter, Nine-Month Earnings Rise Sharply

IRVINE, Calif. – Third quarter and nine-month results are up considerably from those a year ago at Computer Automation, Inc., maker of the Naked Mini.

In the quarter ended April 1, revenues more than doubled to $3.1 million compared with $1.2 million in the year-ago period.

Earnings soared to $271,020 or 16 cents a share from $84,827 or 6 cents a share in the 1972 period.

In the nine-month period, revenues reached $7.9 million compared with $2.9 million a year ago, while earnings totaled $665,927 or 42 cents a share compared with $165,270 or 13 cents a share.

"This marks the seventh consecutive quarter of increased sales and earnings for the company. Pretax profit margins have steadily increased to over 18% for this quarter and 17% for the nine-months period," President David H. Methvin observed.

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Computerworld Stock Trading Summary

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CLOSING PRICES THURSDAY, APRIL 26, 1973

SOFTWARE & EOP SERVICES

EXCH		1973 RANGE (1)	CLOSE APR 26 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1 5/8	+ 1/8	+8.3
A	APPLIEO OATA RES.	3- 4	3	0	0.0
O	APPLIED LOGIC	2- 3	1 3/4	- 1/4	-12.5
N	AUTOMATIC DATA PROC	65- 94	67 3/8	+2 1/8	+3.2
O	8RANDON APPLIEO SYST	1- 1	5/8	0	0.0
O	COMPUTER OIMENSIONS	2- 4	3 1/2	+ 7/8	+33.3
O	COHPUTER DYNAHICS	1- 2	7/8	0	0.0
O	COMPUTER NETWORK	2- 5	1 1/2	- 1/4	-14.2
N	COHPUTER SCIENCES	2- 6	2 3/4	- 1/4	-8.3
O	COMPUTER TASK GROUP	1- 2	1	0	0.0
O	COHPUTER TECHNOLOGY	2- 3	2	- 5/8	-23.8
O	COMPUTER USAGE	5- 9	5 7/8	- 1/8	-2.0
O	COHRESS	1- 2	3/8	- 1/8	-25.0
O	COHSHARE	5- 9	5 3/4	- 5/8	-9.8
N	CORDURA CORP	6- 15	7	- 3/4	-9.6
O	DATATA8	3- 4	2 1/2	- 1/4	-9.0
O	EDP RESOURCES	1- 3	1 1/4	- 1/8	-9.0
A	ELECT COHP PROG	1- 2	1 1/4	- 1/8	-9.0
N	ELECTRONIC DATA SYS.	37- 56	36 3/4	-1 1/4	-3.2
O	INFORMATICS	3- 6	3 1/8	- 1/4	-7.4
O	I.O.A. OATA CORP	1- 1	3/4	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYOATA CORP	7- 12	7 1/2	- 1/2	-6.2
U	LOGICON	4- 7	4 3/4	0	0.0
A	HANAGEMENT OATA	2- 5	2 1/8	- 1/8	-5.5
O	NATIONAL CSS INC	8- 41	24 3/4	-2 1/2	-9.1
O	NATIONAL INFO SRVCS	1- 2	1 1/8	- 1/8	-10.0
P	ON LINE SYSTEMS INC	13- 17	12 7/8	-1 1/4	-8.8
N	PLANNING RESEARCH	3- 7	3 3/4	- 1/4	-6.2
O	PROGRAMMING HETHOOS	22- 24	21 3/4	- 3/8	-1.6
O	PROGRAMMING & SYS	1- 1	7/8	0	0.0
O	RAPIOATA INC	13- 24	13 3/4	-1	-6.7
O	SCIENTIFIC COHPUTERS	1- 2	1 1/8	0	0.0
O	SIMPLICITY COHPUTER	2- 4	2 1/4	+ 1/8	+5.R
O	TBS COMPUTER CENTERS	3- 4	3	0	0.0
O	TCC INC	1- 1	1/2	0	0.0
U	TYMSHARE INC	7- 12	7 1/8	- 1/2	-6.5
O	UNITED OATA CENTER	5- 6	4 1/4	- 3/4	-15.0
N	UNIVERSITY COMPUTING	7- 11	7 1/2	- 1/2	-6.2
A	URS SYSTEMS	4- R	4 1/4	- 1/2	-10.5

PERIPHERALS & SUBSYSTEMS

EXCH		1973 RANGE (1)	CLOSE APR 26 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-HULT	16- 34	16 1/R	-3 5/8	-18.3
O	AOVANCED MEMORY SYS	12- 23	14	- 3/8	-2.6
N	AMPEX CORP	4- 7	4 7/8	+ 7/8	+21.R
O	ANDERSON JACOBSON	4- 6	5 1/2	0	0.0
O	8EEHIVE MEOICAL ELEC	6- 10	8 1/2	-1 1/4	-12.8
A	BOLT,BERANEK & NEW	R- 12	8 1/4	- 5/8	-7.0
N	8UNKER-RAMO	6- 1R	15 1/R	+9 1/8	+152.0
A	CALCOMP	9- 13	9 1/8	-1 5/8	-15.1
O	CAMBRIOGE MEMORIES	10- 15	9 1/8	-1 1/2	-14.1
O	CENTRONICS DATA COHP	13- 2R	24 1/4	-1 3/4	-6.7
O	COOEX CORP	11- 19	10 1/2	-1 1/2	-12.5
O	COGNITRONICS	1- 3	2	+ 1/2	+33.3
O	COMPUTER COMMUN.	2- 4	2	- 1/4	-11.1
A	COMPUTER EQUIPHENT	2- 3	2 1/4	0	0.0
O	COMPUTER MACHINERY	8- 13	8	- 7/8	-9.8
O	COMPUTER TRANSCEIVER	2- 6	2 1/8	0	0.0
A	COMPUTEST	3- 5	4 3/4	0	0.0
N	CONRAC CORP	20- 32	20 3/8	-2 1/8	-9.4
A	DATA PROOUCTS CORP	3- 4	3	- 1/4	-7.6
O	OATA RECOGNITION	2- 3	1 1/2	0	0.0
O	OATA TECHNOLOGY	2- 5	2 3/4	- 1/8	-4.3
O	OI/AN CONTROLS	2- 4	2 3/8	- 3/8	-13.6
N	ELECTRONIC H & M	3- 6	3 7/8	+ 1/R	+3.3
O	FABRI-TEK	3- 5	2 3/4	- 1/4	-8.3
O	GENERAL COMPUTER SYS	6- 9	6	0	0.0
N	GENERAL ELECTRIC	60- 76	60 7/8	-3 1/4	-5.0
N	HAZELTINE CORP	7- 9	6 3/4	- 7/8	-11.4
O	INFOREX INC	12- 23	15	-1 1/4	-7.6
O	INFORMATION DISPLAYS	1- 2	1	+ 1/8	+14.2
O	INFORMATION INTL INC	11- 15	10 3/4	-1	-R.5
A	LUNDY ELECTRONICS	4- 9	4 5/8	0	0.0
O	HANAGEHENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	17- 28	1R 1/4	-2 1/2	-12.0
N	HOHAWK DATA SCI	6- 13	5 7/8	0	0.0
O	ODEC COMPUTER SYST.	3- 6	3 1/2	- 1/2	-12.5
O	OPTICAL SCANNING	2- 7	3 1/2	-1 3/4	-33.3
O	PERTEC CORP	5- 8	5	- 1/4	-4.7
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUHENT	4- 9	4 5/8	- 1/2	-9.7
O	PRECISION INST.	2- 6	2 1/2	0	0.0
O	RECOGNITION EQUIP	4- 8	4 1/4	- 1/4	-5.5
N	SANDERS ASSOCIATES	9- 18	9	- 5/8	-6.4
O	SCAN DATA	2- 6	2 1/4	- 1/4	-10.0
O	STORAGE TECHNOLOGY	17- 34	18	-3 1/2	-16.2
O	SYCOR INC	9- 13	12 1/2	- 1/2	-3.8
O	TALLY CORP.	3- 14	5 1/4	+2 1/8	+68.0
N	TEKTRONIX INC	34- 53	33 7/8	-5 1/8	-13.1
N	TELEX	4- 6	4	- 3/8	-8.5
O	WILTEK INC	13- 18	12	- 1/2	-4.0

SUPPLIES & ACCESSORIES

EXCH		1973 RANGE (1)	CLOSE APR 26 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE 8US FORMS	5- 9	7 1/4	+ 1/4	+3.5
A	8ARRY WRIGHT	8- 13	8 1/8	- 1/4	-2.9
A	DATA OOCUMENTS	18- 22	19 3/8	- 1/2	-2.5
O	OUPLEX PROOUCTS INC	8- 10	7 3/4	- 1/4	-3.1
N	ENNIS 8US. FORMS	6- 8	5 3/4	- 1/4	-4.1
O	GRAHAM MAGNETICS	13- 20	13	-1 1/2	-10.3
O	GRAPHIC CONTROLS	10- 12	10	- 1/8	-1.2
N	3M COMPANY	78- 89	80 1/8	-2 7/8	-3.4
O	MOORE CORP LTO	55- 60	59 1/8	-1 1/8	-1.8
N	NASHUA CORP	42- 58	44 3/4	- 3/8	-0.8
O	REYNOLOS & REYNOLD	44- 51	44 1/8	-4	-8.3
O	STANDARD REGISTER	16- 20	17 1/2	-1 1/2	-7.8
O	TAB PRODUCTS CO	14- 23	14	0	0.0
N	UARCO	19- 23	19 1/4	+ 1/4	+1.3
A	WABASH HAGNETICS	6- 7	6	- 1/4	-4.0
N	WALLACE BUS FORMS	21- 26	21	- 3/8	-1.7

COMPUTER SYSTEMS

EXCH		1973 RANGE (1)	CLOSE APR 26 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	219-245	219 5/8	-10 1/8	-4.4
N	COLLINS RADIO	19- 26	18 1/2	-1 1/8	-5.7
N	CONTROL DATA CORP	42- 62	45 5/8	-2 3/8	-4.9
O	DATA GENERAL CORP	33-131	33 3/4	-4 1/4	-11.1
O	OIGITAL COHP CONTROL	3- 6	3	- 1/4	-7.6
N	OIGITAL EQUIPMENT	73-105	80 3/4	-2 1/8	-2.5
N	ELECTRONIC ASSOC.	5- 9	5 3/8	- 7/8	-14.0
A	ELECTRONIC ENGINEER.	8- 11	7 3/4	-2 1/4	-22.5
N	FOXRORO	25- 32	25 1/8	-1	-3.8
O	GENERAL AUTOMATION	26- 55	30 1/2	-3 1/4	-9.6
O	GRI COHPUTER CORP	1- 3	1 1/8	- 1/8	-10.0
N	HEWLETT-PACKARO CO	80- 95	82 3/8	-1	-1.1
N	HONEYWELL INC	106-139	109 7/8	-8	-6.7
N	I8M	405-457	409 3/4	-19 1/4	-4.4
O	INTERDATA INC	7- 13	10 1/4	-1 1/4	-10.8
N	MEMOREX	6- 19	7 1/8	+ 1/8	+1.7
O	HICRODATA CORP	6- 10	6 3/R	- 3/8	-5.5
N	NCR	27- 34	33	- 1/4	-0.7
N	RAYTHEON CO	26- 34	26 7/R	-2 7/8	-9.6
N	SPERRY RAND	39- 50	39 7/R	-1 5/R	-3.9
A	SYSTEMS ENG. LARS	4- R	4	0	0.0
N	VARIAN ASSOCIATES	13- 20	13 3/8	- 5/8	-4.4
N	WANG LARS.	1R- 34	1R 3/4	-1 1/4	-6.7
N	XEROX CORP	145-169	149	-5 3/4	-3.7

LEASING COMPANIES

EXCH		1973 RANGE (1)	CLOSE APR 26 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	8OOTHE COMPUTER	2- 5	2 3/R	0	0.0
O	RRESNAHAN COHP.	1- 2	1 7/R	- 1/8	-6.2
O	COMOISCO INC	11- 17	9 1/R	-1 1/8	-10.9
O	COMMERCE GROUP CORP	4- 4	3 3/4	- 1/8	-3.2
O	COMPUTER EXCHANGE	1- 1	5/8	0	0.0
A	COMPUTER INVSTRS GRP	3- R	3 3/R	- 3/8	-10.0
O	COMP. INSTALLATIONS	2- 2	2	0	0.0
N	OPF INC	6- 9	6 1/2	0	0.0
M	DATRONIC RENTAL	2- 3	2 3/8	0	0.0
A	DCL INC	2- 3	1 7/8	+ 1/4	+15.3
A	DEAR8ORN-STORM	15- 26	16 3/R	- 7/8	-5.0
A	OPA, INC.	5- 8	5 1/8	- 3/8	-6.R
A	GRANITE MGT	3- 6	3	- 1/2	-14.2
A	GREYHOUNO COMPUTER	4- 6	4 5/8	+ 1/8	+2.7
A	ITEL	7- 12	7 1/4	- 1/8	-1.6
N	LEASCO CORP	9- 18	10 1/2	0	0.0
O	LEASPAC CORP	5- 8	5 1/2	-1 1/2	-21.4
O	LECTRO MGT INC	1- 2	7/8	- 1/8	-12.5
A	ROCKWOOD COHPUTER	2- 3	1 3/4	+ 1/4	+16.6
O	SYSTEMS CAPITAL	7- 15	8	- 3/R	-4.4
N	U.S. LEASING	24- 36	25 1/4	-1	-3.8

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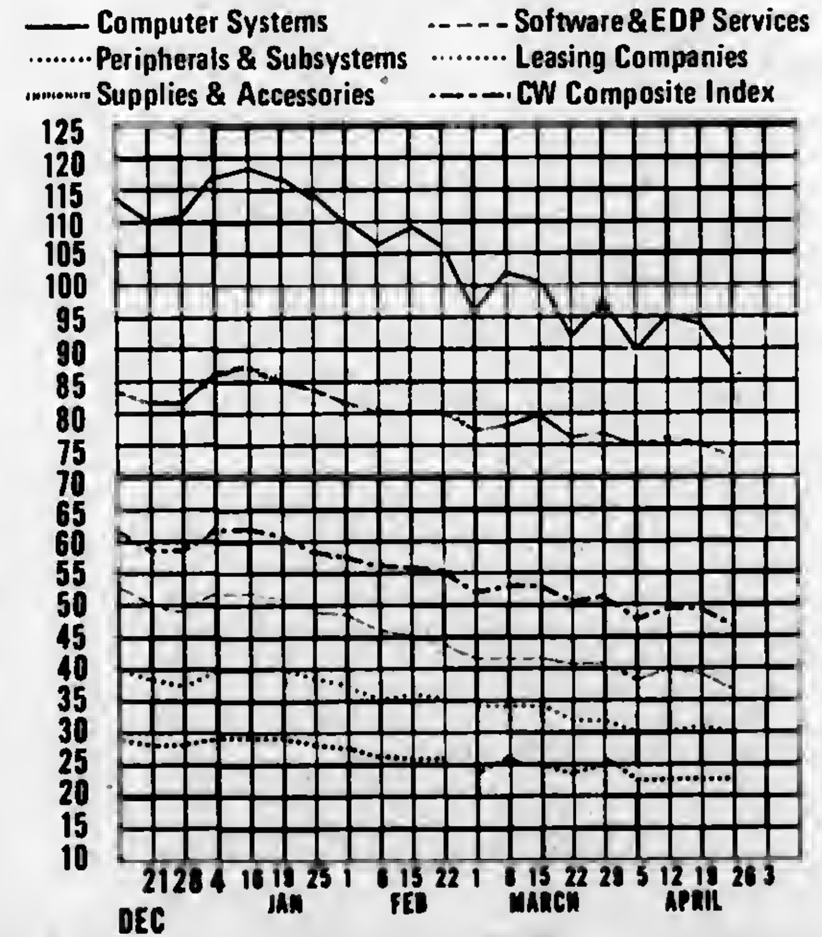

Earnings Reports

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	1972	1971
Shr Ernd	$.30	.....
Revenue	145,422,000	$110,201,000
Earnings	1,193,000	(13,390,000)

MICROFORM OATA SYSTEMS
Six Months Ended Jan. 26

	1973	1972
Revenue	$879,140	$322,498
Loss	872,828	1,223,463

MACROOATA
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.92	$.58
Revenue	4,699,343	2,649,635
Tax Cred	210,500	160,000
Earnings	599,286	356,530

COMPUTER COMMUNICATIONS
Three Months Ended Dec. 31

	1972	e1971
Shr Ernd	$.02	.....
Revenue	1,645,605	$2,292,150
Disc Op	(29,417)	(216,154)
Spec Cred	b14,000	.....
Earnings	42,162	(407,769)
6 Mo Shr	.08	.....
Revenue	3,189,113	2,989,940
Disc Op	(29,417)	(403,887)
Spec Cred	b64,000	b118,660
Earnings	142,983	(916,698)

a-Restated. b-In 1972, consists of tax-loss carryforward less loss on sale of subsidiary; in 1971, gain on sale of subsidiary.

MINICOMPUTER SYSTEMS
Yeer Ended Oct. 31

	1972	1971
Shr Ernd	$.13	$(.76)
Revenue	629,002	441,269
Tex Cred	15,000	.....
Earnings	38,520	(151,060)

ELECTRONIC MEMORIES & MAGNETICS
Year Ended Dec. 30

	1972	e1971
Shr Ernd	$.70	b
Revenue	76,440,000	$70,472,000
Disc Op	206,000	(1,150,000)
Spec Item	c3,494,000	d9,572,000
Earnings	4,854,000	(8,510,000)
3 Mo Shr	.56	.....
Revenue	22,076,000	17,364,000
Disc Op	90,000	(519,000)
Spec Item	c2,356,000	10,946,000
Earnings	3,280,000	(11,428,000)

a-Restated. b-Preferred dividend requirements exceeded net income. c-Credit; consists of proceeds on notes receivable in excess of carrying value, gain on sale of subsidiary and tax credit; in the three months does not include proceeds from notes receivable. d-Charge; net of tax credit and gain on sale of discontinued operations, writeoff of notes receivable, provision for impairment in value of other notes receivable and provision for loss on discontinued operations; in the three months does not include sale of discontinued operations and provision for loss on discontinued operations.

VICTOR COMPTOMETER
Year Ended Dec. 31

	1972	e1971
Shr Ernd	$.54	$.28
Revenue	205,927,713	165,931,387
Disc Op	(1,562,790)	(1,637,921)
bSpec Chg	1,907,760	1,106,001
Earnings	3,259,756	1,831,383

e-Restated to include Nissen Corp., acquired as of October 1972. b-In 1972, loss from sale of computer division; in 1971, reflects writeoffs related to conversion of product lines.

ON-LINE SYSTEMS
Three Months Ended Jen. 31

	1973	1972
Shr Ernd	$.28	a$.06
Revenue	1,599,996	964,905
Earnings	220,950	40,188
9 Mo Shr	.58	a.13
Revenue	4,550,603	2,375,830
Earnings	456,010	91,205

a-Adjusted for a three-for-two stock split distributed March 3, 1973.

ELECTRONIC COMPUTER PROGRAMMING INSTITUTE
Yeer Ended Dec. 31

	1972	1971
Shr Ernd	.....	$.02
Revenue	$3,972,975	2,982,687
Spec Cred	.....	a99,399
Earnings	(233,858)	14,506
3 Mo Shr	.....	.03
Revenue	879,844	790,914
Spec Cred	.....	a117,905
Earnings	(237,987)	25,908

aFrom settlement of antitrust litigation, less loss on sale or liquidation of subsidiaries.

OECISION OATA COMPUTER
Three Months Ended March 3

	1973	1972
Revenue	$3,375,000	$117,000
Loss	396,000	548,000

ULTIMACC SYSTEMS
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.44	$.19
Revenue	1,746,615	683,075
Earnings	201,426	62,495

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HE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

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May 9, 1973

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NEWSPAPER

J. Robert Ippolito, director of the Central Management Information Center, receives an award from Milton J. Shapp, governor of Pennsylvania, for his work in saving thousands of data tapes at the state's computer center during the floods of Tropical Storm Agnes last June.

For Flood Recovery

Governor Commends Crew

HARRISBURG, Pa. – The director of this state's computer center was recently awarded for his role in saving thousands of data storage tapes when the center was hit by severe floods from Tropical Storm Agnes last June [CW, June 6].

J. Robert Ippolito, director of the Central Management Information Center, received the award from the governor for "economic and cost conscious achievement."

"I am pleased to single out Ippolito and the members of his staff for their work, judgment and foresight during the flooding crisis," the governor said.

(Continued on Page 4)

Telex Witness Claims Software Locks Users to IBM Processors

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Computer users become wedded to their suppliers because of the huge programming investment and the incompatibility problems of changing from one vendor to another, a user witness told the court here last week as Telex neared the end of its presentation in its $1.2 billion antitrust action against IBM.

Court documents show IBM studied profits and discounts of its fixed price leasing plan. See story on page 31.

James Martin, DP manager at the First National Bank of Louisville, Ky., testified that software compatibility ties users into the central processors of one manufacturer, especially after making substantial software development expenditures.

In other action in the case, Telex witnesses relied almost solely on internal IBM documents to try to prove that IBM had tried to bankrupt companies in the plug-compatible marketplace and to prove once again IBM's dominance in the market.

Martin indicated his bank had a "considerable investment" in programs written for IBM processors and that it would have to make a "very large expenditure" to switch to another company's mainframes.

Translators Work But . . .

Even though many of the other manufacturers talk of translators for converting programs written for IBM machines to their systems, Martin noted these only work for part of the program and the remainder would cause the user problems.

Because of this, the user would have to get a "tremendous" savings from the other equipment, he said, in order to justify making any change.

In addition, Martin testified the only real competition had been in the plug-compatible area since that was the only major non-IBM equipment his bank had considered since going to the 360/370.

(Continued on Page 2)

Apollo, Iceberg, Midas... The Future IBM Disks?

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – In order to try to clarify some of the confusion over the code names used for various products in the IBM court documents, *Computerworld* has sorted out the documents and projected IBM future products in the disk area.

Here is the present line-up:

The IBM Merlin file referred to in many of the documents has become the 3330 which was introduced in 1970 with a capacity of 100M byte/drive and a data transfer rate of 800 kbit/sec.

There are presently two improvements being made to the 3330-type drive: Iceberg and Midas.

Midas, which is expected to be announced at any time, is a 50M-byte file or half-capacity 3330, and involves no change in technology over the 3330, according to IBM source court documents introduced here.

The half-capacity on the Midas file will be achieved by reducing the number of disks per pack and a new pack type will be created and marketed by IBM for this device, it is understood.

The device is intended for the small, medium and intermediate systems markets and the primary users will be small 155s, 145s and the larger 135s.

However, the decision to push the Winchester type drive, which has been announced as the 3340 direct access storage facility, may delay the introduction of Midas since they

(Continued on Page 2)

Secure and Accurate?

Most Vote Officials Seem Content

CW West Coast Bureau

LOS ANGELES – Although there have been many stories about inaccuracies and security breaches in computerized vote counting systems, most county election officials seem to be unconcerned about the problem.

At least that is the conclusion drawn from a survey of county election systems prepared a year ago and just released by Systems Research Inc. here.

The survey also found that in spite of claims of reducing costs of elections, punched card voting systems were actually more expensive to operate than lever-type voting systems, even though both systems were found to be cheaper to operate than paper ballots.

In the security and accuracy area, county election officials using punched card systems rated their equipment as 100% accurate and secure, the report said, compared to paper ballots which received only an 83% "good" rating in the accuracy category and only a 75% "good" rating in the security area.

Faith in Machines

"It is interesting to note the apparent lack of impact of the fairly recent controversy surrounding security of computerized vote counting systems," the report noted. "Officials apparently still find it easier to place their faith in a machine and its faceless operators than in a wholly flesh-and-blood vote tabulator," the report added.

The survey also found "none of the hostility anticipated with the advent of the punched card is reported by the election officials," noting that 82% of the officials said public acceptance of the systems had been good.

At the same time, however, the survey found the lever-type voting machines had a better public acceptance with voters, with a 95% good rating.

While 100% of the users were giving the computer-based vote counting systems good ratings in the categories of accuracy and security, only 88% rated their speed as good, with the remainder giving them only a fair rating.

(Continued on Page 5)

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Prove Need to Upgrade: GAO

By Don Leavitt
Of the CW Staff

SAN FRANCISCO – Installations can no longer justify requests for new computers solely on the basis of an economic analysis, and "the simple fact that present equipment is in use 24 hours a day, seven days a week" isn't enough justification either, a computer systems analyst for the General Accounting Office (GAO) warned here last week.

Keynoting a meeting devoted heavily to computer performance evaluation (CPE) tools and techniques, Dennis R. Chastain told managers of government DP sites, "Performance monitors can be utilized in evaluating existing systems to determine if requests for additional components or systems are justified."

Policy Change?

This represents a tentative policy change for GAO, he admitted, adding that in time he would like to see the "must" in place of the word "can" to give the statement some teeth.

He reminded the audience that GAO had issued a report in August 1972, which reviewed the use of CPE in government installations at that time, and recommended that the Office of Management and Budget direct heads of Federal agencies to "consider using" CPE to improve the efficiency of computer performance, especially before acquiring additional computer capacity.

GAO recently completed a research and development effort to determine the practicality of utilizing performance monitors to audit the efficiency and effectiveness of government DP sites.

"Our initial conclusion is that these tools will be a considerable aid to our auditors," he said. "GAO is preparing now to use [CPE] in an actual auditing situation to further establish . . . the procedure. If successful, GAO will use monitors on a more widespread basis."

When finally implemented, this "efficiency and effectiveness" auditing will be a more penetrating

(Continued on Page 4)

At IBM/Telex Trial

Economist Says IBM Has Clear Peripheral Dominance

By a CW Staff Writer

TULSA, Okla. – The economist testifying for Telex in its suit against IBM said last week that the "census" IBM had prepared for the Control Data case clearly showed IBM had a dominant market position in the peripherals business.

Dr. John Bonham, doctor of economics and professor at Tulsa State University, also told the court a monopolist was one who had enough market power to be able to do anything it wanted without fear of competitive reaction.

"It is the giant-pygmy concept," he said, noting the large company could take an action and force all of the smaller ones to react to it in a monopolistic industry.

In addition, he said, this type of market power allowed the giant firm to practice market price discrimination because it allowed it to lower prices in one area and then raise them in another in order not to have lower revenues across the board.

A monopoly can also change interfaces on products in its middle life, he indicated, forcing all the other firms to react to it.

The monopoly firm, he noted, also earns monopoly profits that are higher than they should be and which in turn allow more research and development. This "thing feeds on itself after a period of time," he noted.

Using data from the census IBM had prepared of more than 2,700 firms in the computer business, Bonham said those figures show IBM had 95.5% of the tape business at the end of 1970 with the rest of the competitors having only 4.1% at that time.

At the same time, he noted the IBM market share was probably understated because many of the other firms sold more equipment than they leased while IBM leased the majority of its equipment.

Outright sales tend to increase revenues the year they are made while leases defer them over a longer period of time. He indicated the census figures were based on firms' revenues and not number of units in the field.

In the memory area, Bonham said in 1970 IBM had 98.8% of the market with the remaining 1.2% split among five other companies.

In the printer market the situation was much the same, he said. IBM had total revenues in this market of almost $194 million where its nearest competitor had revenues of only $271,000, he said.

In the overall peripherals area, he said the census figures show IBM had 91.8% of the market while its competitors had 8.2% of the market. He again added that the IBM percentage was probably understated.

Efficiency Measured

In another analysis, Bonham compared the ratio of the net income before taxes divided by sales as a measure of the efficiency of a firm. He compared IBM with several other firms of different sizes in different industries to see how well their performance measured up.

IBM, he said, had a 24.5% ratio in this category which was higher than any other firm.

He said over the last 20 years the IBM ratio had varied very little, showing that its earnings had a very stable growth and were not affected by business cycles as its competitors' earnings were.

This type of stability, he said, indicates the firm has the ability to control its own future and its own life.

In another comparison, he said IBM's return on investment figures were very good even though they were not the highest of all the firms measured. Again with this measure he noted the IBM variation of return on investment was very small which indicated that it had good stability in its marketplace.

Summary Judgment Motion Expected

TULSA, Okla. – Telex was expected to end its presentation last week in its $1.2 billion antitrust suit against IBM.

Before IBM begins to present its case, it is expected the firm will move for a summary judgment rejecting the Telex claims which should be considered early this week.

In the Greyhound vs. IBM antitrust suit, the judge, in a decision that is being appealed, granted the IBM request for summary judgment and IBM was never required to present its defense.

Sources here feel Judge A. Sherman Christensen will not grant the IBM request and will make the firm present its defense, which should begin early this week.

Good Practice Code Correction

The British Computer Society "Code of Good Practice" is available in the U.S. for $3 plus a $2 handling and shipping fee from International Publishing Services, 114 E. 22 St., New York, N.Y. 10016.

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Witness Claims Users Locked to IBM

(Continued from Page 1)

The main reason for going to the independents, he noted, was to save money, even though there were often slight performance improvements with the independent devices.

There really is no choice in the CPU area, he said, because none are compatible, but users have a definite choice in the peripherals area today, he said.

On cross-examination, however, IBM attorney David Boies got Martin to admit that just recently two banks in the Louisville area had switched the source of their mainframes, which seemed to indicate the switch might not be as difficult as Martin made out.

However, it was not brought out in court that the two banks had switched from GE computer systems, made by a firm which is now out of the computer business.

Martin also said the cost of the software library was not necessarily the major consideration when deciding not to switch, but rather the problems of conversion in the field.

While converting from one system to another, he said, there are great problems and when 300,000 bank customers rely on you, you can't afford to have systems problems during a switchover.

In all, he said not only would a competitor have to offer a great deal of dollar savings to get a user to switch systems, but it would also have to give him functional advantages he could not get with IBM.

Earlier in the case, Berton Hochfeld, now with F. Eberstadt & Co., and formerly with IBM as a market analyst, said IBM knew that if it cut prices, forcing Telex to do the same, it would make Telex a marginally viable company and give it a great deal of trouble in paying needed financing.

In addition, he said IBM knew that the price cutting measures would have largely the same effect on other firms in the plug-compatible peripherals business when it made the move, and he hinted that IBM purposely made the move to dry up those companies' sources of financing and drive them out of business.

Thomas Barr, the lead IBM trial attorney, repeatedly objected to the Hochfeld testimony, claiming Hochfeld was only a low-level "pencil-pusher" while at IBM and therefore not qualified to speak for the company and its plans.

Barr also tried to introduce evidence that Hochfeld might be guilty of stock "scalping" in his new job, but the judge ruled that this line of questioning was irrelevant to the case.

Papers Reveal Future Disks

(Continued from Page 1)

compete somewhat in the same market and because IBM decision-makers are putting more emphasis behind the Winchester program than the Midas program.

However, when and if Midas is announced, its price will probably be 60% of the 3330-type drive, according to the documents.

The other major development under way in the 3330-type drive area is called Iceberg and will be a double-density 3330 drive.

Reportedly the doubling of the capacity will be achieved in a manner similar to that used by the independents to double the 2314 capacity, according to the documents.

Twice the number of tracks would be written onto a single disk surface which would require a new head design with narrower track width.

However, the pack for an Iceberg will probably be different and unique from that of the 3330, the document said, since twice the number of servo tracks are required to be written on the servo surface.

Therefore, the documents say, the packs for the Iceberg will not be interchangeable with the present 3330 disk packs.

Both Midas and Iceberg are expected to have approximately the same stated transfer rate as the 3330.

The Winchester program, which saw its first product announcement in the 3340 [CW, March 21], is a completely new type of technology and is probably the forerunner of a new generation of disk drives.

The 3340 is available in two densities – 34.9M and 69.8M byte/disk pack, but it is expected that IBM will upgrade the line with additional versions being developed under the code name "Colt."

The Apollo drive is for the future generation, 375 family of computers, according to the court documents.

Last week *Computerworld* incorrectly reported the capacity of the Apollo drive. The documents actually show that the Apollo drive could have up to 1,000M byte/drive and could have a data rate of 1.6M byte/sec, double the 3330 speed.

However, even though some IBM documents show this capacity, both testimony in the case and other documents indicate this may have been overly optimistic.

It appears now that the Apollo drive – at least the first Apollo drives – will have a capacity of approximately 400M byte/pack or double the planned double-density 3330.

At the same time, it is understood that the Apollo will probably use a non-removable disk pack from the customer's standpoint, with the pack removable only for service.

The Apollo is not intended for the 370 market, the documents show, but will be designated for the FS systems that are currently under development. FS is believed to stand for "Future System" which would be the 375.

Presently IBM has funded a full-blown development effort on the Apollo drive and even though it is slated for announcement in 1976 there is some indication that it could be moved up to 1975 and used as an enhancement on the larger 370 processors as stepping stones into the FS systems.

Calif. Software Tax Stayed

SACRAMENTO, Calif. – The State Assembly has passed with one dissenting vote a bill which would continue permanently California's moratorium on the taxing of software.

The measure is now being considered by the Senate Revenue and Taxation Committee.

Emergency legislation enacted last year exempted certain software from taxation as tangible, personal property but the exemption runs out this year.

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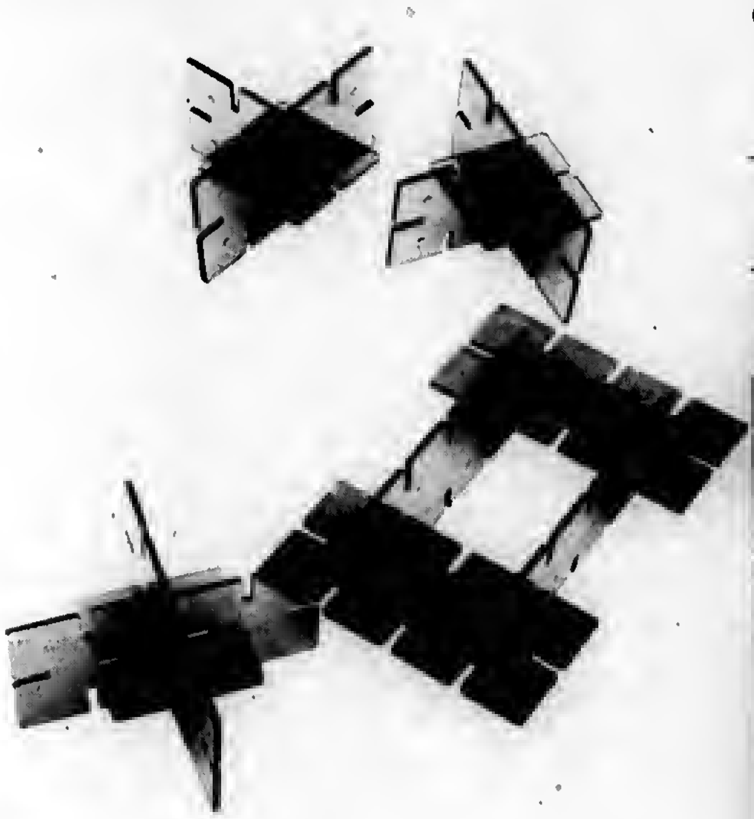

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Governor Commends DP Crew for Flood Recovery

(Continued from Page 1)

"By his quick action, thousands of data storage tapes containing vital information were recovered and restored to a usable level. Only quick action on his part could have saved the crucial information regarding the accounting system and the payroll and processing information for hundreds of state programs which utilize the central management information system."

More than half of the approximately 30,000 square feet of space in the computer center was under 11 feet of water during the flood crest. During the flood, the computer operations room containing a Univac 1108 computer system and all its ancillary equipment as well as 28 keypunch machines was completely destroyed.

"The tape file storage area which contained more than 18,000 reels of magnetic tape was the top priority," Ronald G. Lench, secretary of administration said.

"These tapes would have been lost, and we came very close to that, but for the dedication of the 123 persons in the bureau under Ippolito's direction," Lench said.

Ippolito had been on the job only four months when the crisis occurred but had sufficiently implemented several recommendations concerning possible contingencies such as fire or flood as recommended in the governor's Review of Management Report.

Tapes were actually being removed during the period that the water was cresting. Those which could not be saved because of hazardous conditions in the building were washed with household detergent and dried with hairdryers.

During the two-week period after the flood the entire computer center was reinstalled in a nearby facility and operation was begun again.

"It is interesting to point out not a single paycheck nor payday was unmet during this hectic period," the governor said.

It has been estimated that the original tapes saved by the reclamation process saved $250,000 in man-hours which would have been needed to reconstruct the tapes, assuming the raw data was available.

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Prove Need Before Upgrade

(Continued from Page 1)

analysis of the installations' DP operations than GAO has performed before.

The problem with using any sort of economic justification for new equipment, he explained, is that almost anyone can list enough future applications to make the request seem reasonable. Even pointing to a system that is running around-the-clock on a current workload really avoids the issue, according to Chastain.

The central issue must be a determination of how well the current configuration is really being used "and that should be a consideration for any installation, not just the government ones that we ride herd on," he added.

Does a manager need new equipment if his present CPU is working less than 50% of the time the system is being used? he asked.

Chastain spoke at the two-day Scientific Computer Information Exchange Meeting sponsored by the Atomic Energy Commission.

Study Reveals Welfare Errors

BOSTON – A study of the computerized state welfare recipient list has revealed errors in 650 cases. Payments to these people have since either been reduced or terminated and will result in a savings to the state of about $57,000/mo, according to welfare commissioner Steven Minter.

The study revealed that about one percent of those receiving public assistance receive both welfare and unemployment compensation. A further check of the double recipients showed 361 cases or 26% are the result of fraud or misrepresentation. Payments in these cases have been reduced or terminated and are being referred to the Bureau of Welfare Auditing for investigation and prosecution.

In another 289 cases, or 21%, it was found that welfare payments were incorrect because of misunderstandings or delays in processing and these are being corrected.

In 41% of the cases checked, the double assistance payments were found to be legitimate. The remainder involved incorrect Social Security numbers or cases which have not been completed.

Grant Aids Health Research

DENVER – Health Care Management Systems, Inc. has received a $62,000 grant from the Robert Wood Johnson Foundation for research on computer applications in ambulatory health care services throughout the U.S.

The study is intended to identify which of the thousands of computer projects used in medicine could be of significant value; successful completion of this study should assist health agencies in choosing computer applications.

The project will involve a study of literature on existing computer systems followed by a study of representative systems.

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Most Elections Officials Claim Systems Secure and Accurate

(Continued from Page 1)

According to the study, the average cost per registrant in counties using lever machine systems is $1.39, compared to $1.90 for the punched card systems and $2.05 for the paper ballot counting systems.

The computer-based techniques were only less expensive than their manual counterparts in one application area – the maintenance of voter registration lists.

Counties that have computerized this function, the study found, spend 42 cents less per registered voter than their manual counterparts. In all of the other application areas, the manual systems and computer systems cost approximately the same on a per registered voter basis, the survey reported.

Computer use in the elective process is still in its infancy, the report noted, pointing out that only 7% of the counties presently use punched card voting systems and an additional 2% use some sort of OCR system to help count votes.

At the same time, 16% of the counties use computer systems to maintain registration lists and 12.8% of the counties use computers to print summaries of election results. According to the report, 10.7% use computer systems "in some way" for ballot counting, since some of the counties using lever systems as the primary counting method, also use computers to some extent in the counting process. This is why this figure is higher than that for just punched card and OCR counties.

Only 9.7% of the counties use computers to actually produce election results, the survey found.

Overall, the survey discovered the punched card and OCR methods of election recording were most popular among larger counties.

Accuracy of L.A. Vote System Challenged

By Marvin Smalheiser

CW West Coast Bureau

LOS ANGELES – The accuracy of the computer punched card voting system here has been challenged by county supervisor Baxter Ward.

Ward asked the Los Angeles election commission for a "thorough review" of the system, which had a number of problems initially but which has been performing smoothly for the past two years.

Elected to the board of supervisors last fall, Ward expressed concern about the "security of the ballot" under the present system of punched card voting.

He said he wanted an extensive post-election manual recount to check against the computer count. There is now a manual recount of 20 precincts after each county election. The county has over 7,000 precincts.

Ward said he was curious about the accurancy of the computer system because of a check of the votes he received in the primary election last year. In at least 34 instances, he said, identical vote totals were reported for successive precincts by the computer.

In some cases, he said, two precincts in a row reported an identical total for him or his opponent. In some cases three precincts in a row and in one case four in a row reported the same figures.

Ward told the election commission he took the matter to a private computer firm, which said a four-in-a-row sequence of identical totals was a "million to one" mathematical coincidence. The firm said it could not explain what it called an "interesting" situation.

A check of precinct totals for another election in 1970, Ward said, also showed the "unique" coincidence of identical figures in sequence.

Safety Planning Unit To Analyze Data On Crimes in Schools

By Judy Kramer

Of the CW Staff

NEW YORK – The Board of Education here has set up a unit in the Office of School Safety to collect and analyze data on crimes and acts of violence in the city's schools.

The new analysis and planning unit will use the Board of Education's IBM 370 computers to analyze reports on violent incidents in the schools to learn more about the types and severity of crimes committed, which schools or areas are more incident-prone, when these incidents are most likely to occur, and what types of people (boys, girls, gangs) are involved in the incidents.

Input for the system comes from formal written reports of accidents or incidents in the school which are sent to supervisory personnel and the school safety office. The local police also send in reports of crimes in or near schools.

Everything entered into the computer system is of a statistical nature, emphasized W. Domenique, systems analyst and head of the unit. No names of students or teachers are included and all written copies of original incident reports are destroyed at the end of each school year to protect the students, he said.

Data collected from this system will be used to determine trends and plan new efforts to protect students and teachers. The unit's reports will be used as a basis for training security personnel and for assigning day-to-day security guards.

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*EDP Analyzer, October 1972, That Maintenance "Iceberg," P.1. (Send for complimentary copy.)

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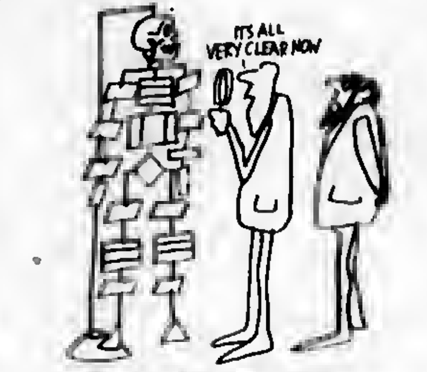
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NCC Sessions Offer Chance for User-Industry Dialogue

NEW YORK – The first National Computer Conference (NCC), less than a month away, looms as an extraordinary chance for users and industry figures alike to actively engage in dialogue and interaction.

In addition to the "conference within a conference" approach, by which sessions are labeled either methods and applications or science and technology, there is a special program of in depth sessions, which gives attendees an unprecedented number and variety of sessions.

Advance registration for the June 4-8 NCC closes May 15. Prospective attendees should call the American Federation of Information Processing Societies, the conference sponsor, to obtain registration materials. Afips has a toll free number, 800-631-7070.

The conference fee is $50 for Afips members and $60 for nonmembers and includes a copy of the proceedings. A one-day pass to both the exhibits and the programs is $20 while a five-day exhibit-only pass is $15. Student fee is $5 from 210 Summit Ave., Montvale, N.J. 07645.

The following is a schedule of the sessions available at NCC. All locations are the New York Hilton except where specified at the Americana Hotel. Special sessions are in bold type.

Monday

1:30–3:30

Methods & Applications

1. Regulation of Computer/Communications Industry – *Robert Bigelow* – Sutton North

2. Voice Answerback Comes of Age – *Tom Fisher* – West Ballroom

3. Point-of-Sale Systems – *Richard K. Hampson* – Clinton Suite

4. Computer Use Around the World – *Bruce Gilchrist* – Nassau Suite

Science & Technology

5. What's the Computation in Computational Linguistics? (ACL) – *Robert F. Bamas* – Georgian A, Americana

6. Conversion Problems – *Bonnia Dunning* – Murray Hill B

7. Design and Development of Application Packages for Users – *Wayne B. Nelson* – Georgian B, Americana

8. Computer Evolution and the Next Decade (IEEE Computer Society) – *Ned R. Kornfield* – Sutton South

9. Trends in Data Base Management – *Gaorge Dodd* – Regency Ballroom, Americana

3:45–5:45

Methods & Applications

10. Legal Protection for Software – *Robert Bigelow* – Sutton North

Voice Answerback Comes of Age (contd.)

11. Data Processing Directions in the Retail Industry – *Richard K. Hampson* – Clinton Suite

Science & Technology

12. Simulation: Past, Present & Future (SCI) – *Philip J. Kiviat* – Georgian A, Americana

13. Intelligent Terminals – *Ira Cotton* – Murray Hill B

14. Computing for Statistical Purposes – Expectations Amid Accomplishments and Gaps (ASA) – *Marvin E. Muller* – Georgian B, Americana

15. Natural Language Processing – *Aravind K. Joshi* – Nassau Suite

Trends in Data Base Management (contd.)

18. Information Science and Technology from a Global Viewpoint – *Robert M. Lendeu* – Sutton South

Tuesday

8:45–10:15

Methods & Applications

17. 9-12, Performance Evaluation and Measurement – *Berry W. Boehm* – Sutton North

18. 9-12, Computers in the Elective Process – *E. Draka Lundall Jr.* – Sutton South

19. Publishing – *Frank Anzelmo* – Nassau Suite

Science & Technology

20. Instrumentation, Computers and Process Control (ISA) – *Arthur C. Lumb* – Gramercy Suite

21. Advanced Hardware – *John T. Lynch* – Murray Hill Suite

22. Information Science – Promises, Realities and Futures – *Jack Belzer* – Gibson Suite

23. The Use of Computers in Education (AEDS) – *Sylvia Charp* – Clinton Suite

24. Environmental Quality and the Computer – *Peter W. House* – Georgian A, Americana

25. A Day of the Computer Arts Music: Demonstrations, Presentations, Philosophy – *Stafen Bauar-Mengelberg* – Regent Room

10:30-12:00

Methods & Applications

Performance Evaluation and Measurement (contd.)

Computers in the Elective Process (contd.)

Publishing (contd.)

26. The Impact of Hand-Held Calculators – *Gregory Williams* – Beekman Room

Science & Technology

Instrumentation, Computers and Process Control (contd.)

Advanced Hardware (contd.)

27. Specialized Information Processing (SLA) – *Betty B. Brociner* – Gibson Suite

The Use of Computers in Education (contd.)

28. A Day of the Computer Arts: The Editors View Computer Arts – *Graca Hartlein* – Regent Room

1:30–3:30

Methods & Applications

29. Computers in the Congress – *Ernest C. Baynerd* – West Ballroom

30. 1:15–3:45, Manufacturing Automation – *Robert H. Anderson* – Nassau Suite

31. Knowledge Dissemination – *Andrew A. Aines* – Gramercy Suite

Science & Technology

32. Performance Evaluation – *Marshall D. Abrams* – Gibson Suite

33. Information Networks–International Communication Systems – *Betty B. Brocinar* – Murray Hill Suite

34. An Undergraduate Program in Information Systems – *Gerald L. Engel* – Clinton Suite

35. The Impact of Networking on Storage, Retrieval and Transfer of Technical Information – *Andraw J. Kasarda* – Beekman Room

36. A Day of the Computer Arts: The Computer and the Arts – George Arnovick – Regent Room

37. Economic Future of the Data Processing Industry *(Business Week)* – *Lewis H. Young* – Sutton Ballroom

3:45–5:45

Methods & Applications

38. Graphics Applications for the Garment Industry – *Fanton Gilbert* – Sutton South

Science & Technology

39. The Auditor's Interface with EDP Systems (Aicpa) – *Noel Zakin* – Clinton Suite

Performance Evaluation (contd.)

40. Automated Project Management Systems – *Ira Bitz* – Murray Hill Suite

41. Academic Computing at the Junior/Community College: Programs and Problems – *Harold J. Highland* – Rhinelander Center

42. The Growing Potential of Mini/Small Systems – *Douglas B. McKay* – Beekman Room

43. Networks and Data Banks: What Contents? – *Michael Lesk* – Sutton North

44. A Day of the Computer Arts: The Renaissance of Art-Science – *Kurt Lauckner* – Regent Room

45. Computer Technology as a Public Resource – *Alan Kaplan* – Rhinelander South

46. 7 p.m., A Day of the Computer Arts: Computer Generated Films – *Kennath Knowlton* – Regent Room

Wednesday

8:45–10:15

Methods & Applications

47. Five Year Plans for Computers in State Government – *John Gentile* – Nassau Suite

48. 9-12, Computers in Automotive Design and Manufacturing – *Hans Kuschnarus* – Sutton North

Science & Technology

49. Computer History: Critical Turning Points and Software Developments – *William F. Luebbert* – Gramercy Suite

50. Interactive Computing: A Mind Expander (SID) – *Carl Mechovar* – Murray Hill Suite

51. Resource Utilization in the Computing Community (ACM) – *Harbert S. Bright* – Georgian A, Americana

52. Data Security in Government – *James M. Cleyton Jr.* – Sutton South

53. A Graduate Program in Computer Science – *Michel A. Melkanoff* – Beekman Room

54. Wave Form Analysis in Clinical Medicine – *Harold W. Shipton* – Regent Room

10:30–12:00

Methods & Applications

55. Computer Operations of State Agencies and Universities – *John Gentila* – Nassau Suite

Computer Use in Automotive Manufacturing (contd.)

Science & Technology

Computer History: Critical Turning Points in Software Developments (contd.)

56. 10:45–12:45, Graphic Applications I – *Jackie Potts* – West Ballroom

Resource Utilization in the Computing Community (contd.)

57. Information Science and Technology through the Eyes of Asis (Asis) – *Robert M. Landau* – Murray Hill Suite

Wave Form Analysis in Clinical Medicine (contd.)

1:30–3:30

Methods & Applications

58. Interim Report from the IBM Data Security Study Sites – *C.L. Foster* – Murray Hill Suite

59. Urban Services I – *Ed Blum* – Nassau Suite

60. Off Vehicle Diagnostics – *Joseph P. Sweenay* – Sutton North

61. Status and Future of Software Products Worldwide – *Martin Goetz* – Sutton South

Science & Technology

62. 2:30–5:00, Graphic Applications II (contd.)

63. Views of the Future I – *Murray Turoff* – Gramercy Suite

64. Mathematical Software: State-of-the-Art (Slam) – *William Jameson Jr.* – Regency Room

65. Computing and the Law: Interactions – *Philip H. Dorn* – Regent Room

3:45–5:45

Methods & Applications

Urban Services II (contd.)

86. Development of Generalized Software Products – *James Porter* – Sutton South

67. Secure Data Systems – *Lawrence Foster* – Murray Hill Suite

68. 3:45–6:45, Advertising and Marketing – *Charles Gulotta* – Clinton Suite

69. Simulation of International Relations – *George L. Draper* – Gibson Suite

Science & Technology

Views of the Future II (contd.)

70. 5:15–6:45, Graphic Film Festival – *Jackie Potts* – West Ballroom

71. Satellite Packet Communications – *Lawrence G. Roberts* – Beekman Suite

72. Venture Capital for the Computer Industry – *Robart F. Johnston* – Regent Room

73. 8–10, Graphics in 3D: Sorting and the Hidden Surface Problem – *Rodney Allen* – West Ballroom

Thursday

8:45–10:15

Methods & Applications

74. In-house Training I – *Dorothy Tucker* – Sutton South

75. Onboard Computers for Automobiles – *H. Blair Tyson* – Trianon Ballroom

76. Data Integrity – *Milton Bryce* – Rhinelander North

Science & Technology

77. Storage Systems – *Ban M. Y. Hsiao* – Gramercy Suite

78. Tutorial on Resource Utilization in the Computing Process – *Harbert S. Bright* – Regent Room

79. Managing the Impact of Generalized Data Bases (by special registration only) – *Charles A. Philips* – Georgian A, Americana

80. Outlook and Prospects for Marketing Abroad – *Joseph Millar* – Clinton Suite

10:30-12:00

Methods & Applications

81. Inhouse Training II – *Peter Savidas* – Sutton South

Onboard Computers for Automobiles (contd.)

82. Four Major Reports on Privacy and Computers – *John Gosden* – West Ballroom

83. Reliability for Integration into Human Affairs – *Donn B. Parker* – Sutton North

Science & Technology

Storage Systems (contd.)

84. Data Communications Via Satellite (AIAA) – *W.G. Schmidt* – Regency Ballroom, Americana

Tutorial on Resource Utilization in the Computing Process (contd.)

Managing the Impact of Generalized Data Bases (contd.)

Outlook and Prospects for Marketing Abroad II (contd.)

1:30–3:30

Methods & Applications

85. 1:30–3:00, Inhouse Training III – *Gail Buarger* – Sutton South

86. 2:30-4:00, Automobiles, Computers and the Consumer – *Harbert Meinwaring* – Trianon Ballroom

87. 1–4, Security and Privacy, in Specific Computer Systems – *James Riley* – West Ballroom

88. Computers Are for People – *Gabriel Groner* – Versailles Terrace, Americana

Science & Technology

89. Network Computers: Economic Considerations – Problems and Solution – *William J. Barr* – Gramercy Suite

90. Applications of Automatic Pattern Recognition – *Louis S. Rotolo* – Regency Ballroom, Americana

Managing the Impact of Generalized Data Bases (contd.)

3:45–5:45

Methods & Applications

91. 3:15–5:45, Inhouse Training IV – *Dorothy Tucker* – Sutton South

92. 4:15–6:00, Security and Privacy in Disaster – *Thomes B. Steel Jr.* – West Ballroom

Computers Are for People (contd.)

93. Metrication – *W.E. Andrus, Jr.* – Versailles Terrace, Americana

Science & Technology

94. Nontechnical Causes of Failure of EDP/MIS Groups – *Herbart Halbrecht* – Trianon Ballroom

95. Cryptology in the Age of Automation – *Henry Ephron* – Royal B, Americana

Network Computers: Economic Considerations – Problems and Solution (contd.)

96. Ingredients of Pattern Recognition – *Robert S. Ledley* – Regency Ballroom, Americana

Managing the Impact of Generalized Data Bases (contd.)

7 p.m. Managing the Impact of Generalized Data Bases (contd.)

Friday

8:45–10:15

Methods & Applications

97. Economics and Remote Terminals – *Dan Printz* – Royal B, Americana

Science & Technology

98. Virtual Machines – *Ugo O. Gagliardi* – Sutton North

99. What's Different About Tactical Military Computer Systems – *James A. Werd* – Royal A, Americana

100. Associative Processors – *P. Bruca Berra* – Madison Suite

101. Computer-based Integrated Design Systems – *Harbert M Ernst* – Princess, Americana

102. Discrete Algorithms, Application and Measurement – *Michael L. Krieger* – Sutton South

103. Career Development for Computer Professionals – *Paul Oyer* – Versailles Terrace, Americana

Managing the Impact of Generalized Data Bases (contd.)

10:30–12:00

Methods & Applications

Economics and Remote Terminals (contd.)

Science & Technology

Virtual Machines (contd.)

What's Different About Tactical Military Computer Systems (contd.)

Associative Processors (contd.)

Computer-based Integrated Design Systems (contd.)

Discrete Algorithms, Application and Measurement (contd.)

Managing the Impact of Generalized Data Bases (contd.)

'Special Regulations' for Each Country

World Group Urges Right of Inspection of Data Banks

By E. Drake Lundell Jr.
Of the CW Staff

PARIS – All private data banks containing personal information should be regulated just as credit data banks are in the U.S., and governments should consider allowing citizens to see government information kept on them in public data banks, according to a "restricted" report prepared by a subcommittee of the Organization for Economic Cooperation and Development (OECD).

The report, submitted to the OECD's Computer Utilization Group, noted that "central governments are faced with the problem of engendering public alienation over the personal and societal implications of the computer," particularly in the area of personal privacy.

Because of this, the report recommended, "public uncertainties regarding data confidentiality and security should be resolved as quickly as can be achieved in each country."

To help overcome this public fear, the report stated, "special attention should be given to the question of the individual's access to public and private files containing personal information on him."

In addition, the report recommended that "the use of data from private data bases, such as credit reference, medical, insurance and business personnel records, ought to be subjected to special regulations."

The report also indicated that governments should launch " formal programs" to "apprise the public of the characteristics of computers, their use by government, immediate and future benefits."

In addition, the report noted that for some fast-changing files it would be hard to provide an up-to-date printout to people identified in it.

However, the report found that a more workable solution might be to allow persons to inspect their files where they were being kept, much as the Fair Credit Reporting Act does in the U.S.

But, it noted, at present it would be hard for all government agencies that kept records on individuals to meet "the demand of curious constituents if this were a public policy.

"Perhaps later, when the personal identifier becomes a key to release file information at the local post office terminal, such an access right can be contemplated."

As a compromise to releasing a person's complete file or letting him inspect that file, the report suggested allowing individuals to "challenge and rebut derogatory information in personal files in government departments and agencies."

To do this the governments would have to inform an individual that a certain file was the source of information that prevented him from getting some benefit and then allow him to see that file and delete or correct any inaccurate information, the report said.

Including this right of inspection whenever information in a file is used to deny a citizen something should go a long way toward allaying the public fears about the retention of records in computerized data banks, the report added.

.The report noted that today "there is wide agreement on the desirability for installing computers for recordkeeping and more sophisticated tasks in public administration" among the 14 member countries that make up the OECD.

However, it stated that "the issues before central governments are changing from a commitment to install automatic data processing to the best practice governing its use" once installed.

Security Downplayed

While consideration is being given to some other areas of computer operation, the report noted "the installation of security techniques in a data base containing health, economic, welfare, census, housing, political or other categories of data which include personal identifiers is not being actively considered by any country, as far as could be determined."

Rather, the report said, "rules of prudent administrative management information collected by central governments on their citizens are considered sufficient protection of data integrity" in the countries surveyed.

But the report indicated that "there seems to be a need to exa.nine higher levels of data confidentiality for traditionally routine files."

Even though the report found a need for more protection for personal files, it said that "the notion that every citizen has a right to computer printout of all (non-security) records held by central government was found to require further investigation to determine its feasibility."

The cost and complexity of providing every citizen with a printout of his files, the report indicated, "would probably bring to fruition a centralized intelligence data base employing standard personal identifiers, an effect generally opposed by those supporting the notion of a right to printout."

Computer May Hold Key To Ancient Mayan Glyphs

UNIVERSITY OF MEXICO – The hieroglyphic writing of the ancient Maya Indians, which has puzzled scholars for centuries, is now beginning to yield its secrets thanks to some modern decipherment techniques.

One method being used by a group of scholars at the Center for Maya Studies at the University of Mexico combines the computer and linguistics.

The scholars are compiling a computer catalog of pottery glyphs and two of the three existing Maya books (codices) now preserved in museums in Dresden and Madrid.

By assigning numbers and letters to represent the different parts of glyph "sentences," they hope to construct a computer "map" of the books. The glyphs are normally arranged in "cartuches," four- to six-character sentences. Thus a cartuche might be represented in a printout as DO4W – E45E – J82P – M08U.

When this task is completed, it should be possible to compare different parts and spot frequently used constructions.

The computer project, coupled with the current independent project of a linguist who is trying to recreate the ancient Mayan as spoken when the codices were written, will hopefully provide the key to the written language.

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L.A. County to Monitor Justice Systems

CW West Coast Bureau

LOS ANGELES – The district attorney of Los Angeles County is planning to set up a management information system which would monitor the performance of the county's criminal justice system from police to prosecutors to judges.

Promis (Prosecutors' Management Information System) is expected to be on-line in about three years at a cost of $1,079,484, partially funded by the Federal Government.

It is intended to give visibility to and standardize procedures in the criminal justice system to insure equal and consistent justice in various parts of the county.

Robert Martin, special assistant district attorney, said the system would be implemented in two 18-month phases.

One will be for software cleanup and the second for selecting and automating those portions of the district attorney's functions most susceptible to data processing.

The software will be developed by a joint project team of top executives and deputies and an outside consultant not yet selected.

News Wrapup

Decimal Point Error Delights Shareholders

NEW YORK – The dividend checks read 75 cents per share and 32,000 shareholders of Dart Industries, Inc., of Los Angeles, were celebrating the unexpected increase of almost 70 cents per share.

The celebration was soon cancelled, however, as were the checks which had been mailed out by Morgan Guarantee Trust Co., dividend-disbursing agent for Dart Industries.

New checks will soon be received by shareholders, but with a small alteration – the decimal point has been shifted. Corrected statements will read 7-1/2 cents per share, which is what the originals would have read if a programmer hadn't input wrong data, according to Russ Everett, spokesman for the bank.

"It was strictly a human error, not connected with the computer in any way," Everett said. This human error nearly cost $13.5 million.

DP Does It Again

HOLLYWOOD, Fla. – They've done it again – computers have helped police track down a stolen car, but this time it was a double coup.

After Bernie Seville allegedly took a 1965 model car from a garage on approval and never returned the vehicle, Newcomerstown, Ohio, police input the information into the national crime information file.

According to Florida police, Seville managed to obtain a title and Ohio license plates for the car and drove it to Hollywood, where it was stolen when he parked it on the street.

Seville reported the theft to the Hollywood police who fed the information into their computer. The computer indicated that Seville himself was suspected of originally having stolen the car. He was then apprehended and held for the theft.

Harlem Center Opens

NEW YORK – A new community-oriented DP center has opened in Harlem which will serve black businessmen, train black computer operators and keypunch operators and funnel profits into a fight against some of the community's "many ills," according to Heyward B. Davenport, chairman of the board of directors.

Har Computer, Inc. expects to reap $250,000 in profits by next April, Davenport said.

Firm Fermenting Fake Food

LEHIGH VALLEY, Pa. – One-celled organisms are teaming up with computers to produce a myriad of life's essentials through Fermentation Design, Inc., whose products include antibiotics for medical purposes and enzymes for laboratory studies and industrial applications.

Fermentation Design's business is to design and manufacture complex research systems for other companies engaged in production fermentation, the manipulation of large colonies of single-cell organisms to produce marketable quantities of organic products.

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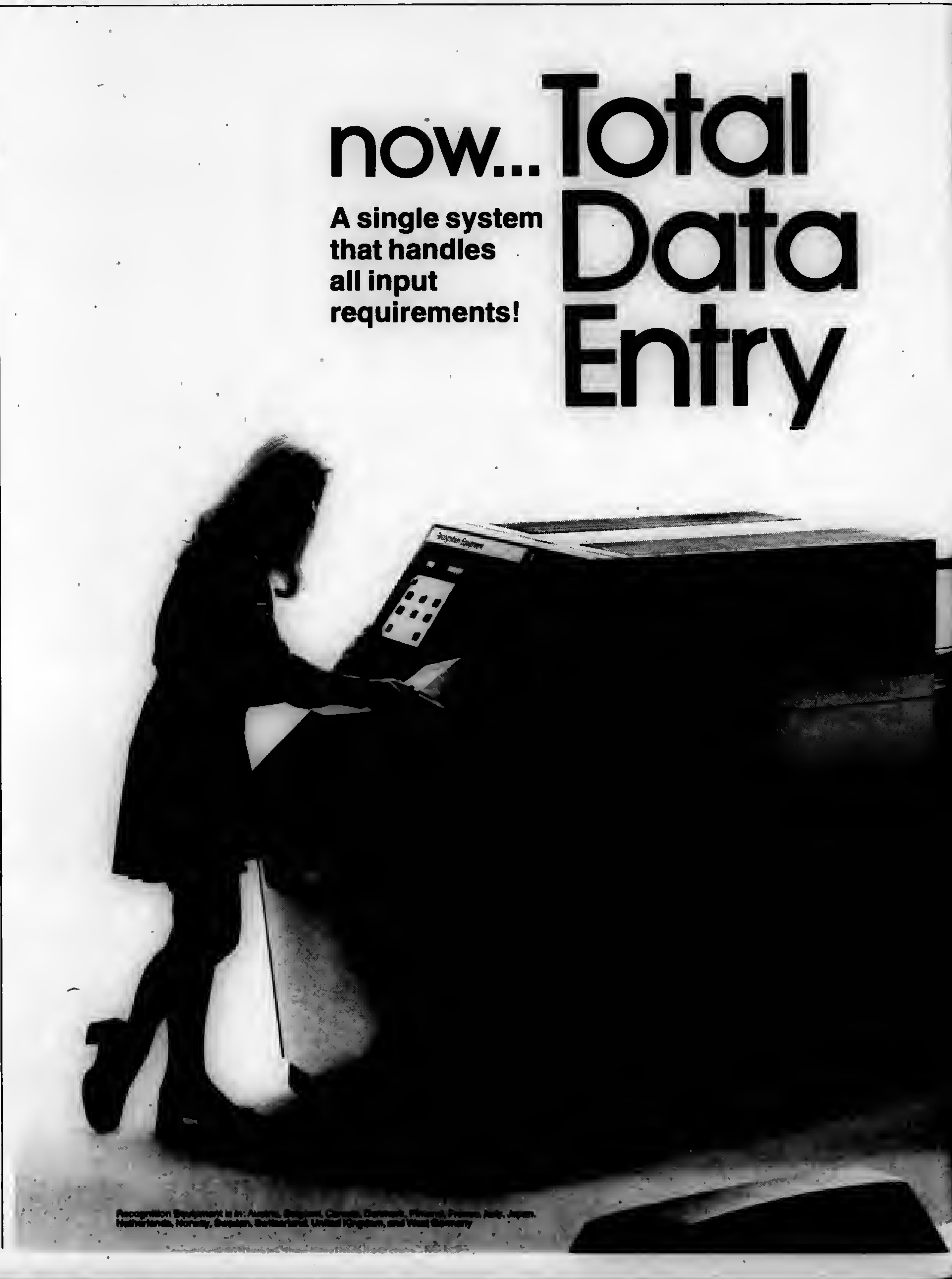
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Church Seeks Disclosure of IBM S. African Dealings

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Charging IBM with breach of promise, the Episcopal Church has renewed its efforts to get the firm to disclose information about its dealings in South Africa.

The church, which owns over 8,000 shares of IBM stock (worth more than $3 million), has even filed a stockholder resolution that was included in the IBM proxy statement, asking the firm to provide "basic data" about its South African operations and employment practices so that stockholders might give those practices "thoughtful consideration."

Discussion of this proposal dominated the annual meeting of about 1,200 shareholders last week before it was defeated.

Frank T. Cary, president and chairman told the shareholders he felt IBM could do more good by staying and working in that country.

At the same time the church's Committee on Social Responsibility in Investments filed the resolution, Paul Neuhauser, committee chairman, charged that IBM had not lived up to its promises to supply similar information last year.

The church, he noted, had filed a similar stockholder resolution last year for inclusion in the IBM proxy statement, but it had been withdrawn prior to the annual meeting when the committee and IBM agreed on a draft report that was to be presented at the meeting.

However, Neuhauser now charges that the company "omitted much of the factual material" which IBM had promised to supply. In fact, he said, 80% of the material in the draft report was omitted from the report of the annual meeting.

He also said that IBM had agreed to provide information in separate categories in response to last year's stockholder resolution, but charged that only one of the areas "was fully complied with, and in each of the other eight instances either the promised information was not supplied at all or it was supplied in an inadequate fashion."

IBM said last week that "we think that we provided enough information last year," and a spokesman said the firm was against this year's request because it asked for an "inordinate amount of detail."

The IBM board of directors has urged the shareholders to vote against the proposal.

The Episcopal Church is a member of a six-church consortium called "The Church Project on U.S. Investments in Southern Africa – 1973," which is challenging some of the largest U.S. corporations about their investments in South Africa.

While the churches were stepping up their campaign against IBM and charging it with deceit in its agreement last year, they at the same time cleared another computer company, Burroughs Corp., from a proxy battle, because Burroughs voluntarily agreed to publish a report of its activities in South Africa and on other social issues.

Investment Details

The resolution filed with IBM asks for information on the annual capital investment in South Africa since 1962; the annual profits; the number of employees by race; contractual relations with the government there; and taxes paid to the South African government.

It also seeks "a listing and explanation" of grants and charitable gifts made there by the company since 1962.

In the area of relations with workers, the resolution asks the firm to supply a listing of current wages and employee benefits by functional job description comparing workers of different races and a summary of such wages and benefits and promotions for whites and non-whites since 1962.

It also seeks a listing of grievance procedures open to African workers and questions whether the firm has any trade union contracts that restrict the opportunities for Africans.

Furthermore, the resolution seeks a description, by race, of "technical training, general education, legal assistance, housing or other programs provided by the corporation for workers or their families."

It also asks for a description of the firm's investment plans for the border areas of the Bantustans and a description of the total number of non-South African personnel employed in the country and the international recruiting programs of the firm.

Finally it requests that the firm describe and explain "those South African laws which directly affect the corporation's employment practices and the working conditions" of African workers and a statement on compliance with those laws and on what action the firm has taken to get them changed.

The church also seeks a list of products sold for military and police use to the South African Government since 1962.

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Editorials

A Clean Slate

IBM should supply the Episcopal Church with information on its operations within South Africa.

It is hard to understand why the IBM Board of Directors is fighting this request – Burroughs and Mobil Oil have proved that firms can comply with the proposals adequately without bankrupting themselves.

Surely with IBM's resources, the answers to the questions asked by the church are probably already available somewhere.

Last year IBM released partial information on its activities in South Africa which made the firm look very good in its employment and training practices for Africans. Surely the release of similiar information this year would also reflect favorably upon IBM.

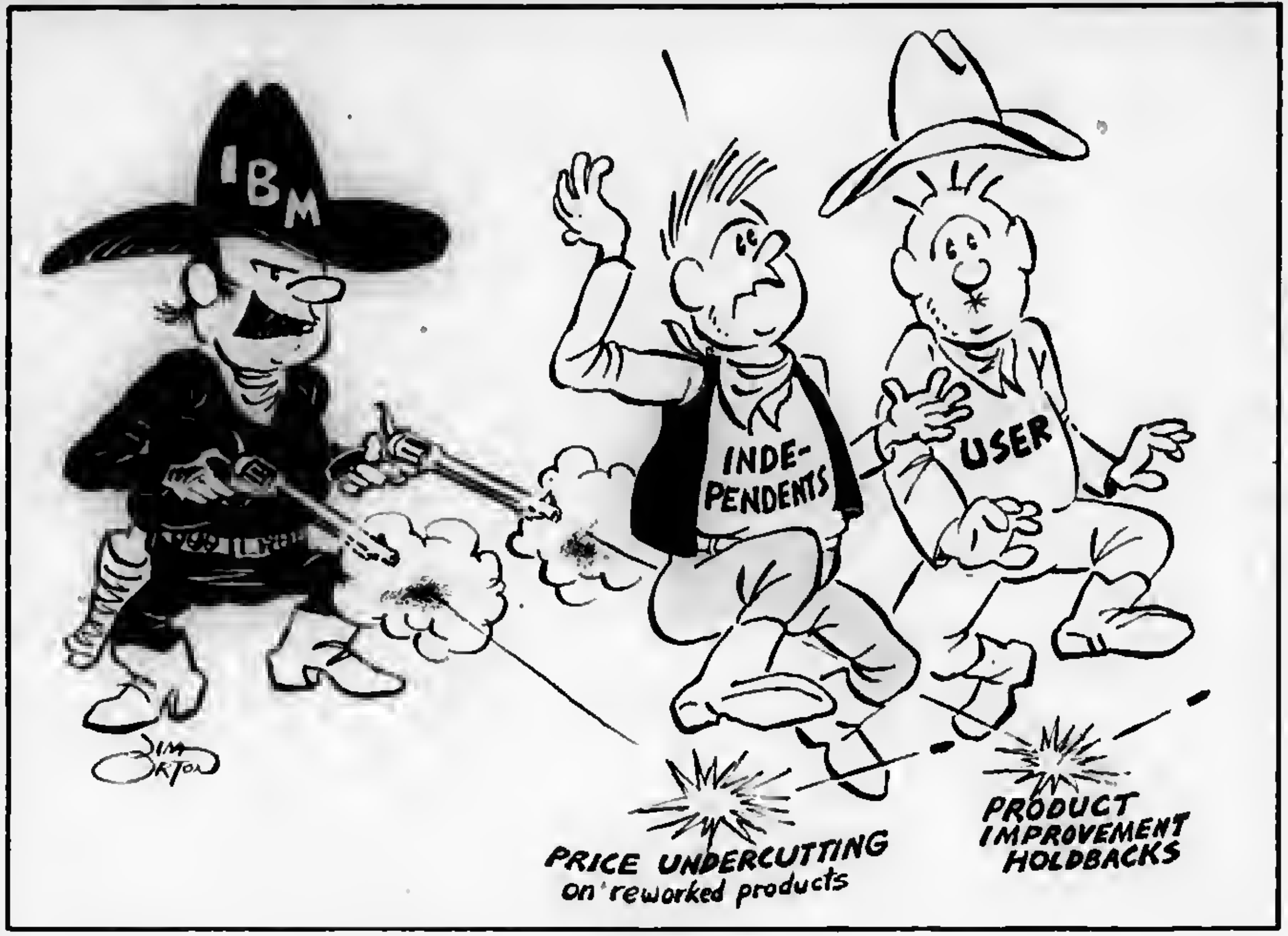
Breaking the Silence

The relationship between a DP user and his vendor is not a private domain that must be protected at all costs. While some vendors would have this relationship protected in much the same way a patient shares confidences with his doctor, most users object.

The myth that secret negotiations between user and vendor lead to favored treatment and discounted prices for the customer cannot be verified. And subservience to the whims of the vendor should not be required for proper treatment for the user.

Fortunately, most users enjoy a reasonable relationship with their vendors and their DP systems meet many, if not all, of their expectations.

So it is unbelievable that some users believe they must suffer in silence, lest they incur the wrath of their local salesman and his superiors.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Letters to the Editor

Open Letter to IBM On Support for RPG

Mr. Jim Homet
IBM DB/DC Systems
1133 Westchester Avenue
White Plains, New York 10604

Dear Mr. Homet:

I am writing you with the hope of motivating the IBM Corp. into giving additional support to RPG II under DOS. Specifically, I am referring to:

- Compatibility with CICS/DOS. As you know, only COBOL, PL/I and assembler are supported.
- Compatibility with a Data Base Management System (VANDL/1 or DL/1).
- Ability to OPEN and CLOSE files in the calculation specifications.
- Ability to define an Isam file for sequential processing and also be able to chain to the same file without having to redefine it as a chain file.
- Ability to read an Isam file with a partial key.
- Relative addressing of positions within a field or record.
- More indicators.
- Ability to use registers in the calculation specifications.
- Ability to update a sequential file at total time.
- A cross reference list at the end of a compilation showing each field and every statement it is used with.

RPG II has proven to be one of the most productive commercial languages now available on the market. It is significantly superior to Cobol both economically and productively.

I would need five Cobol programmers to do the work of three RPG II programmers. (See related story on page 15.)

The greatest and most important enhancements that IBM could make to RPG II are CICS and Data Base Management support. We use RPG II for all of our batch systems and CICS/DOS for our on-line systems.

The enhancement mentioned above would only be used a small amount of time, but would be very helpful when needed. Such enhancements would make RPG II a much more powerful language.

Managers are interested in productivity and from this standpoint, RPG II can't be beat. If IBM would only give it the additional support it needs, IBM would make a major contribution to the efficient and economical use of computers.

Mike Pauken
Director, Data Processing
St. Vincent Hospital and
Medical Center
Toledo, Ohio

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

(other letters and viewpoints on Pages 12 and 13)

10 Guides Can Help Manage System Design

Management

By Frank Greenwood, PhD

These ten "commandments" should help manage the design of our information systems (see Siemens et al, *Operations Research*, N.Y., The Free Press, 1973):

1. Systems have a triple function: to get action, to record that action and to report the results.

When an organization grows beyond a one-man operation, efficiency suggests specialization of labor. As continued growth is matched by spreading specialization, someone must begin concentrating on coordinating the activities of these specialists.

Organizations thus consist of specialized parts which are coordinated by management. Information binds these split parts. The information system gears individual contributions to the overall plan and coordinates the specialists.

Probably .90% of the transactions in most organizations are concerned with routine actions.

System design develops decisions determining: the best way to handle these routine transactions, who does what, the forms needed and the policies and procedures governing the effort. If 90% of the transactions pass through this type of systems channel, it is fast and cheap, leaving only 10% to be handled as nonroutine exceptions.

2. Systems are natural cycles.

Find the pattern of 90% or so of the transactions. Identify the major objective of this bulk activity, where it starts, where it ends and the process points between. This defines the system to work on. Ignore department boundaries because they seldom coincide with system parameters.

3. Emphasize the work objective.

Define what results from the pattern of activity which makes up the system cycle. This limited work result needs to be related to the other goals of the organization, coordinating the overall effort.

4. Systems improve coordination.

Systems help coordinate by gearing individual effort to overall objectives. This requires careful analysis of how the work should be done, including: people's skills, procedures, data, machines, forms and policies. Information systems help achieve coordinated effort by getting action, by recording that action and by reporting the results.

5. People make a system work.

Operating (often clerical) people can make a poor system work or a good system fail. Therefore, involve these individuals in the system design early. Listen to them. Give them credit for their contributions. Keep them informed.

6. Forms and procedures are important.

Forms carry the data in the system and should be designed with this basic role in mind. Procedures are equally essential, helping to coordinate by defining who does what and when.

7. Minimize data handling.

Handling data is expensive, so avoid it. Eliminate recopying the same data, which is both costly and error-prone. Give each work station only the data to do its work (often reporting by exception).

Give particular attention to the connections between people working; that is, watch the transfer points, establishing where the responsibility of one person ends and where that of another begins.

8. Get machine-readable data early.

Record the data at the point of origin in machine-readable form. Capture enough data at this point to serve all the subsequent data needs of the system. Process the data mechanically from then on.

One way to design a system is to begin by defining the specific output reports, and then to work backwards to identify the inputs needed for that output. This approach is alright until promotion, transfer or retirement brings in a different executive to head up the office for which these output reports are designed.

The new fellow will probably need different reports, since his style of management is different. Much of the system now must be redesigned and reprogrammed to pick up the new input needed for his new output reports.

Therefore, a better way to begin the system design is to start by defining the data base (instead of just some specific output reports). That is, determine what data is needed now and what may be needed later by all offices using the system.

This involves where to best capture the data and how to maintain it (e.g., women change their names when they marry, people change addresses, and so on). With a carefully reasoned data base available, changing the output reports becomes considerably less work.

9. Balance costs and benefits.

System design weighs costs and benefits, considering speed and quality. Improving one factor usually degrades another, so it is a problem of optimization.

10. Documentation is critical.

Information systems are intangible (for example, holes in cards). The chief tool for planning and controlling system design is documentation. Documentation is a written record of the system, including: its purpose, what the input data is, what each work station does and who gets what output reports.

Creating and maintaining this documentation is critical. As each stage is planned, ask the user to "sign-off" on the specifications so that when the systems analysts then do what they are supposed to, systems specifications cannot later be redefined unilaterally by the user.

An information system cannot be automated until the manual system is in good shape.

(Frank Greenwood is a computer center director at the University of Montana.)

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Who Should Decide American Position On International Standard Interface?

The Taylor Report

By

Alan Taylor, CDP

I would like any computer I own to have the ability to be connected to any peripherals I own – and I think most computer owners and many computer borrowers would agree. However, at the moment, an official U.S. position is being formulated which would have the U.S. oppose any further work on international standard channel interfaces.

I discovered this apparent discrepancy between the opinions of the public, and those of the Ansi committee which considers itself responsible for formulating and presenting these opinions on the international standarization stage last month. The committee sent out a recommended position, opposing any further work on the project, which I disagreed with.

Many Unrepresented Areas

I talked to members of other groups which one would expect to be involved in such matters. I talked to people who own many computers – the leasing companies. I talked to people who own and manufacture peripherals – the computer service firms. I talked to educators, computer auditors and users.

All over I found that American opinion was in favor of such work, yet my soundings also told me that the position against it would be adopted as the official position. Response to the recommendation had a 30-day limit.

The recommendation will probably be accepted because eight or 10 individual computer mainframe manufacturers will probably vote for it on the Ansi committee – and their votes will be counted on a company by company basis in the formation of what is called "a consensus."

By contrast, there won't be any votes from the computer auditors, the leasing companies, the computer service industry or the people who buy and sell computers.

From the point of view of computer manufacturers, a standard interface capability could hurt their corresponding sales of overpriced peripherals to users of their mainframes; the replacement of one mainframe generation with another also generates peripheral revenues. So I can see that standard interfaces are not first priority items for mainframe makers. But they are only part of the community. Other parts have the right to be heard also.

> *"The one compelling reason which may yet make me oppose further work on the interface standard is the inadequate support currently available. If there is one thing I want less than not having a standard interface of some kind, it is having a standard that does not work!"*

Ansi Regulations Give Right

Ansi has seen to it, by providing various sets of regulations, that it can be heard. The SCDP membership on the X3 Committee, which must approve the current recommendation, is itself proof that the Ansi-protected right to be heard is real. Why then is it not used?

The real reason other interests are not being heard is simply because they have not accepted the fact that they have a *duty* to make themselves heard, as well as a right to be heard. The failure of the Ansi committees to really be representative of the community feeling, and yet be able to produce persuasive ballots showing everything is being approved by the consensus method is because the other interests have not accepted such a duty.

I think they should. It is my hope that the various organizations that have been set up to speak for the various areas of the computer industry should join in and actively participate in determining the American positions.

Such groups as the Computer Dealers Association, Inc., Computer Industry Association and the Computer Lessors Association should get involved.

Ansi rules say that as long as there are areas where organizational representation is not available, individual companies can also join.

Support Needed

I would like to ask your help to get these organizations to take up their proper role and to provide support for such important work. It need not involve much money to get support. And support is actually the problem we face with regard to getting standard interfaces.

The one compelling reason which may yet make me oppose further work on the interface concept, is not because the National Bureau of Standards has reported against it, but instead because of the inadequate support currently available.

For if there is one thing I want less than not having a standard interface of some kind, it is having a standard that does not work!

You can help by filling in the questionnaire and saying what you think. Then we will see what can be done to persuade the community organizations to play their role. Perhaps even in time to save the interface program.

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Ansi Interface Recommendation

The U.S. member body has at this time no technical response to ISO/TC97/SC13 (Japan-1) 2 because it believes that further technical work toward the goal of achieving a channel level interface at the ISO level will be of minimal value due to the following considerations.

- We believe that support for a channel level interface throughout the ISO community is diminishing. The Ecma General Assembly has asked to withdraw support of the Ecma proposal for a channel level interface as reported in Ecma/GA/72/44. The U.S. National Bureau of Standards (Center for Computer Science and Technology report on "Means of Achieving Interchangeability of Computer Peripherals) has recommended that no attempt be made to develop a single Federal interface standard. It appears that German and UK member bodies have now decided not to generate a channel level interface proposal.
- As expressed in U.S. comments on TC97/SC4/WG4 N135, the U.S. member body believes the "interface standard administration" issue is critically important. The lack of an acceptable resolution to this issue represents a significant obstacle to the implementation of the proposed interface standard. Until there is indication of resolution, it appears to us inappropriate to pursue the technical interface definition, since we believe administration problems are likely to prevent the realization of a standard.

For these reasons, we have decided not to provide further technical comment on the proposed channel level interface working paper.

An Ansi committee officially recommended that the U.S. no longer participate in an international effort to develop a standard channel interface.

Who Should Represent U.S.?

I think the following areas of the community should be represented when decisions are made on the U.S. position on channel interfaces.

____

What organization(s) could represent these community interests?

____

☐ I personally
☐ My organization
would support such representation.

Name ____________ Professional Position ____________
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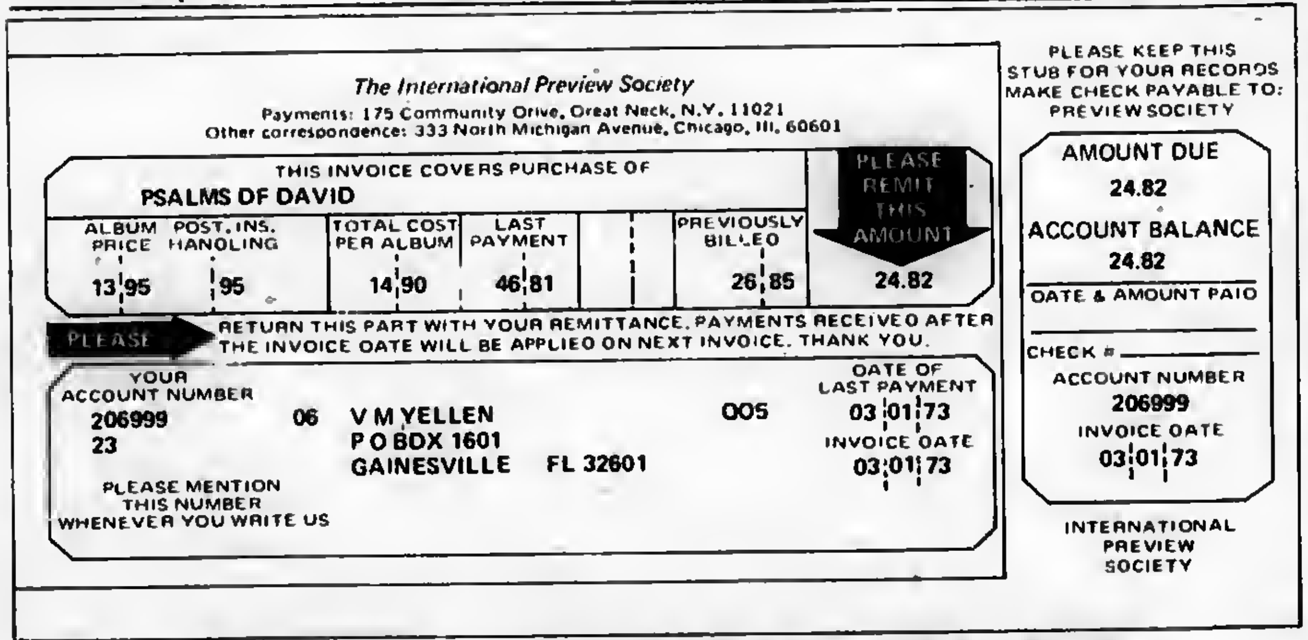

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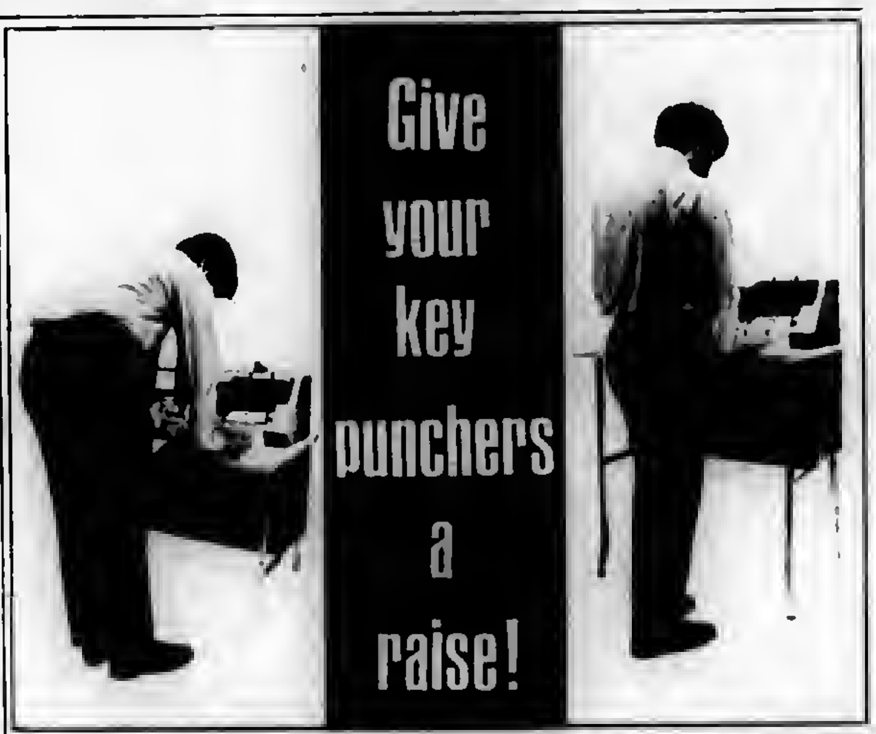
Why Didn't They 'Preview' This Bill?

The International Preview Society recently sent this computerized bill to *Computerworld* reader V. Yellen. What he wants to know is how they arrive at $24.82 owed from an album cost of $14.90 and payments of $46.81 on a previous billing of $26.85. Can you help?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Must Start From Within

CDP Needs Positive Help, Not Prophets of Doom

By Kenniston W. Lord Jr.

Special to Computerworld

Viewpoint

If one were to take the perspective of some recent prophets of gloom, one might come to the conclusion that the CDP program, and ell it has attempted to be, has gasped its final breath.

Nobody denies that the CDP program has not been "everything it has been cracked up to be." It is for that precise reason that groups of CDP holders have ettempted to organize over the years.

The parent of this "teenager," while continuing to administer the test, has done little to promote the value of the certificate and the person who holds it. No attempt has been made, since its inception:

- To answer the question, "What shall he certify?"
- To convince corporate management anywhere that this was a worthwhile individual to hire.
- To reach the attorneys general of the several states to seek a legal status for this individual.
- To produce a code of ethics with teeth in it, with an evaluative measurement, or with enforcement procedures.
- To organize these "children" into a national force to bring strength to the profession.

The entire industry has stood by and let the function be labeled as nonprofessional. There is no loyalty where there is no strength.

The basis for these people to function is standards. To my knowledge, the parent in this case is not a working member of any standards activity. In truth, the parent is unable to certify to American industry that the recipient of this certificate has accomplished anything short of the accumulation of certain amounts of education, certain lengths of experience and the ability to answer eight hours worth of multiple-choice questions.

How many more headlines like "The Great Fraud: DP or Not DP?" will be required before the attorneys general start raising holy hanna with the data processing practitioner? How many more documented cases will be required before business and industry rises en masse to demend the same quality service from their data processing professionals that they do of any other licensed or certified group of individuals?

We license a variety of professions and para-professions not merely as a source of revenue, but as a guarantee to the user of that service that the individual is competent to perform that service, with the right to the recovery of damages if he is not. Why should it be any different for the data processing individual merely because he is buried in the folds of a corporate empire?

How many more credit card fiascos will the public stand for? How much more abuse of corporate power, power obtained by blaming the computer, can we stand?

Not everyone who holds the CDP could be called a professional, just as not every professional, in the true sense of the word, is a CDP. But it has to start somewhere. And it has to start with us. If it begins at the urging of non-DP people with legal leverage, we no doubt will be very unhappy with the results.

There are a whole cadre of people who need to be certified – not with just one test, but it is becoming very obvious that they must be certified by many and varied measurements. The new parent, the Computer Foundation, must give the program and whatever other programs it assimilates or develops, the teeth and tenacity it will demand.

Legal stabilization must be sought. Diverse measurement must be developed. Upgrade training must be developed and implemented, with or without recertification. A campaign of education and information must be undertaken throughout the country to both gain industry acceptance of the individual, and to insure that the individual performs as required.

New tests must be developed, preferably by individuals whose business is tests and measurements. A system of state codes must be developed and licensing obtained, if not for all data processing individuals, then certainly key data processing personnel and those who interface with the public. A decent code of ethics with an appropriate enforcement mechanism must be developed, subscribed to and implemented.

This is the mandate to those of us who are determined to keep the CDP program alive. It would be useful if its detractors would spend their time in assisting us to build in a positive direction, rather than seeking to destroy what the program's parents, however ineffectively they may have executed the plan, have built.

Kenniston W. Lord is an EDP educational consultant and vice-president of the Society of Certified Data Processors.

Letters to the Editor

Are Old-Timers Afraid Of Young, Bright DPers?

I take exception to the remarks made by Joseph T. Rigo in the April 25 issue.

There seems to be a kind of masochistic syndrome that is being fostered within the data processing field. There seems to be some kind of delight in tearing down, teering apart, nit-picking at every thread and fiber until the whole fabric of this highly technical and professional activity is in tatters and is subject to general ridicule, contempt and suspicion.

Are these negative people afreid that there are just too many new, brighter and more knowledgeable people entering the data processing field? Are they afraid that their prestige is in jeopardy? The reaction is not unusual. It has happened meny times in history as the old-timers ere threatened by the new-timers.

Let us be a great deal more realistic and practical and positive in our opinions about the deta processing field. If you do not like the climate of the data processing field, seek another avocation.

Robert R. Hamilton
Manager
Electronic Systems
and Methods Division
Prudential Insurance Co.
Boston, Mass.

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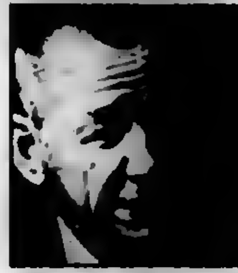

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Does RPG Help Produce a 'Professional Product'?

Viewpoint

By Reginald D. Gates

Special to Computerworld

I've been interested in the recent exchange of letters regarding RPG. Although I was originally trained in assembly language and my current assignment is Ansi Cobol, I've had experience with System/3 RPG, DOS RPG and OS RPG. In the past year I've been involved with a project that converted over 50 System/3 RPG programs to run under RPG on the IBM 370.

I quite agree with the viewpoint that languages are simply tools to perform a task. Even though we select our tools according to the task's requirements, this does not prevent us from evaluating the tools. The basic question is, "Does the chosen tool help us in producing a professional product?"

A professional program has at least the following characteristics. The program can be run by an operations group without the programmers' intervention; the program can be easily understood, debugged and modified by someone other than the original programmer. RPG does not lend itself to producing a professional program as judged by the above criteria.

The Archilles heel of most RPG applications seems to be the second criterion. A few reasons why RPG does not seem to be adaptable to professional programs are:

- The language itself is more difficult to understand than the near-English language of Cobol.
- It is extremely difficult to produce an intelligible flowchart of an RPG program (at least, I've never seen one).
- There are no execution time debugging facilities such as the "Display" verb or IBM's "Ready Trace."
- All the RPG halts possible are not documented, especially the ones dealing with chained files.
- In RPG, it is not possible to work backward from an interrupt and a core dump to the source code that produced the interrupt.
- There is no convenient method for stating the meaning of each indicator used in the RPG program.
- RPG does not lend itself to modular programming, i.e., coding and testing a program in logically related sections.

Finally, a word about "productivity." The obstacles to producing professional programs in RPG can be overcome by expending quite a bit of effort in the area of documentation. However, most programmers and their managers seem to feel that documentation is not "productive" work, and will bypass the documentation for more interesting tasks.

An RPG programmer can produce a working program in less *coding* time than a programmer using Cobol, but the RPG program will be lacking the necessary documentation. It will take more effort to properly document the RPG program so that the productivity gained by RPG in coding will be lost in documentation.

Of course, if a professional product is desired, the documentation for RPG can be minimized, and the programming staff can appear to be very productive.

Whatever language is used, products of a professional nature should be the objective of every programming staff.

Reginald D. Gates is employed by McDonnell Douglas Automation Co., Huntington Beach, Calif.

Letters to the Editor

Certify People First

Alan Taylor, you're on the wrong road!

In the April 4 issue you support Jerry Martin's idea for certified documentation and certified testing as the second great step forward for mankind, while giving next to no consideration to this vital question: "Who's going to do the certifying?"

I recall seeing only four words in the entire article which addressed this question: ". . . who should give them, . . ." – although that has been, and probably will continue to be, the key question. Now, I'm asking you: Who's going to certify that the certifier is qualified to certify? And, how?

I don't disagree that documentation and testing certification are good ideas, but most organizations heavy in EDP already have the people to do this job – their own internal auditing departments!

Maybe it should become an industry standard, but as such, it would still be an auditing function.

At least the idea might be capitalized as a marketable service to users. But here again, I would caution those users to question the certifiers' qualifications!

In addition, your assertion that "we did have a number of people picked out . . . who could be called 'professionals' " is without merit. You, of all people, should not have to be reminded that the mere fact of membership or officeship in some computer society or the holding of a certificate is no claim to professional status.

Professionalism is gained by adherence to a rigid set of ethical standards, be they written or implied, and by the acquisition of public confidence.

Certainly, we do have some true professionals by the above definition, but we haven't been able as yet to give them the identity and recognition they deserve, which is my point. We still have the task of *people* certification before us. Let the applications documentation take a back seat to this!

D.R. Lister, CDP
Standards Specialist

Springs Mills, Inc.
Lancaster, S.C.

I said that various groups "could" be defined as professionals – not that they should be. See, for example, the ACM New York Ombudsman's definition, "In my book, a professional is someone who gets paid for his work." [CW, April 25, An Obituary on the Fated DP Certification Program]. AT

RPG Does It for 360/20

I must stand and be counted in defense of RPG. The several comments on its being a "Mickey Mouse" language and the creator of "operational nightmares" are not necessarily so. Properly understood and used, it can and does do many things for the smaller DP user.

Perhaps my people are even better than I thought, because we have no such problems as have been described in recent letters. I'm not recommending it for a larger-scale system but for our 360/20 it does it all.

A. Donald Taylor
DP Manager

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COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

In Coding, Run Times, Core Used

Benchmarks Show RPG II Beats Cobol

By Don Leavitt
Of the CW Staff

TOLEDO, Ohio – The DP staff of St. Vincent Hospital and Medical Center is devoted to RPG II as the language best suited to its needs. But this devotion is not a matter of blind faith. Carefully planned and carefully documented tests proved RPG II is "one of the most productive commercial languages available . . . significantly superior to Cobol," according to DP director Mike Pauken, CDP.

The tests were conducted about two years ago when St. Vincent converted from an IBM 360/20 to a 360/30. Pauken ran the programming language evaluation to be sure his staff would be using the most efficient language of the several under consideration.

The hospital's approach was to select two specific programs that represented the majority of its commercial workload and to write them in each of the languages being evaluated. The program functions were the same; each had the same number of I/O overlap areas specified and they were run against identical files.

The two programs selected were already written in DOS RPG. Only minor changes were necessary to recompile them under DOS RPG II. Then both programs were rewritten in Cobol by the same individual.

In both cases, the RPG II took less time to develop, to compile and to run than the Cobol, and required less core in the bargain.

Same Results Today?

The tests pitted a fairly early implementation of DOS RPG II against Cobol D. The statistics might be different if the tests were rerun today comparing a current RPG II to ANS Cobol, but the overall result would be the same, programmer/analyst Vern Luse said.

RPG II has matured tremendously, he noted, and now includes niceties such as the FORCE macro and Demand file use that allow the user to break away from the classic prestructured logic of a report generator.

First of the test cases was a program handling three sequential and two index sequential disk input files, a data table for look-up operations and a report to be printed. Program logic included matching two of the files and chaining among three of them. The final output was a census report, Pauken explained.

In this situation, the RPG II took only 16 hours to code and 24 hours to debug, compared to 28 hours for coding and 50 hours for debugging of the Cobol program. Compilation took less than half as long under RPG II and execution took almost a minute less than the five minutes and 19 seconds required by Cobol.

The second test program utilized three sequential disk files and cards as input, four sequential disk files and punched cards as output, along with reading and writing from the console typewriter. Program logic involved matching all files and a control break on one field.

This program was to update a detailed revenue file and, at the same time, create temporary files for billing. Again, coding, debugging, compilation and execution times were all lower with RPG II than with Cobol D.

The distinction between RPG II and "old fashioned" RPG was highlighted by the statistics on core usage in both tests, and by the run-time figures in the second. RPG took more core in both situations, and ran 58 minutes compared to almost 27 minutes for RPG II and 29 minutes for Cobol D in the second test.

The programs were run on a 360/30 with 96K bytes of core (all from IBM), 2319 disk drives, a 2540 card reader/punch, and an 1,100 line/min 1403 N1 line printer. Since that time, St. Vincent has expanded to 156K bytes of core, utilizing an add-on from Computer Hardware Consulting Services (CHCS).

In the first test, the RPG II program compiled in 2 minutes 24 seconds, used 14,455 bytes and ran in 4 minutes 28 seconds; Cobol D compiled in 6 minutes 20 seconds, used 22,988 bytes and ran in 5 minutes 19 seconds. – summary of benchmark results.

Language	Compilation/Run Times (Min:Sec)		Core (Bytes)	Coding/Keypunch/Debugging Times (Hours)			# of Source Statements
DOS RPG	3:38	58:21	25,769	20	3	32	437
DOS RPG II	2:44	26:57	20,921	20	3	32	437
Cobol D	7:18	29:00	22,745	32	4:45	80	964

The results of the second test showed St. Vincent Hospital exactly how well each language had performed and how much effort the DP staff had to put into developing the programs.

'Dass' Uses JCL For Access Rights, Passwords Avoided

SAN FRANCISCO – OS/360 installations concerned about potential security "leakage" caused by casual handling of conventional passwords, can avoid them completely and still maintain a flexible security environment by using the Data Access Security System (Dass) routines from Information Management Inc. (IMI).

In a conventional situation, an IMI source explained, special passwords have to be entered, exactly as prescribed, whenever a user wants to work with a protected program or file. Because the entry has to be precise, he noted, users often carry passwords with them, pass them in an off-hand manner from person to person, or leave them unattended when unauthorized personnel have a chance of finding them.

Dass is based on the IBM-supplied password facility, but rather than working with an external entry, it assembles a "protect code" internally from user-defined but apparently non-security-related characteristics of the subject job stream. After assembling the code dynamically, Dass compares it to a range of acceptable codes and grants or withholds access based on the results of the comparison.

Dass imposes no special limitations on the user. The same range of access possibilities are available with these routines as with normal password operations. Some users or terminals can be limited to read-only access, for example, while others have full creation, updating and deletion privileges on a given file.

Selection of the job stream characteristics to be assembled and the sequence in which they are to be evaluated in the process can be altered by a security officer whenever he feels a leak may have occurred. No new list of passwords is prepared or distributed, however, since the security system is essentially transparent to the user, IMI noted.

Dass algorithms are maintained either through the IBM TSO processor or through a batch protect utility program. In either form, the routines take "no more than 2K bytes of core," a spokesman said. Dass is available for $2,500.

IMI is at 447 Battery St., 94111.

'DD/D' Describes Data on OS Files

WHITE PLAINS, N.Y. – OS/360 users faced with sprawling data files and applications can bring most of the information they need about the files under control with the Data Dictionary/Directory (DD/D) package from IBM.

The package accomodates both narrative and technical descriptions of data, along with facilities for maintaining data integrity and identifying responsibility, data relationships, data structures and application usage. DD/D would be most useful in a manufacturing environment, IBM noted, since it includes a glossary of more than 4,000 manufacturing data element definitions.

One of IBM's Installed User Programs (IUPs), DD/D is described as "especially timely" for users preparing to move to a data base/data communications operation, since the new package introduces discipline and standardization in the management of data. But DD/D is not "automatically" tied in with any particular data base management system, IBM said.

Data descriptions are entered on cards punched according to three preprinted specification sheets. The DD/D will also accept data definitions from Cobol source programs either in card form or from the Cobol library. Any of these descriptions can be modified or deleted later to keep the dictionary current, IBM noted.

From the internalized dictionary, users can retrieve definitions of labels assigned to each data item, record layouts, keyword-out-of-context (Kwoc) listings, alphabetical label list and statistical printouts. Data definition statements, in either Cobol or PL/I form, can also be punched from the system, IBM said.

The data specification methodology of DD/D contains more than 80 operators, keywords, symbols and coventions for use in developing comprehensive and meaningful descriptions of data.

Core Requirements

DD/D is coded in PL/I for the F compiler and operates under either OS/MFT or MVT. It requires a 128K partition for the "build and change" programs and 192K bytes for the print function.

As an IUP, it is leased under license agreement for $475/mo, but payments are waived after the first 12 months of use.

Correction of errors in the DD/D logic will be provided without cost to users, but only until this September. No plans for further development work on the package have been announced.

T/S Firm Adds Staff To Work With Users

PITTSBURGH – A Software Services Division has been formed by On-Line Systems Inc. to work directly with users in developing, modifying and enhancing applications, analyzing corporate information requirements and identifying present and future DP opportunities.

The new division will also present courses in programming languages and application of on-line technology and provide consulting services in any area of time-sharing applications. The company provides dial-up service to 16 metropolitan areas in the U.S. and is based at 115 Evergreen Heights Drive, 15229.

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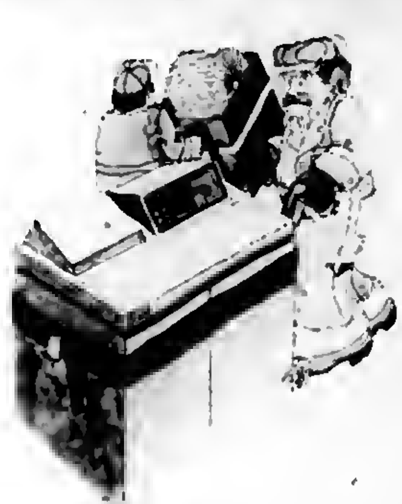

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'AMS' Includes Data Base Management, Application Design, Coding, Support

DALLAS – Application Management System (AMS) software from Tres Computer Systems Inc. is an integrated application design, programming and documentation system through which OS/360 users can control the buildup and maintenance of large, complex information systems.

AMS includes a formalized structuring of system development functions ranging from design through programming, documentation, decision table techniques and testing. It also has a data base management system to work with complex, interrelated files and a data base language which supports all IBM file and record structures.

A built-in design and programming language (DPL/I) provides a high-level interface between the application systems and IBM's OS, Tres said, and documentation requirements are considered so important to the system that program logic cannot be changed until the supporting documentation is updated.

AMS includes a generalized retrieval and report/file writer system (Tresgen). Users will also be able to access modules written in Cobol, Fortran, Assembly and PL/I, through a DPL/I CALL. Thus coding developed independently of AMS can be included in programs controlled by the system, Tres noted.

AMS utilizes four major systems concepts. The so-called Platform system provides control of operating system facilities in terms of the application environment. It structures the DP interfaces into four skill levels: application system user, application system designer/programmer, software programmer and operating personnel.

The concept of application management integrates data base data and program management into a coherent body of controls common to all applications. The goal of the structuring concept, Tres said, is to modularize programs into logical processing units with specific processing functions.

Finally, the design unit concept is an extension of the structuring concept. Each design unit performs specific data base, data, and program management functions. And each design unit requires specific definitions to integrate it into the rest of the application system structure.

AMS is written in BAL and runs under any of the OS/360-370 options. The minimum CPU model is the same as is required for the operating system under which AMS is to execute.

Tres is at One Lemmon Park Midway, 4255 LBJ Freeway, 75234.

T/S Net Installs 'Watfiv'

NORWALK, Conn. – A time-shared version of the compile-and-go Watfiv (Waterloo Fortran IV) compiler and execution control system has recently been installed on the National CSS remote-computing network.

Watfiv supports "essentially the same Fortran dialect" as IBM's Fortran IV, NCSS added, but the newer system provides more detailed and explicit messages, and diagnoses more errors and violations of Fortran language rules than Fortran "G." Watfiv also supports a set of extensions to the language which speed program development but which are limited to running exclusively under Watfiv.

The Watfiv logic was developed at the University of Waterloo, Waterloo, Ontario, and is available as a batch-oriented OS/370 package from the school's Computer Science Department. The NCSS implementation is the only time-shared version of the system that is currently available, a university source noted.

Spotting Errors

Errors that Watfiv is capable of spotting include use of uninitialized variables, subscripts that are out of range, illegal entries in the range of DO loops, and subprograms redefining constants, expressions, DO loop parameters or ASSIGNed GO TO indices. Without Watfiv, NCSS said, these errors could be very difficult and, in large programs, even impossible to detect.

When Watfiv detects these and other errors, it reports the names of the variables involved, an explicit description of the violation(s), and the location in the source program where the errors occurred.

Free-format I/O without FORMAT statements, CHARACTER data types, and multiple assignment statements are among the language extensions supported by Watfiv. Others include implied DO loops in DATA statements, support for non-numeric subscripts, and the use of expressions in output statement lists.

For Novice, Old-Timer

Both experienced and novice Fortran programmers benefit from the use of Watfiv, the company claimed, since the high compilation speeds and extended diagnostic aids cut debugging time sharply.

The time-shared Watfiv is available through any of the NCSS local offices. The original batch-oriented package from Waterloo University requires a 128K byte 360/370 CPU operating under OS.

National CSS is headquartered at 300 Westport Ave., 06851.

'ISL' Simulates Analog CPU

KENNEWICK, Wash. – Simulation of continuous processes and control and data logging functions can be performed up to 50 times faster on a mini equipped with Interactive Simulation Language (ISL) than on a CDC 6000 series or IBM 360/50 mainframe equipped with standard floating point methods, according to the ISL developer, Interactive Mini Systems Inc.

ISL has been installed on the DEC PDP-8 and -12 families of minis, as well as on PDP-15s and Data General Novas. Operating in as little as 4K words of core, ISL is essentially a digital simulation of an analog computer. It includes analog blocks for integration, multiplication, addition, time delay and generation of non-linearities, as well as logical blocks such as GO TO, conditional transfer and relays.

It has many of the same advantages over real analog computers as other simulation languages, but unlike some others, it permits and even encourages interactive participation in the operation by the user. Faster than most simulators, it is still much slower than a real analog computer, the company noted.

The basic ISL for a PDP-8 is available for $2,000. Various functions can be added, generally for $100 each, but "it would be hard to pay more than $3,000" for a completely tailored package, a spokesman said.

The company is at 5312 W. Tucannon, 99336.

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AFTER
Our June 13 **Wrap-Up Issue** (Color closes May 25. B&W closes June 1.)

Whether or not you're going to The National Computer Conference, *Computerworld's* last-minute, complete coverage of the new, consolidated show is must reading – including the latest information on the wide variety of new products which will be displayed. Only a weekly newspaper can give you such complete and up-to-date coverage. And *Computerworld* is the only newsweekly for the computer community.

People who think this far ahead are thinking BASF/2000A.D.

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let's talk!...

...about the biggest computer show on earth

Now everything you need to know about the 1973 National Computer Conference & Exposition is as close as your telephone.

Just give us a call on AFIPS' new toll-free hot line and we'll send you all the facts on how to register for the biggest computer show on earth—including this year's largest display of computer hardware, software, systems and services.

73 NCC brings it together for the first time. It's your once-a-year opportunity to look, listen and learn about the latest developments in data processing. To share ideas and experience with leading experts. To gain a wealth of practical knowledge and know-how which can spell immediate dividends for you and your company.

We've structured the 73 NCC program to meet your day-to-day requirements. A total overview of data processing and its applications, emerging uses, and its impact on user industries and the world economy. More than 80 sessions, panels and seminars providing in-depth coverage of Methods & Applications and Science & Technology.

All this plus an exhibit program which puts a world of EDP information right at your fingertips—with more than 200 organizations ready to assist you in meeting your specific data processing needs.

Act now to avoid long lines at the New York Coliseum, June 4-8. You can pre-register for the entire conference, for any one day of the conference program and exhibits, or for all five days on an exhibits-only basis. Beginning March 12, just dial 800-631-7070* for complete registration, housing and conference information or write: 73 NCC, c/o AFIPS, 210 Summit Ave., Montvale, N.J. 07645.

**In New Jersey, dial 201-391-9810*

800-631-7070

1973 National Computer Conference & Exposition
June 4-8 • New York Coliseum

Data Briefs

Technical Sessions, Exhibits Included in ICA Conference

BOSTON – The International Communications Association will hold its annual conference here May 13-17 at the Sheraton Boston Hotel.

Among the technical sessions planned are four "case study" presentations by ICA users, and seminars dealing with data communications economics, management and interconnection.

Other sessions will deal with problems of implementing an international communications network, domestic satellites and a discussion on regulatory issues.

More than 100 communications carriers and equipment suppliers will he represented at the exposition which is part of the conference.

Information is available from J.D. Martin at National Steel Corp., 700 Chatham Center, Pittsburgh, Pa. 15219.

Four Terminals Tied To Modem With Multiple Access Coupler

NEWPORT BEACH, Calif. – Collins Radio Co. has a multiple access coupler (MAC) that can connect four data terminals to one modem. The TE-795 has four RS-232 terminal input ports that can direct data to either one or two modems.

A front panel switch enables the user to select the required line, and diagnostic indicators monitor the condition of the line being used. The diagnostics include Request to Send, Data Carrier Detect, Transmit Data, Receive Data and power indicators.

Several TE-795 units can be interconnected to allow an even greater number of lines to use a limited number of modems, a spokesman said. The coupler costs $900 from Collins at 4311 Jamboree Road, 92663. Delivery is four months.

Unit Converts BCD to Ascii

ITASCA, Ill. – The DL 1200 Digilogger from Nationwide Electronic Systems, Inc. converts 10 digits of parallel 1248 BCD data to serial 8-level (11-bit) Ascii code suitable for driving teletypewriters and other Ascii devices.

The Digilogger inputs are strobed and loaded into a buffer memory within 100 nsec of log command which eliminates the need to hold input data constant for scanning, the firm's spokesman said.

At a price of $845 the unit is available from 7N662 Route 53, 60143.

Service Facility Opens in N.Y.C.

SOMERVILLE, Mass. – National Data Industries, Inc. (NDI), an independent supplier of time-sharing terminals and data processing equipment, has opened a branch in New York City.

NDI-Manhattan has service and maintenance facilities for customers.

Novars Tied to 360/30

On-, Off-Line Uses Save $125,000/Yr

By David P. Meade

Special to Computerworld

ST. PAUL, Minn. – A lot of work gets done after hours at the Automotive Battery Division of Gould, Inc. through the use of a terminal communications network. Details of hundreds of incoming customer orders and outgoing shipments flow into headquarters from remote division manufacturing plants, central control records are updated, and current status information goes back to the plants to guide the next day's service operations.

All this activity takes place overnight between a computer at headquarters and unattended data terminals at the plants. The system combines the benefits of online dynamics and off-line economy to assure fast order processing while saving the division over $125,000 a year in direct order handling costs.

The communication terminals – GTE Novar 5-51s – function in off-line mode during the day, recording order, shipment and production data as transactions occur. They also produce needed working documents for plant personnel and simultaneously create a tape record to be forwarded later to headquarters.

Power-typing capability, involving a high-speed search of customer master tape records, reduces order preparation time while virtually eliminating errors. The only new information the terminal operator enters is order number, shipment mode, request date and item quantity.

The search for terminals was launched in December 1970, with the emphasis on faster data transmission between the plants and headquarters, and, just as important, an increase in data entry and transmission accuracy. The system also had to be easy to operate at the plant end, economical and flexible. The decision to install the 5-51s was made in April 1971; the first terminal went into service in July that year, and the system was fully operational at all 12 plants within three months after that.

Transmission speed of the terminals is up to 1,200 bit/sec, and the digitial tape cartridge has a storage capacity of 73,000 characters to accommodate records of the full day's order and shipment transactions at the plants. An auxdiary tape unit makes it possible to power-type data retrieved from customer master tape records while simultaneously recording the data on the transmission tape in the main unit.

Bell Data Access Arrangements link the plant terminals to headquarters via four standard voice-grade Wats lines. The control computer is an IBM System/360 Model 30, with one partition devoted to the terminal transmission function.

In addition to its order handling capabilities, the terminal system provides a bonus benefit to management in the form of more reliable, more current information about what is happening at the remote manufacturing plants.

David Meade is director of information systems at Gould, Inc.

Long-Term, Variable Cost Lease May Be Offered for Bell Units

By Ronald A. Frank

Of the CW Staff

NEW YORK – AT&T may be planning some important changes in the pricing of its data modems, terminals and other equipment.

Instead of the traditional month-to-month rental of its equipment, Bell is considering the introduction of leasing arrangements whereby users would pay a higher initial monthly rate in return for lower payments later on.

The revisions in AT&T equipment rentals are apparently being spurred by increasing competition from suppliers of independent equipment which can be installed in place of carrier-provided units.

Although no firm plans have been announced, AT&T is reportedly considering a 10-year lease under which a user would initially pay between 25% and 100% of the total cost for the equipment. If he paid the full cost initially, the user would save about 35% over straight monthly rentals for the same period.

Also being considered are maintenance options whereby the user could pay an annual prepayment charge. For users who paid ahead there would be a savings over the usual maintenance fee included in each monthly bill. Another option would be a flat hourly rate for Bell maintenance representatives when they are called to a site.

Another option considered by Bell management but rejected for now is outright sale of equipment to users.

All the moves away from traditional month-to-month rentals are an extreme step for AT&T and its operating companies. And before any of the proposals can be implemented, serious regulatory and legal questions will have to be answered.

The phone companies have always had to justify their rates as being fully allocated to cover the costs of equipment and the overhead associated with supplying equipment and service to the user. Lease plans that allow Bell to recover all projected costs associated with equipment for 10 years might not win the necessary approval of regulatory commissions. In addition Bell must live with the restrictions of its 1956 consent decree.

But Bell is becoming much more conscious of customers' costs. Illinois Bell already provides users considering non-carrier equipment with computerized cash flow analyses comparing Bell rentals with independent lease plans.

And another indication that AT&T would like to get more "front-end" money from the user is the trend toward increased installation charges. An example is the new private line, high-density, low-density rate proposal made by Bell [CW, March 7].

Bell is undoubtedly feeling the competition from independent equipment suppliers and impending specialized carriers. In this environment, Bell apparently feels it must get as much money as possible from a user before the customer has second thoughts and begins to consider alternate suppliers.

MCI Using Us to Fight AT&T: PCI

WASHINGTON, D.C. – MCI is using the FCC application of Packet Communications Inc, (PCI) "as another weapon in the MCI-AT&T competitive struggle," according to allegations included in PCI comments filed with the FCC in answer to earlier responses from MCI and others.

PCI told the commission that it was gratified that its proposal for a packet-switched network [CW, Feb. 7] had met little opposition. The MCI suggestion that an FCC rulemaking procedure on value-added networks was necessary serves only as a delaying tactic, PCI said.

The MCI suggestion was designed to set common ground rules for all value-added carriers rather than allowing Bell to dictate its own terms, an MCI spokesman said. MCI has formed an affiliated company to operate a value-added network [CW, April 11] and the firm welcomes open entry into the field, the spokesman added.

"MCI's obvious purpose is to delay and impede any potential competition for as long as possible," PCI told the FCC.

The PCI application is being considered by the FCC staff which will then make its recommendations to the commission. An FCC staff spokesman said the PCI application will be considered after a recommendation is issued on AT&T's proposal for its Digital Data System (DDS).

The FCC spokesman could not fix a time when it will complete consideration of the PCI application, but a rulemaking procedure could delay the commission's decision, he said.

World's First 1200 Baud
Full Duplex
Two Wire Modem

vadic

505 East Middlefield Road,
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(415) 965-1620
TWX 910-379-6567

Dear Ma:
Remember when you took me to see the magician that sawed the lady in half? Vadic has just done the same thing to line costs!

Believe it or not, they have a modem capable of full duplex data transmission at 1200 bits per second over dial-up or two-wire leased lines.

Think of the impact this will have on users of CRT's, cassettes, and all sorts of buffered terminals who have been forced to piddle along at 300 bits per second or live with half duplex 1200 bits per second operation.

This modem is really something, Ma. It provides four times the data rate of your 103 while maintaining the same line discipline for connect, hand shaking, and disconnect. Imagine eliminating the complicated and inefficient half duplex mess forever. The zero turn around delay will save bundles on line costs.

I hate to tell you, Ma, but the VA3400 can be used in Vadic's Multiple Data Set or standalone units which have analog and digital loopback, display of all EIA interface signals, built-in 300 and 1200 baud test signals. It can also be used with any of Vadic's automatic dialers.

The price? Better sit down, Ma. Just $750, with OEM discounts available. Delivery is 60 days ARO. Better phone your order in soon.

Your independent thinking son,
Alexander Graham Jr.

P.S. Who's Vadic? They've delivered over 20,000 modems to date.

MOUNTAIN VIEW, CA 94040
PM
7 JAN
1973

Ma Bell
195 Broadway
New York, NY 10007

Communications Panel Agrees:

Support Linked With User's Credibility

KANSAS CITY, Mo. – One of the chief problems a communications user faces in procuring prompt and effective service is establishing credibility with the various suppliers when he has correctly pinpointed a problem with that particular supplier's equipment, according to panelists at a recent communications workshop.

"It took a year until vendors believed my analysis of the problem and then things smoothed out tremendously," observed Bob Kuykendall of Massey Ferguson Inc.

The purchase of a data test set was very beneficial in this regard, he said.

Dick Fioretto, of Panhandle Eastern Pipe Line, said his firm uses Milgo ICC modems with built-in test capability and he always makes sure it "isn't in our own equipment before we call the phone company."

Don Class of the Kansas City Police Department said his solution was to start at the top – with the president of Southwestern Bell and the president of IBM's DP Division. "Then the guys down the line are usually quite responsive," he said.

Terms Differ

Terminology is another area that can create problems when dealing with different vendors, Class said at the Computer Caravan/73 session.

For example, when his department ordered half-duplex lines from Southwestern Bell, it received 4-wire full-duplex equipment, apparently as a matter of policy.

Unfortunately, the department didn't know its equipment was operating in full-duplex mode and when it later ordered and got half-duplex lines from AT&T they couldn't be interfaced with the existing setup. Once the conflict was identified, he said, the new lines had to be reconfigured in full-duplex mode.

To IBM and the telephone company the term "send-receive" has opposite meanings, Class warned. "Ninety five percent of the time when they install a line that's faulty, asking the question 'have you swapped the pairs?' will solve the problem," he said.

Problems can also arise if the phone company changes lines since this may necessitate adjusting data set volumes. Some modems offer automatic volume equalization adjustment, and most users familiar with this area agreed it could often be a worthwhile option.

Class said whenever he called the phone company it would say the line was okay.

But then after IBM comes in, puts a scope on the line, and comes up with some specifics as to the failure in the line, and the phone company is informed of the diagnosis, "they'll fix it," he said.

Part of the problem lies in the fact that the phone company does not seem to be able to put a scope on a user's line because of tariff regulations, he said.

One of the best things about the Bell System's Dataphone® 4800 data set is the maintenance behind it.

This new solid state data set transmits at 4800 b.p.s. over basic, unconditioned, private-line facilities.

It has a 50 millisecond turnaround time that makes it suitable for multi-point or point-to-point systems.

And it offers convenient local and remote loop-back testing. Which means trouble can be readily isolated between your equipment or ours.

Perhaps even more important, the Bell System has what is called the Data Technical Support Team.

This team is made up of representatives from various levels of the Bell System, from the local company to Bell Labs.

When necessary a data problem can be taken to the level where it can be solved quickly. Usually within hours.

At AT&T and your local Bell Company, we know how costly "downtime" can be to your business. You don't have to say another word.

We hear you.

SYSTEMS&PERIPHERALS

Bits & Pieces

Varian Announces A/D Minicomputer System

IRVINE, Calif. – Varian Data Machines has announced a low-level Analog Input System designed to provide high-noise immunity and a wide programmable range for conversion of low-level analog signals into digital computer format, according to the firm.

For use with Varian 620 and V73 series computers, the Model 620-855 is a self-contained unit which provides an analog-to-digital converter, low-level multiplexer, sample-and-hold amplifier and programmable timer.

Price of the unit with 16 channels is $16,000 from 2722 Michelson Drive, 92664.

Disk System Replaces Nova 4019s

CANOGA PARK, Calif. – Nova series minicomputer users can get a direct replacement for the Nova 4019 disk and control unit from Alpha Data Inc.

Features of the DS-N Disk System include: 256M bit storage capacity; 250 kword/sec transfer rate; 8.4 msec access time.

DS-N Disk System prices range from $4,570 to $20,000 depending on capacity and quantity from 8759 Remmet Ave., 91304.

Moving a Nova On-Line

PALO ALTO, Calif. – The AED 2408 multiplexer, from Advanced Electronics Design, interfaces a Nova computer to eight I/O serial asynchronous terminal devices.

Features include one slot computer I/O board; selectable data rates/channel; channel selectability from five through eight bit/char.; odd/even or no parity bit; and one or two stop bits.

Each channel has its own DMA register to load its starting memory address with an automatic increment of the DMA address register after each I/O operation.

The multiplexer unit is priced at $2,250 from 3197 Park Blvd., 94306.

PDP-11 Users Get Linc Tape

BELTSVILLE, Md. – Linc Tape direct access memory for the PDP-11 minicomputer is available from Computer Operations, Inc.

Included in the system is a Linc tape loader, utility software and a keyboard executive. Transfer rate – via direct memory address – is 8,400 byte/sec and storage capacity is 335K byte/drive.

The basic system provides the capability to read and write on COI 10-track tape. An option, CO-571D, is available for the PDP-11 Linc tape.

Cost of the basic unit is $4,500. The CO-571D option is $850. CO-505 slave units, each providing 335K bytes of additional storage cost $1,700 each from 10774 Tucker St., 20705.

For Fast I/O

Slash 4 Mixes Core, MOS Memories

By Michael Weinstein
Of the CW Staff

FORT LAUDERDALE, Fla. – Datacraft has unveiled a medium-scale computer, the Slash 4, which uses a 24-bit word and offers users the optional ability to mix core and semiconductor memory in one mainframe.

The mixing of memory media allows users to run standard operations with the core memory (cycle time 750 nsec) and use the semiconductor memory portion (cycle time 200 nsec) for fast I/O operations.

In some operations data can be transferred through the faster semiconductor portion with no intervention needed from the central processor, Datacraft said.

As I/O operations become more complex, they can still be routed through the semiconductor portion with needed central processor intervention obtained on a cycle-stealing basis, a spokesman added.

Minimum system configuration is 8K words (24K bytes) of core memory. This is expandable to 256K words, of which 16K words can be semiconductor, the spokesman said.

The basic unit comes with four priority interrupts that can be expanded to a maximum of 48 and one I/O channel with the ability to add up to 24 channels.

Operating Systems

Four operating systems are offered with the Slash 4 including: a resident operating system for simple applications such as process control and real time monitoring; a tape operating system; a disk operating system for batch operations; and a disk monitor system.

The disk monitor system (DMS) has the most expansive features for users, Datacraft said. It is a real-time system providing foreground multiprogramming concurrent with background batch processing. Additional features include spooled I/O, interactive terminal support, dynamic memory allocation, timer scheduled programs and dynamic file creation, the firm said.

Languages Available

Languages available include Fortran, Basic, RPG and Snobol, with overhead software including Forgo (a fast Fortran load-and-go program), an editor program and a macro assembler.

Prices start at $19,900 which buys a basic system with 8K words of memory, parity, hardware multiply/divide/square root, priority interrupt control system, four external priority interrupts, five registers (three for indexing), one 8-bit I/O channel and basic software.

A typical system with disk subsystem and other peripherals will cost in the $70,000 range from P.O. Box 23550, 33307.

RCA Demonstrates Laser Memory: Core, Drum, Disk Replacement?

Looking Ahead

PRINCETON, N.J. – RCA has demonstrated an experimental computer memory, based on laser-holographic technology, which can perform full cycle data processing operations such as write, store, read and erase.

The significance of RCA's demonstration is that laser-holographic memories may be the base of a new generation of mass memories equal in capacity to, but 1,000 times faster than the largest disk systems currently available, according to an RCA spokesman.

"The holographic memory has the potential, when fully developed, to replace the entire hierarchy of core, drum and disk systems now used, and thereby simplify the whole architecture of computers and many other information systems," he added.

Flash Gordon?

In operation, an argon laser beam is passed through two acousto-optic crystals. The crystals deflect the beam in direct proportion to the frequency of sound waves made to pass through them.

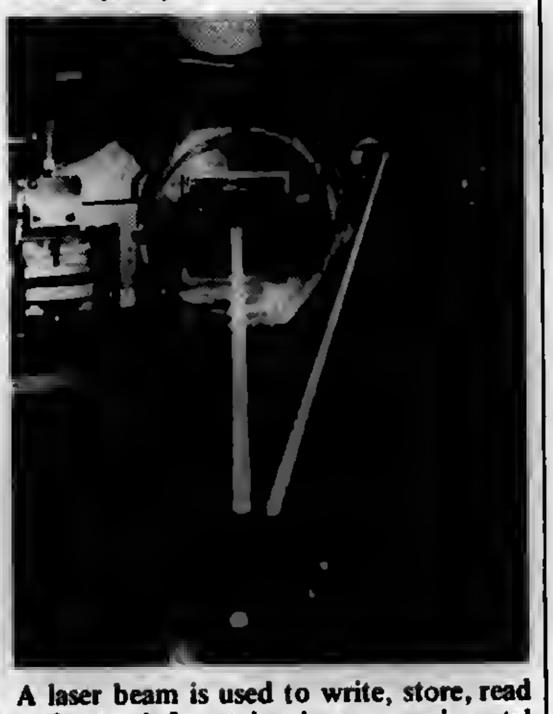
One crystal bends the laser beam from left to right, the other, up and down.

This bending results in 1,024 distinct positions, called "hololens," to which the beam can be deflected. The hololens splits the beam into two parts, one of which goes straight through while the other is diffracted to fall on a flat plane 3 inches square and composed of 1,024 liquid crystal cells.

These cells introduce digital information into the laser beam in the form of tiny areas that are dark or light.

These correspond to the "ones" and "zeroes" of binary code and constitute the data to be written into memory.

RCA's experimental unit comprises 1,024 pages each with 1,024 bits, for a total capacity of more than 1M bits.



A laser beam is used to write, store, read and erase information in an experimental holographic optical computer memory.

HP Unveils Buffered Optical Mark Reader

PALO ALTO, Calif. – Hewlett-Packard is offering users a 300 card/min, internally buffered, serial optical mark reader.

The Model 7260A is a desk-top unit designed for use with terminals, computers or remote data systems through a communications link or direct connection, the firm said.

Data Rates

Data rates are switchable from 110 bit/sec through five intermediate rates up to 2,400 bit/sec.

From one to 80 characters can be read and with the standard 128-character Hollerith character set, the reader transmits the data in 7-level Ascii code.

Price of the HP Model 7260A is $2,975 with lease terms available from 1501 Page Mill Road, 94304.

125-, 200 Line/Min Printers Interface Most Minicomputers

DARIEN, Conn. – Minicomputer users can obtain a Tally Series 2000 line printer from Digital Associates Corp.

The 132-column printers – Model 2100, 125 line/min and Model 2200, 200 line/min – are offered as complete systems including all necessary interface hardware, cables, connectors and documentation for the following minis: DEC PDP-8, -11 and -12 series, Data General, Honeywell 316 and 516, HP 2000 series, Datapoint 2200, all others using RS232 communications interfacing.

Options include a 96-character set and serial interfaces enabling the printer to operate as a receive-only printer terminal.

Lease prices start at $111/mo for a complete system, $79/mo for the printer only from 1031 Post Road, 06820.

the centronics phenomenon: a printer that's 100% faster for 12% more money

Model 102A printer [illegible]
Twice as fast as our first printer
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A 132 column [illegible]

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DATA GENERAL INTRODUCES THE LOADED NOVA.

The loaded Nova is the new Nova 840 and the most comprehensive set of software/hardware capabilities ever available with a Data General computer.

It comes with a built-in Memory Management and Protection Unit that lets you expand main memory to 128K 16-bit words. Base price with 16K of memory is $16,530.

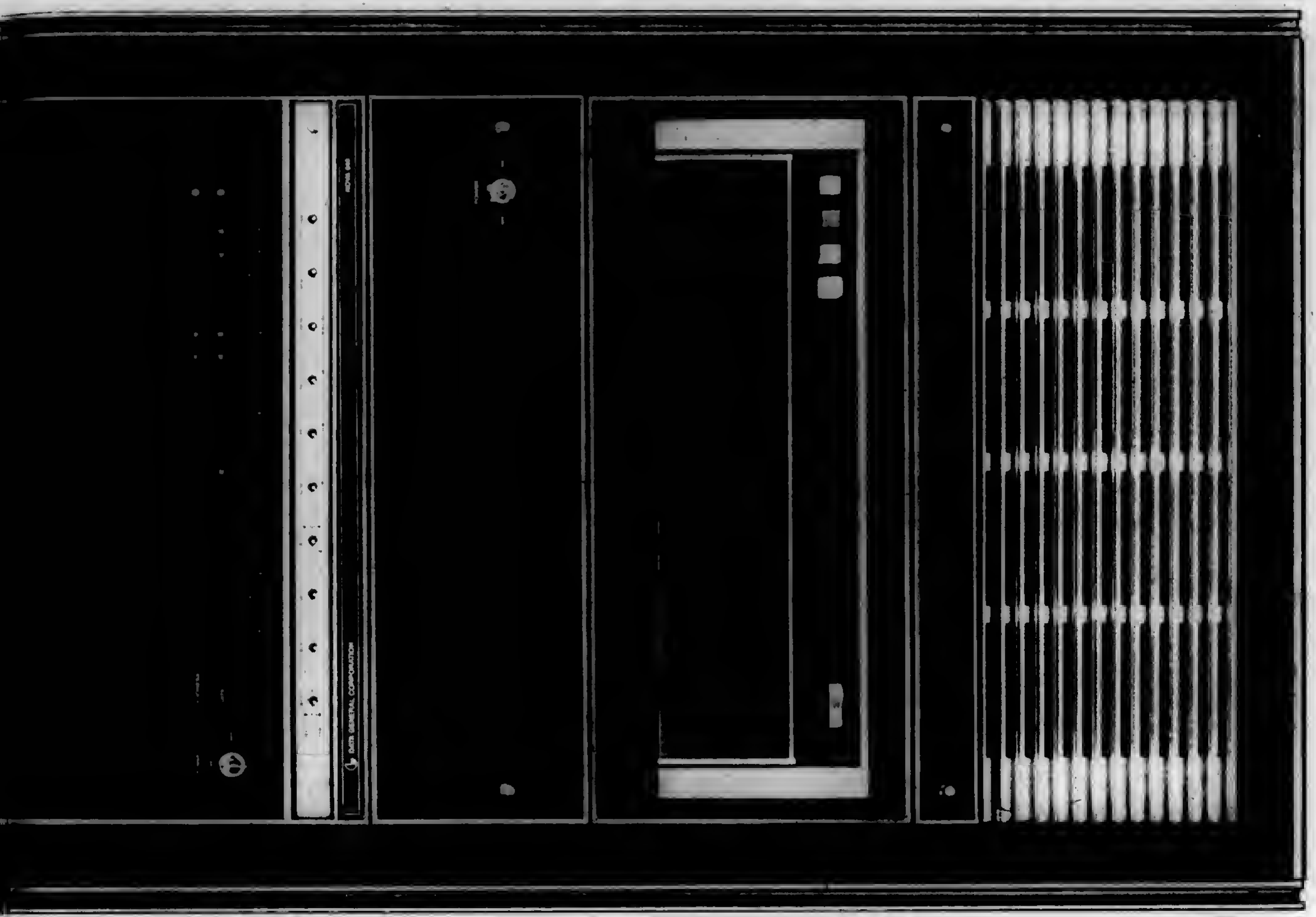
Nova 840 runs a comprehensive Real-time Disc Operating System (RDOS) for dual programming operations.

A new BATCH executive lets you pick your I/O devices, load your jobs, and walk away.

It has our new Fortran 5, Extended ALGOL, Extended Timesharing BASIC, and a whole library of proven Data General software; proven software that we can deliver now.

And our Remote Job Entry software can let the 840 double as a high-powered terminal to a big computer someplace else.

With the right kind of configuration (like the one shown), all that software is available free.



ON YOUR DOORSTEP IN UNDER 90 DAYS.

The Nova 840 in the picture has a central processor with 32 to 64K of main memory, a high-speed Floating Point Processor, hardware Multiply/Divide unit, fast-access disc storage, and 9-track mag tape.

The picture doesn't show lots of the other things you can get with Nova 840: line printers, card readers, Novadisplay terminals, fixed-head Novadiscs, moving-head discs, Nova Cassette tape, communications interfaces.

Nor could we show you the applications and service experience we've developed in the course of building, installing, and supporting over 6,000 Nova computer systems all over the world.

If you're looking for more throughput than you could ever get with a minicomputer, for better access to system resources, at a lower price, call Data General.

Call with an order: we'll put a loaded Nova on your doorstep in less than 90 days.

DATA GENERAL
Southboro, Massachusetts 01772

Interactive Network Unveiled for Graphic Operations

SOUTH WINDSOR, Conn. – An interactive Design System from Gerber Scientific Instrument can allow engineers to work jointly with associates thousands of miles away on particular job problems or to use local computer power to compose, digitize, edit and plot complex mechanical drawings in final form.

Hub of the interactive system is a central processor interfaced to from one to six remote terminals.

Each remote terminal is provided with a satellite process controller capable of supporting one or more local work stations.

Operating capabilities for each work station can be broadly divided into three modes: digitizing, editing and plotting.

While no two of these modes can be operating at the same time, the operator can switch modes at will.

From each remote location (terminal), operations are independent even though they are using the common central processor as the heart of the network.

Hardware

Hardware elements of the interactive system consist of the CPU, disk storage subsystem, magnetic tape cartridge I/O device and teletypewriter at the network center and digitizer plotter, video display terminals, satellite process controller and keyboard/display at the remote locations.

The CPU has a solid-state core memory with a basic size of 12K words, expandable to 33K words (word size is 16 bits).

The disk subsystem is used to store data files and program files for each design terminal as well as libraries of master system symbols and individual terminal symbols used in job definition. Disk capacity is 1.2M words, expandable to 9.6M words.

A standard I/O typewriter unit is provided for system control.

The magnetic tape cartridge I/O device is used for data and program file loading and dumping.

At the Terminal

Each terminal is equipped with its own minicomputer with memory capacity of 2K words. This satellite processor acts to provide program control for local devices and to gather data for the host CPU.

An alphanumeric and function keyboard is provided for each terminal with at least one edit or digitize work station. Forty-eight alphanumeric keys are provided for entry of parameter values and text with 80 encoded pushbuttons provided for entry of system function commands.

An alphanumeric display is provided with a capacity of 80 characters. The display functions to inform the operator of current job state.

The primary means of inputting drawing descriptions is a digitizer with a common drafting machine. The unit allows sketches to be digitized and edited with immediate plotback.

A storage CRT and stylus are available to allow high-speed overview and window-view edit and proofing capabilities.

Software is designed to allow the user to dynamically construct, store, retrieve, manipulate, associate, edit and reproduce information visually or interactively

Also included are all programs needed for the network's operating system and peripheral drivers coupled with graphics packages needed to communicate with a central data base.

A basic system with host CPU and one terminal work station costs about $88,000. Costs vary from that point dependent on the number of remote stations used.

Gerber is at 83 Gerber Road, 06087.

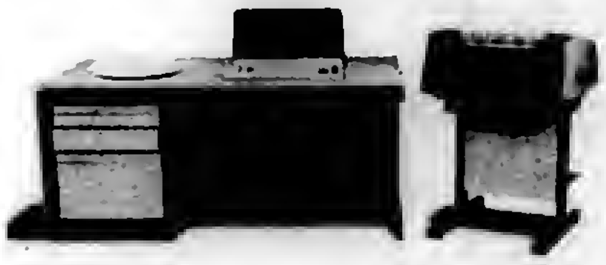
Punchy

IBM employee Ann Nemoede sifts through a pile of nearly two million card chips punched from more than 6,500 cards. This testing procedure is used to test each punch unit of the IBM 3525 card punch.

You design software for end users. We have the systems they need.

Why stop at selling or leasing software systems to end users? Now you can offer them complete minicomputer package systems.

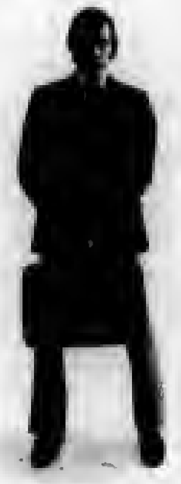
This way they'll be able to get everything they need from you. And you'll be able to get everything you need from us.



Wider choice of peripherals We offer a full line of peripherals to go with our SUE and MAC minicomputers: IBM compatible 5440 disks, CRT/keyboards, printers from 100 cps to 600 lpm, magnetic tapes, cassettes, punched card devices and paper tapes. Anything your customer needs. And when his needs change, so can the system. Easily. Even by factors of 2 or 3.

Complete software tools To make your programming burden lighter we offer a full set of software tools: Fortran, assemblers, utilities, RTOS, sort/merge, DOS and RPG/SUE. That last item is 98% compatible with RPG II by the way.

And we're the only company we know of that unconditionally warrants all our software for a full year.



Maintenance too We'll handle any and all problems your customers might have, promptly and expertly, anywhere. (We recently solved a problem in Bangkok, for instance.) And we'll do it by contract or on call, either way you want it.

We also offer training classes in maintenance as well as in programming.

Add it up So what you'll have is a more salable package to offer an end user. Everything he'll ever want or need in a minicomputer system, right down to the enclosures. (Which we'll put your name on, if you wish.) Everything ready and working from the minute it's wheeled in his door.

YOUR NAME

And you'll be dealing with an established, reputable company. One that will be there when you need us.

Let's talk. Call the number below, collect, or write us at 6201 E. Randolph Street, Los Angeles, California 90040.

Let's talk.

See SUE systems at the National Computer Conference booth #2831

Would You Believe?

3½ cents

To convert a three line name and address to computer tape

Minimum Quantity – 40,000

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(213) 749-3171

New OEM Products

(While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users.

Further, while much of this equipment is not presently available as such to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.)

Head Upgrades 2314 To 3330 Capability

GOLETA, Calif. – A disk pack recording head with the ability to upgrade 2314 subsystems to 330 subsystem capability is available from Information Magnetics Corp.

The Model R 4400-NT is primarily designed for use in quadruple density 2314-type and cartridge disk subsystems, writing 200 track/in., with a recording density of 4,400 bit/in.

The read/write head has the same flying height as conventional 2314 heads and writes with a track width of .004 in.

Operating frequencies are 1.25 MHz and 2.5 MHz nominal. Output signal is minimum of 1mV, and resolution exceeds 50%.

Price is around $500 in low volume OEM quantities from 5735 Thornwood Drive.

Floppy Disk for Minis Out

PALO ALTO, Calif. – A minicomputer-compatible floppy disk subsystem is available complete with one drive, controller electronics, computer interface and software from Advanced Electronic Design.

Storage capacity is 262K character/drive with a transfer rate of 31 kchar./sec.

Price is around $3,000 for a one-drive system with optional extra drives at $1,000 each from 3197 Park Blvd., 94306.

Data Display Uses One PCB

ST. PAUL, Minn. – A 23-in. data display unit, the TD-23, is available from Miratel Division of Ball Brothers Research Corp.

The unit is designed with one solid-state printed circuit board with plug connections to all necessary components. A differential input system is incorporated to minimize hum and extraneous pickup on long cable runs, the firm said.

Additionally, special CRT phosphors and faceplates are available, and TD-23 mounting options include shelf or ceiling yoke hangers.

OEM list price is $425 with volume discounts available from 1633 Terrace Drive, 55113.

Tape Controller Fits Novas

FAIRFAX, Va. – A magnetic tape controller developed for Nova series minicomputer systems is available from C3 Inc.

The controller is constructed on a single printed circuit board which fits into the Nova chassis to provide interfacing and data formatting for up to two Pertec-compatible 9-track, 800 bit/in. tape drives.

The unit can handle speeds of 25-, 37-1/2- and 45 in./sec and provides character parity, character recognition check and logitudinal check on all write and read operations, the firm said.

Other features include read, write, rewind, block skip, erase and search file mark as standard operations.

The controller is priced at $3,500 in quantities of 10 from 2820 Dorr Ave., 22030.

Computer Keeps Cool

CHERRY HILL, N.J. – A.C. Manufacturing Co. has a chilled water cooling system for computer equipment requiring internal cooling.

The system is available in 15hp or 23hp aircooled (glycol) and watercooled systems with computer-compatible compressors, circulating pumps and alarm system.

A.C. Manufacturing Co. is at Old Cuthbert and Deer Roads, 08034.

One-Pass Variable Forms

Computer Married to Printing Press

By Michael Weinstein

Of the CW Staff

NIAGARA FALLS, N.Y. – Users with business forms or direct mail applications may benefit from a new technology that involves the first marriage of a computer with an ink jet printer to produce variable data on standard forms as they pass through a specially equipped printing press.

Previous to Moore Business Forms, Inc.'s development of the one-pass capability, variable forms had to pass through the presses twice – once to print the form and once to add variable information such as name, address, etc.

The first application of this new process was the preparation of tax forms for the Midwest region of the Internal Revenue Service. As the forms were printed with basic information at 700 ft/min, personalized information was added by the integrated computer unit before the completed form came off the press.

The device used to add variable information is built around a Varian minicomputer and an A.B. Dick ink jet printer modified to Moore's specifications.

After the form passes under the ink jet printer, information held on standard computer magnetic tapes is used to direct the printing of 5 by 7 dot matrix characters.

At the current level of development the "Compurite" system is equipped with three print units, each capable of printing five lines of variable information on a maximum of three parts of a form (i.e., a maximum of 15 lines of variable information).

Each line can contain up to 38 dot matrix characters with characters printed in black, red, green or blue. At the present time all characters are printed as capitals.

The impact of this system on the $3.4 billion direct mail industry is expected to be immense and Moore said to protect its lead-time advantage it would not quote actual operating specifications or prices.

The only way a user can obtain the Compurite capability is on a service bureau basis from Moore. Moore promises full security of users' tapes and will help with any conversion problems of putting information in a format Compurite can read.

The firm is at 900 Buffalo Ave., 14302.

Report Details System 370

MOORESTOWN, N.J. – A 60-page Datapro 70 report on the IBM System/370 computer line, including descriptions and analysis of all equipment and software announced by IBM through April 1, 1973, is available at $15 per copy from One Corporate Center, Route 38.

OUR INTELLIGENT TERMINAL DOESN'T ALWAYS DO WHAT IT'S TOLD.

Our intelligent communications terminal, the Sycor 340, can be very obstinate.

Like the times an operator inadvertently enters the wrong data.

Perhaps she omits an entry. Or tries to enter a number that doesn't pass the range check.

An alarm buzzes, the keyboard goes dead, and the entry that's incorrect blinks on and off.

Your operator corrects it on the spot. And you save time and money.

And when she's got the clean data ready, the 340 can transmit it unattended at 1200 to 4800 baud speeds.

But clean source data entry isn't the only advantage of an intelligent communications terminal.

The 340's 8K bytes of programmable memory, and our special terminal application language (T.A.L.), make our terminal putty in your hands when it comes to tailoring it for specific applications.

And with capabilities like customized field validation, conditional data entry and arithmetic operations, you've got the tools you need to tackle applications you may not have had in mind when you first leased it.

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Book Describes Microforms

WASHINGTON, D.C. – Users with applications involving microforms can obtain a publication from the American Society for Information Science (Asis) detailing the state of the art.

The book describes the types of microforms available, and discusses the uses, benefits and drawbacks of various microforms.

The Invisible Medium: The State of the Art of Microform and a Guide to the Literature is available from 1140 Connecticut Ave. N.W., Suite 804, 20036 for $3.50 per copy.

System/3-Type Disk Packs Available for Mini Users

TORRANCE, Calif. – System/3-type disk packs are now available from Athana Division of Computer Disc Mastertape Corp., for use with minicomputers utilizing IBM 5440-type drives.

The company claimed the disk coatings were error-free and that the disks carry a standard three-year warranty.

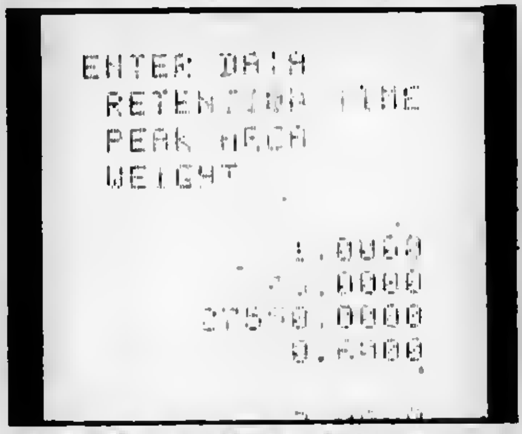
Unit price is $140 from the firm at P.O. Box 3313, 90510.

Calculator Prints In Japanese

PALO ALTO, Calif. – Hewlett-Packard has developed a special memory for its Model 9810A programmable calculator which enables the calculator to print in Katakana, the Japanese phonetic alphabet.

The read-only memory (ROM) block, developed to adapt the calculator to the Japanese market, permits the calculator to print Roman characters, numerals and various symbols, as well as the Katakana characters in any combination.

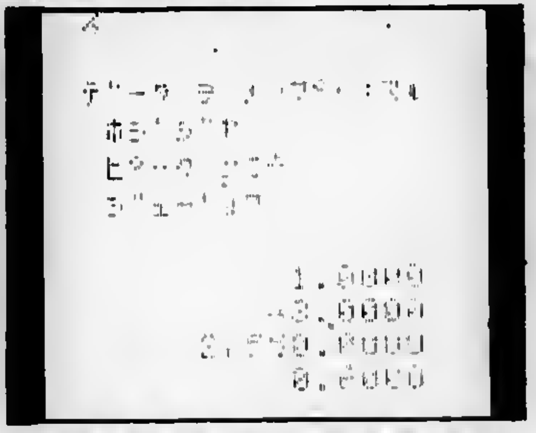
The Katakana ROM block is being offered only in Japan. Price is in the range of $600 to $700, depending on the rate of exchange. Hewlett-Packard is at 1501 Page Mill Road, 94304.



ENTER DATA
RETENTION TIME
PEAK AREA
WEIGHT

1.0000

Hewlett-Packard Model 9810A electronic calculator prints out paper tape of user instructions and labeled results in English.



The Japanese version of the same instructions is printed by the calculator using the Katakana memory block.

New OEM Products

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Impact Printer for Minis

CHATSWORTH, Calif. – Pertec Corp. has introduced a medium-speed impact printer for use with minicomputers and remote terminals.

The Pertec printer has two print speeds – 160- and 300 line/min.

Printer electronics are designed so that a change from the normal 64-character set to a 48- or 96-character set is automatically sensed.

Other features are vertical spacing selection of 6- or 8 line/in., full fault protection, forms handling and adjusting capabilities and disconnect terminals on the power transformer to provide nominal voltage selection from 95 to 250 Vac.

The printer also has optional, plug-in features such as the 12-channel vertical format unit.

The price is $3,990 in quantities of 100 or more with delivery in 30 days. Pertec is at 9600 Irondale Ave., 91311.

Datapoint Joins Centronics Printer

SEATTLE, Wash. – A plug-in interface which connects a Datapoint 2200 with any Centronics printer is available from Keywrite Corp.

Circuitry is contained on one printed circuit board which fits inside the printer and requires no installation modifications.

Operationally, the interface receives a parallel 8-bit input from the Datapoint 2200 and transmits the data in parallel to the Centronics printer.

Interconnecting cables are available to fit user requirements, the firm said.

Base price of the interface is $350 with volume discounts available from 1200 N. 107th St., 98133.

Display Provides 6-Digit Read-Out

ITASCA, Ill. – A remote display unit, Slimline Remote Display, is available from Nationwide Electronic Systems, Inc.

The unit provides up to six digits of .270 in.-high LED readout from any TTL/DTL source of parallel 1248 positive true BCD data.

Cost ranges from $149 to $155, depending on digit-design and digit-requirements. Delivery is about 20 days from 7N662 Route 53, 60143.

Tape Unit Handles 75 Char./Sec

CARLSTADT, N.J. – A 75 char./sec paper tape punch has been introduced by Litton ABS OEM Products Division.

Available in desk top or rack mounted models with or without IC electronics, the Roytron 700 Series handles 5-, 6-, 7- or 8-level code.

Features include positive detent stop, tape tear knife, tape hold down, tape drive sprocket, punch cover and timing generator. All units are available with discrete negative logic or positive logic.

Unit price is $507 with OEM discounts available from 600 Washington Ave., 07072.

British Punch Available in U.S.

MIDDLESEX, England – Data Dynamics has announced the availability of its 1130 Series paper tape punches for U.S. OEM buyers.

The 1130 Series operates at speeds of up to 46 char./sec and is offered in either synchronous or asynchronous models.

Other versions include free-standing units with or without tape handling, and options such as echo check, edge punched card perforation, variable tape guide and desk mounting.

Prices for the 1130 units start at $444 through Data House, Springfield Road, Hayes, Middlesex, England.

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We can help you get the answers you need!

PACE Applied Technology announces a new Computer Resource Utilization and Cost Control system, **KOMAND**, operating with both VS and OS in the System 360/370 environment. **KOMAND-DAS** (Data Acquisition System) replaces the **PACES-DAS** which is no longer marketed.

I. STRUCTURE OF KOMAND: KOMAND provides management with the information necessary for positive cost performance measurement and control. Modules presently available are; the Data Base Generator **(DBG)**, the Data Reporter **(DTR)** (these two comprise the **KOMAND-DAS**), the Resource Billing System **(RBS)**, and the Data Inquiry System **(DIS)**.

II. DATA BASE GENERATOR (DBG)
Records generated:

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Internal Control Features:

- *HASP/SMF Compatibility — DBG retrieves SMF data lost due to HASP.* • *JCL Error Accounting* • *Job Account Code Validation* • *Wait Time Extension* • *Completion Code Validation* • *In-Stream Reporting* • *SMF Data Recovery*

III. DATA REPORTER (DTR): Draws on SMF and DBG for a total data base.

Provides costs by job. Produces resource utilization reports by:

- *Steps* • *Job* • *Organization Structure* • *Computing System*

Report Types are:

- *Record Control Totals* • *Error Diagnostics* • *Job Audit* • *Revenue Analysis* • *Graphic plots of: Paging; I/O devices; Core utilization; Multiprogramming* • *Program Analysis by: Paging Volume; Paging Rate; Abends; excessive use of resources*

Special Accounting Features of DTR:

- *Priority Accounting* • *Degradation Accounting* • *Differential costing for TSO jobs, HASP/RJE spooling and Special Forms*

IV. RESOURCE BILLING SYSTEM (RBS): Charging for all computer center resources.

V. DATA INQUIRY SYSTEM (DIS): The Data Inquiry System (DIS) provides the **KOMAND** user with a simple information retrieval and reporting capability.

VI. SUPPORT: Installation support and maintenance are provided.

VII. KOMAND USER BASE: We have 73 systems installed. These include, 26 manufacturing and service, 20 governmental, and 27 financial organizations. The client base is growing rapidly with 1973 sales running 40% above 1972.

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[ ] "Evaluation of Resource Control Systems"

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38 Technical Sessions

NCR Meeting Features Product Preview

SAN DIEGO, Calif. – NCR users gathering at the annual meeting at the Sheraton Harbor Island Hotel here May 14-16 will get a preview of some future products as well as a selection of 38 technical sessions.

A session on "Taxes on Computer Software" will be given by Joseph Frascella of Systems Development Corp. on May 16.

"Prospective Medicine," a means of identifying potential health problems through the use of the computer, will be discussed by Dr. Charles Roos of Inter-Health. Stephen L. Priest of the Brockton, Mass., Hospital will outline a method of "Using Routine Hospital Data in Administrative Decision-Making."

For those interested in computer operating costs, Dr. Laird Sloan of Automated Systems Corp., Houston, will discuss the "Incremental Costs for an On-Line Data Collection and Communications System."

Representatives from NCR will lead some of the sessions, and William S. Anderson, president, will keynote the opening meeting May 14. Users may also visit the NCR DP division headquarters and new manufacturing plant at Rancho Bernardo.

"User Responsibilities" will be discussed by Stephen Loewy, NCR assistant vice-president, systems services, and recent and future trends in software development will be outlined by William P. Keating, NCR assistant vice-president.

Carl Cutright, also of NCR, will explain NCR's computerized inventory management system, and Dave Glick will speak on "optimizing production scheduling."

Attendees will be given a first look at "Documat," NCR's forthcoming computer-assisted documentation system, plus a preview of some future software releases, such as Release 8B.

Societies/ User Groups

Manual Government Systems Unfair, Davis to Tell GMIS Users

JACKSONVILLE, Fla. – Governments that fail to use computer-based systems perform an injustice to the public interest and cannot fulfill their public service obligations, according to Dr. Ruth M. Davis, Director of the National Bureau of Standards, Center for Computer Sciences.

Davis will be expanding on this theme as the keynote speaker for the Government Management Information Systems (GMIS) Users' Group, at its annual meeting here May 15 and 16.

The GMIS users must assume a large responsibility in bringing automation as a technological partner of good government to the attention of national leaders, she said.

Also scheduled for the meeting are two panel/workshops. The Wednesday session is titled "Project '73 – Administrative Regulations for Security and Confidentiality in State and Local Government Data Centers." It will deal with the issue of shared versus dedicated computer systems.

"Project '74 – Computer Independent Data Management Software" will be the topic for Thursday's session, focusing on the need to accomplish transferability of systems.

In addition to the panel/workshops, several sessions dealing with current topics in municipal data processing are scheduled.

Details of the conference can be obtained from Masaji S. Toki, GMIS secretary-treasurer, 138 E. Court St., Cincinnati, Ohio 45202.

Graphics Group to Emphasize MIS, Composition, Mail Applications

TORONTO, Ont. – The seventh annual Graphic Communications Computer Conference May 23-25 offers users in the graphic arts a choice of programs on composition, mailing lists and management information systems using computers. The conference will be at the Sheraton Four Seasons Hotel.

In the composition program, topics range from information storage, retrieval and composition to conversion to OCR and input integration. Other sessions will examine blue sky in software, time-sharing composition input and data base management and composition.

The MIS section of the conference covers such topics as management information and company growth, production loading, scheduling and control, and maxisystems from minicomputers – a case study.

Sessions on the mailing list services and delivery system developments will look at Canadian and U.S. postal services and their implications in list maintenance. The trend to route sequencing will also be examined.

There will also be several tours of local plants which use computerized lists and composition systems.

For non-members of the Graphic Communications Computer Association the fee for a single registrant is $150; for members $100. Discounts for multiple registrants are available. The association is at 1730 N. Lynn St., Arlington, Va. 22209.

ACM Names Bachman Turing Recipient

NEW YORK – The Association for Computing Machinery has named Charles W. Bachman of Honeywell the recipient of the 1973 A.M. Turing Award for his outstanding contributions to data base technology.

Bachman, the inventor of Data Structure Diagrams, has been the principal architect of the Integrated Data Store data base management system.

The award will be presented at the ACM conference in Atlanta, August 27-29.

IEEE Sponsors Awards

SILVER SPRING, Md. – The IEEE Computer Society Governing Board has voted to sponsor the awards in Mathematics and Computers at the International Science and Engineering Fair in San Diego, Calif., May 6-12.

In addition to sponsoring the awards, the society will provide judges in the mathematics and computer category.

The society hopes this step will strengthen its present and future student participation.

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- JERSEY CITY, N.J. 07305, Liberty Industrial Park, 43 Edward J. Hart Rd., Phone: (201) 434-0003 (N.J.), (212) 732-9494 (N.Y.)
- SKOKIE, ILL. 60076, 7620 Gross Point Road, Phone: (312) 965-7550
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EDP Auditors 'Come of Age'

SANTA MONICA, Calif. – The 1973 EDP Auditors Conference June 7-8 at the Miramar Hotel here, will focus on "EDP Auditing: A Coming of Age."

The meeting will consist of two series of sessions, one on management and the other on technical aspects of auditing.

"EDP Auditing Perspectives: Internal versus External" and "EDP Auditing's Role in the Management Function" are topics scheduled for the management series. Other sessions will deal with personnel selection and training, and the development of standards.

The technical sessions will examine performance measurement techniques, controls in data base and telecommunication environments, and the evaluation of documentation.

Cost for association members is $45; non-members, $55. Registration deadline is May 23. For additional details, contact Dick Ryan, EDP Auditors Association, P.O. Box 15562, Los Angeles, 90015.

Bankers to Examine Systems, Operations

Societies/ User Groups

CHICAGO, Ill. – A wide-ranging program embracing both systems and bank operations has been planned for the 1973 National Operations and Automation Conference sponsored by the American Banking Association. The meeting will be held here June 4-6 at the Palmer House.

In addition to 54 sessions highlighting current bank operations and DP topics, there will be seven workshops, as well as small special interest sessions and opportunities to discuss experiences with others who have the same responsibilities in similar-sized banks.

An in-depth examination of the changing payments system will be provided through a workshop and several special interest sessions.

Session topics range from "what the manager needs to know about future changes in DP technology and techniques for improving systems and programming productivity," to multilevel looks at OCR and COM.

One of the seminars for large banks will examine evaluating automation alternatives – facilities management, joint ventures, correspondent services, service bureau or in-house development.

Virtual memory, application software selection, and lessons learned in the implementation process are topics of other first-day seminars.

Special interest sessions on Monday will treat areas such as COM, large bank customer information files, modularity in applications programs, remote processing, on-line teller terminals, minicomputers and multiprogramming costing.

Reject Items

A Tuesday session on reject item processing will evaluate the possible alternatives – OCR, add-on strips and on-line CRTs. Other sessions will examine use of simulation in bank planning, fundamentals of DP planning, data entry and embezzlement by computer – the extent of the problem, case histories, why it happens and what can be done to combat the problem.

The Wednesday workshop on the change of payments system will cover the reasons for change as well as the nature and implication of current changes.

Other related sessions include a status report on a national payments system covering automated clearinghouses, point-of-sale systems, bank cards, a review of Atlanta's implementation of a regional automated clearinghouse and magnetic tape accompanying clearing checks.

Another Wednesday workshop focuses on "user department relations – the DP manager's Achilles heel." Primary emphasis will be on assessing systems tried in various banks.

In "Scenario-78" attendees will get a look at what banking may be like in five years.

Conference registration fees are $130 for bankers and $160 for non-bankers, which includes three luncheons and two evening receptions.

For registration materials, write the meeting registration coordinator, The American Bankers Association, 1120 Connecticut Ave., N.W., Washington, D.C. 20036.

Users to Review Financial MIS Projects

NEW YORK – The Society for Management Information Systems' Spring conference will convene at the New York Hilton May 10-11, preceded by preconference workshops on May 9.

Two concurrent workshops will center on financial management information systems and ingredients of successful MIS project management. Emphasis in the financial session will be on the conceptual design of financial information systems for decentralized management.

Conclusions from a study of 20 information systems development projects in 10 large firms will be reviewed in the workshop on successful management.

The fee for the workshops is $75 for members, $105 for non-members, who will also receive membership in the society for one year.

During the conference there will be a repeat of two presentations from past annual conferences, the Westinghouse Story and the International Utilities Story.

The conference fee is $175 for members, $205 for non-members, which includes annual dues.

The Society for Management Information Systems is at 221 N. LaSalle St., Chicago, Ill. 60601.

Calendar

May 13-16, Denver – **Association for Systems Management, 1973 International Systems Meeting.** Contact: R.B. McCaffrey, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

May 13-17, Boston – **International Communications Association Conference.** Contact: J.D. Martin, Jr., National Steel Corp., 700 Chatham Center, Pittsburgh, Pa. 15219.

May 14-15, Arlington, Va. – **Washington Chapter of Uaide (Users of Automatic Information Display Equipment) Meeting.** Contact: Uaide, c/o Datagraphix, 7315 Wisconsin Ave., Bethesda, Md. 20014.

May 31-June 1, London, England – **International Exposition for the Minicomputer Industry sponsored by the Polytechnic of Central London.** Contact: Lisa Spaducci, Polytechnic of Central London, 115 New Cavendish St., London W1M 8JS, England.

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Multimedia Instruction Plan Features Self-Determined Pace

WELLESLEY HILLS, Mass. – Multimedia instruction in data processing is now available for individual learning through a self-instruction package from Honeywell Information Systems.

This package combines programmed texts and flipbooks with film strips and cassette tapes and is called the "Self-Instructional System of the Seventies."

The basic course material is essentially generic, and the knowledge acquired can be used with any computer, according to Honeywell.

The learning programs are designed to educate the data processing trainee in the basic concepts of computer programming on an individual basis. Although they require no instructor assistance other than exam grading, administrative guides are provided to help implement the program in schools, colleges and corporations.

Each student may begin a course at any time and proceeds at his own pace in an interactive environment involving reading, listening, observing, responding and reviewing. Programmer training requires from 120 to 150 hours of learning on a full-time study basis.

At the end of each course the student is tested and evaluated against national standards on his understanding of the material.

The administrator's kit combines audio and visual aids, the examination answers and a guide that directs the administrator in the use of the audio-visual package.

Education

The administrator supplies the audio-visual aids and instructs the student in their use. These aids include film strips, audio cassettes and, for some courses, flipbooks. The administrator then monitors student progress and grades progress examinations.

The eight self-instruction programs now available are Fundamentals of Electronic Data Processing, Programming Logic, Basic Cobol, Tape Cobol, Disk Concepts, Disk Cobol, Advanced Cobol and Introduction to Series 200/2000.

Two data-entry courses are also offered for Keytape and Keyplex Operator Training. The data entry courses contain texts and audio cassettes designed for use at Keytape or Keyplex machine stations that provide hands-on experience during training.

Cost of the administrator's kits range from $95 to $195. The student texts range from $7.50 to $22.50.

The audio-visual hardware unit for a one-time purchase price of $195, includes a self-contained, rear-screen film strip projector and audio tape cassette player. The audio system has a built-in speaker for group listening and a jack for use with the hi-fi type headphones for private listening. The number of units required is determined by the number of students using the system at one specific time.

The Honeywell education center is located at 110 Cedar St., 02181.

Data processing trainee progresses at her own pace using programmed text and audio-visual self instructional system developed by Honeywell.

DP Goes to Church

NEW DUNDEE, Ont. – A Lutheran pastor sees the computer as "one of God's little helpers" for its capacities as financial advisor. The St. James Lutheran Church here is leasing a computer which lets the church council know if monthly budgets are being met and also gives each member a statement of his yearly contributions for tax purposes.

Control Data Graduates Qualify for College Credit

MINNEAPOLIS – Computer technology graduates of Control Data Institute will be able to apply their training towards a degree at St. Cloud (Minn.) State College under terms of an agreement just completed by the college and the institute.

Institute graduates will be able to transfer as much as 30 quarter hours of credit to the electromechanical technology program in the college's School of Industry, according to Dr. Robert Ryan, chairman of St. Cloud's technology department.

Drake University To Offer Major In DP Management

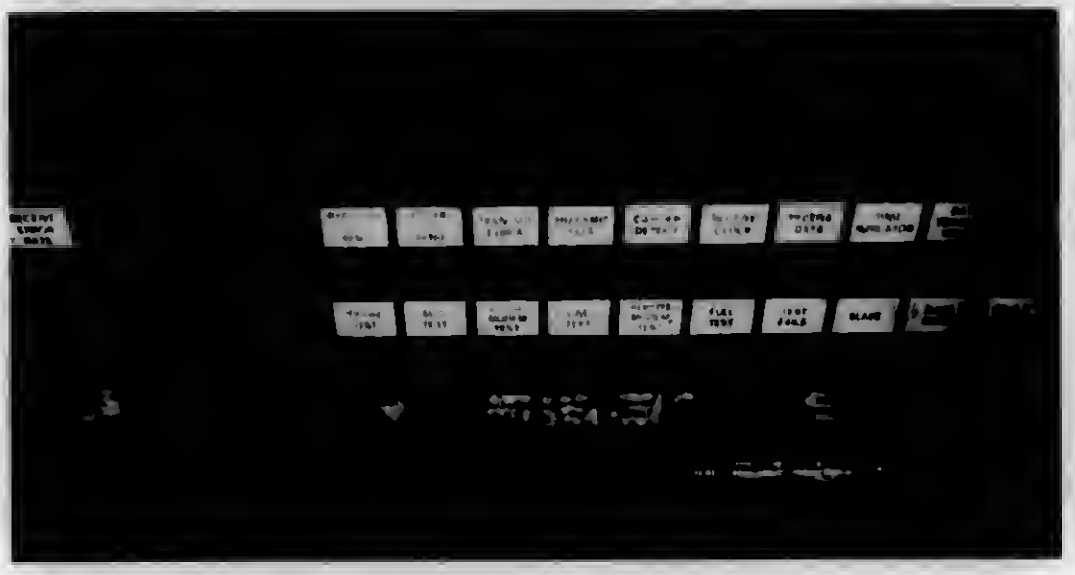
DES MOINES, Iowa – Drake University will offer an undergraduate major in computer information systems management through its College of Business Administration, beginning next fall. One objective of the new curriculum is to prepare students for the Certificate in Data Processing (CDP) examinations sponsored by the Data Processing Management Association.

Management Studies Included

The new program is principally intended to get students ready for positions in DP management and systems analysis. It tempers classic computer science courses with studies in principles of management, and systems analysis and design so that graduates will have an appreciation of business problems as well as DP.

While the new program is the first at Drake to focus principally on DP, students in all curricula run by the College of Business Administration have been required to take at least an introductory course in DP. The school even grants "foreign language" credits for work done in Cobol or Fortran, a spokesman noted.

The university has a Honeywell 111200 which is available for student use.



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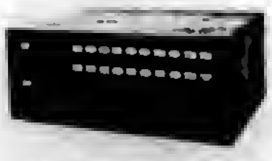

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DP Diagnosis Debugs 'the Bug'

Volkswagen of America has turned to computers to get the bugs out of "the bug."

Computer Diagnosis, the car dealer's check-up system, uses sensors built into all late-model VWs to make up to 72 checks on a car's performance. These include such tasks as checking front-wheel alignment, ignition performance, engine compression and the electrical system.

To perform the checks a digital system designed by Siemens A.G. of Germany is connected to a central socket in the engine compartment. A program card runs the tests in sequence and results are analyzed and printed out in 20 minutes.

Under a services and maintenance contract with Honeywell's Test Instruments Division, the system is being installed at 12,000 VW dealers.

Divided Workloads, CAI Speed Compensation

By Bob Wright
Of the CW Staff

SALEM, Ore. – An unusual concept coupling specialized teams with computer-assisted operation has resulted in increased efficiency and better control for the Oregon State Accident Insurance Fund (Saif).

Used in Saif's claims operations, the Claims Director System (CDS) calls for a team-specialist approach to speed the handling of workmen's compensation cases. The team includes an employment specialist, insurance-legal specialist, medical specialist, computer data control clerk and unit clerk.

Divided Workload

Before CDS was in operation, each claims adjuster was responsible for controlling all of the aspects associated with a claim. The CDS concept, by dividing the total workload, allows the adjuster to concentrate his attention and effort on the claimant.

Ralph Faulkner, DP manager for Saif, explained that the organizational structure around the hardware and software enables CDS to spot rehabilitation needs and anticipate problems that could later complicate a claimant's recovery. "The payoff," Faulkner added, "is in getting the man back to work earlier."

Through faster and more personal claim service, CDS also reduces the chances for psychological barriers to develop which interfere with a worker's rehabilitation.

CDS uses a customized Nova 1220 with two disk drives, one for programs and claimant records and another for backup. Faulkner said the Nova, hardware to drive the CRT display, and the software were all developed by Insurance Technology Inc., Berkeley, Calif. A 150 char./sec printer completes the system.

Faulkner noted that CDS can realistically handle 1,300 to 1,400 claims, although the stated capacity is 2,000. "Cost," Faulkner added, "is about $50,000 annually, which includes hardware, software, concepts, techniques and training."

Checkless Society 'Here Now'

COLUMBUS, Ohio – Money is a thing of the past – at least for some residents of this city.

After a nine-month experiment City National Bank & Trust Co. is now installing a computer system which will allow its customers throughout the area to buy virtually anything with a single credit card.

A checkless system has been tried before in other cities, but at least one foundered in part through lack of customers. This problem does not seem to affect the Ohio scheme – thirty businesses, including supermarkets, pharmacies and department stores, have signed up to participate.

Store terminals are linked by phone lines to a master computer at the bank, permitting the salesman to verify and record a sale in seconds. Customers have the option of charging the merchandise and being billed at a later date, or of paying for it directly from their checking accounts.

The checkless system cuts down on paperwork for the bank, and protects the store since the computer rejects the sale if the customer has insufficient funds or if the card is stolen.

"Everyone has talked about a checkless, cashless society," says bank chairman John G. McCoy. "They said it would be here 10 years from now. We think it's here today."

Ace Bill Collector Gets the Alimony

PORTLAND, Ore. – Harold C. Hart is Oregon's No. 1 bill collector. And what he collects are overdue payments of alimony and child support.

Aided by his computer, Hart, working for the district attorney, collected $10.9 million last year alone. His "victims" are the delinquent among the 19,000 fathers whose names spin in the Multnomah County computer file.

All child support and alimony orders are stored in the computer and a bill is automatically sent out to the father. If no payment is received within 30 days of the due date, the computer sends out a reminder note and waits 30 more days. Then, if the account is still unpaid, the computer marks the case for prosecution.

Last year, some 210 "foundering" fathers were "turned in" by the computer.

'But Ours Are Cuter'

BIRMINGHAM, Ala. – Personalizing computers may be a big problem for some banks, but not for the First State Bank of Altoona. In fact, they boast not only personalized service, but advertise "cuter" computers.

The secret of their service is indeed personalized computers – two women who do all the bookkeeping.

"It's just not economically feasible for us to have computers now," says Jack Ray, bank president. "We have little or no turnover in personnel, so our bookkeepers know the customers, their habits and their technique of banking."

The fact that some First State customers sign their checks with an "X" probably has a lot to do with it too, he said.

Aussies May Store Legal Data

CANBERRA, Australia – The Federal Government has set up a committee to examine the use of computers to store legal information. The government hopes to transfer all legal data on federal statutes to computers to make information more readily available.

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COMPUTER INDUSTRY

CI Notes

Cary Sees Business Up

SEATTLE, Wash. – IBM is expecting improved business this year, President Frank T. Cary told shareholders at the recent annual meeting. "We expect relatively strong economic conditions in virtually all major countries," he said.

The firm plans to hire about 20,000 persons this year, half of whom will be based abroad, he said.

At the meeting, stockholders approved a five-for-four stock split.

Shipments of DP equipment for the year "are expected to be at a high level, with several newly announced System 370 products scheduled to be delivered in increasing quantities as the year progresses," Cary said.

Comma, CHCS May Merge

NEWTOWN, Pa. – A merger may be in the offing for Comma Corp. and Computer Hardware Consultants & Services, Inc.

The boards of directors of both firms have approved an agreement providing for the merger.

DPF to Replace Air Force 360s

HARTSDALE, N.Y. – DPF Inc. has received a contract from the Air Force to replace six IBM 360/40s, 75 IBM 2400 tape drives and other equipment, with a total IBM purchase price of about $5 million.

Under a previous award, DPF will also supply the Air Force with a 360/75.

Supershorts

The Social Security Administration has ordered 70 1302 key-to-disk systems from Inforex, Inc., for a total of 851 keystations. The units will be delivered this year, according to Inforex. The contract allows the government to increase the total order by about 50%, the firm added.

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Peripheral Sciences, Inc. has named Dasa Corp. as sales and service representative in the major metropolitan areas of the U.S.

– – –

Applied Data Research, Inc. has established ADR International Corp. as a wholly owned subsidiary to direct the firm's growing world trade activities.

– – –

Advanced Memory Systems, Inc. has received a contract from Telefunken Computer Gmbh of W. Germany for the design and manufacture of 128K word by 59 bit MOS memory systems. Telefunken will convert its Model 440 computer from core to MOS memory with shipments starting this fall.

– – –

Brother International Corp. recently delivered the 10,000th printer assembly to Centronics Data Corp.

Documents Indicate:

IBM Studied Profits, Discounts on FTP

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – IBM almost gave its users a larger discount on equipment when it announced the fixed-term lease plan, but apparently the larger discount was unacceptable to the firm's lawyers and economists, according to confidential IBM documents released here.

It also appears from the documents that IBM carefully planned in May, 1971, which devices would receive the price reductions and which would not.

IBM's data processing group initially recommended a 10% reduction for 12-month leases and a 20% discount for the 24-month lease plans.

At the same time, the firm's lawyers recommended a plan that would give users a 10% discount for an 18-month lease and a 20% cut if the user would sign up for 30 months.

It was determined, the documents showed, that the "convergence point" of the two plans would be an 8% discount for a 12-month lease and a 16% discount for the two-year leases – and that was the plan that was finally announced.

Only Certain Products

In the briefing plan drawn up on May 18, 1971, just about a month before the plan was announced publicly, there were lists indicating which products would be in the plan and which would not.

The documents show IBM originally planned to reduce lease prices on all printers, tape units and controllers, and disk drives and controllers.

No reason was given in the briefing plan for excluding certain products, but testimony in the Telex-IBM case indicated that the products included in the plan were those with competition from independents, and the ones left on the 30-day lease plan were those that had no competition.

The documents seem to support this contention. The documents show for example, that IBM charted where the reductions would place its equipment in comparison with what else was available in the market.

In the area of three-spindle 2314 configurations, IBM noted that its present price was $2,480/mo compared with the plug-compatible manufacturers' average price of $2,260/mo.

The reduction for a one-year lease brought the IBM price down to $2,282 monthly, while the two-year 16% reduction lowered the price further to $2,083/mo, under the competition.

Long-Term Benefits

IBM also charted the effect of the fixed-term plan on its own revenues before going ahead with it and found it would be beneficial in the long run.

In the disk area, for example, the IBM plan estimated that during the 1971-76 time span the fixed-term plan would generate additional revenues of $52.1 million on the 2314/2319 type of disk drives by preventing that many from going to the competition.

IBM also estimated it would lose $17.1 million over the same time period, by applying the plan to 2311s, but this would more than be made up by additional revenues of $57.2 million expected from long-term leases for the 3330 unit.

So while the firm estimated the plan's effects would cost it some revenues in 1971 and 1972 before the 3330 was on the market, the researchers said over the long run the firm would pick up $61.9 million on the disk line more than it would have without the plan, apparently because it would keep users in the IBM fold who normally would have gone to the independent devices.

In the card equipment area, however, the analysis turned up long-term losses instead of gains if the fixed-term lease was applied. The researchers found IBM would lose revenues of $106.2 million if the plan was applied to the 2540 card reader/punch and to other System 360 I/O gear over the 1971-76 time span.

In addition the firm estimated the profitability of the 3505 Card Reader/Punch and the 3525 Controller would slip from 25.1% of revenues to only 18.9% of revenues if the fixed-term plan were applied to the card I/O gear.

However, the firm might have a surprise in store for card equipment users since the report noted IBM "could do a card I/O price increase on own merit regardless of FTP."

In addition, the researchers said the firm should not "do FTP on System/3 I/O gear" because of profitability reasons and because such a long-term "lease" plan in the System/3 area might "slow migration within the system."

Exhibitors Cite Caravan/73 Sales

By a CW Staff Writer

NEWTON, Mass. – "Based on a 40% increase in exhibitors and a 50% increase in attendance," said Neal Wilder, sales and marketing director for the Computer Caravan/73, "we expect the exhibitors will double last year's sales total of $25 million." The Caravan recently completed its nationwide 10-city tour.

A random sampling of the 52 exhibiting companies confirmed Wilder's expectations, with most of the firms claiming the investment in the Caravan had been cost-justified before the tour was one-third complete.

John Cullinane, the president of the software firm that bears his name, said one sale justified his expenditure of the $15,000 for a single booth.

Cullinane is the software representative on the Caravan Advisory Panel, a seven-member group established early this year to help plan the user forums, select sites and cities, and promote the entire program.

Other members include representatives from Iomec, Inc., General Computer Systems, Lockheed Electronics, Univac, ICC/Milgo and Ampex.

Avery Blake, vice-president of marketing for Iomec, noted his firm had "a $7,000 sale within a half hour after the show opened in Boston."

Dallas Talley, vice-president of marketing for General Computer Systems, noted his firm had a $150,000 sale to a user who never heard of us.

Many of the exhibitors sent representatives to sit in on the panel discussions and workshops, to "hear what users are doing, and their attitudes, and/or evaluations of that which they have experienced," according to a supervisor for AT&T.

CDC Splits DP Into 3 Companies

MINNEAPOLIS, Minn. – In a realignment of management, Control Data Corp. has split its computer operations into three separate companies within the corporation.

The move places operating responsibilities with a seven-member management committee, Chairman William C. Norris explained.

The firms are: Control Data Systems & Services Co., Control Data Peripherals Products Co. and Control Data Marketing Co.

The new president of the units are: Robert M. Price, Thomas G. Kamp and Paul G. Miller, respectively, who were formerly senior vice-presidents. Each will be a member of the new management committee.

With the new arrangement, Norris "will be able to devote much more time to planning and to growing relationships with other organizations, both in the U.S. and in other countries.

In other areas, Control Data has indicated the DP services business of the Central Information Processing Corp., a subsidiary of CDC's Commercial Credit Corp., will be absorbed by the newly acquired Service Bureau Corp.

On the international front, CDC confirmed it has engaged in trade discussions with the Soviet Union. "We have made proposals to them and we are making progress in these discussions," a spokesman said.

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Survey Indicates

Communications Industry Should Help Educate User

By Molly Upton
Of the CW Staff

KANSAS CITY, Mo. – Communications users and industry representatives agreed in a recent survey here that more education and delineation of communications capabilities and foibles are needed in order to advance the level of communications use.

"The industry should be more responsive to the user and provide the facilities he needs," commented Dick Fioretto of Panhandle Eastern Pipe Line.

He observed that the communications capabilities of the dial-up networks should be improved, and said users need more economical systems. Perhaps a dedicated system throughout the country would provide this, he added.

Who Should Help?

"Users need help, but I'm not sure it should necessarily come from the industry," commented Dave Nordlund of the University of Kansas. "Users need a good handle on the kind of service that will supply their needs."

For example, he said; they need more information on data rates, code sets and how to assess their future equipment needs.

Dick Fioretto

"Perhaps some sort of book is needed detailing theoretical case histories involving selection of equipment for particular needs," he observed.

"Users need to prime their intuition. Some aspects are not obvious. For instance," he pointed out, "the most economical units may be inadequate for the system when it is upgraded.

"There are too many factors in selection and use. It's like raising a kid. You often don't know if you've made a mistake until it's too late."

More Comparisons

George Plofkin, a programmer for the Omaha Public Power District, said he would like to see more comparisons of specifications such as transmission speed.

Dave Nordlund

Plofkin is a time-sharing user and he said he thought T/S firms should publish throughput specifications.

"Right now a user feels like he's facing a used car salesman" when talking with vendors of different systems, he said. "It's very hard to evaluate them," he added.

From the industry side, John Roush, central regional accounts executive for ICC-Milgo, said, "The industry should educate the user more," and should offer reliable equipment and service.

Bob Smith

In addition, equipment should be built with "increased diagnostic capabilities of hardware of all types," he said. There should be more schools and seminars informing users about the various communications facilities and characteristics, he added.

Alan G. Melkerson, midwest regional manager of Penril Data Communications, agreed there is a need for more diagnostics in equipment to help stop the finger-pointing between the user and various suppliers.

Bob Smith, sales manager for OEM products, Paradyne, said manufacturers should put more of the communications controlling functions out of the realm of the CPU and put in a "smart box," which would "relieve the user from having DP do functions which can and should be done outside," he said.

Many users currently depend on DP for error control integrity and statistical control, whereas these functions should be performed by a piece of communications gear, he said.

Adapso Management Meeting Focuses on Profitability

NEW ORLEANS – "An Environment of Profit – Now and Tomorrow" is the theme of the 38th annual Adapso Management Conference which will be held here June 21-22 at the Royal Sonesta Hotel.

General sessions and workshops will cover topics ranging from network information systems and data communications to the latest techniques in programming for data centers. The question of "Leasing versus Purchasing" will also be covered.

Concurrent Adapso/Software Industry Association sessions will feature discussions on the future of software, the organization of a software company and important issues facing the industry.

For further information contact Adapso, 551 Fifth Ave., New York, N.Y. 10017.

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Genesis One Aims at System/3 Peripherals Market

Company Profile

By E. Drake Lundell Jr.

Of the CW Staff

Wanted: Firm manufacturing electromechanical peripherals for System/3 that needs national end-user marketing. Also looking for similar terminal makers.

NEW YORK – That ad or anything similar has never appeared anywhere and most likely will not. But it expresses the program underway at Genesis One here fairly succinctly: The national marketing organization is actively seeking new companies to represent and is particularly interested in the System/3 peripherals area and in the terminal business.

Myron Angier, president of the firm, noted that the more than 15,000 S/3 users have very few sources for peripheral equipment and therefore are unable to obtain the savings often possible through the use of independently manufactured peripherals.

He said one of the major reasons holding back development in this area is the fact that there are not really that many engineers around capable of developing the low-end electromechanical peripheral equipment.

"Ninety-eight percent of the engineers in the business are working solely on electronic equipment. What we're looking for is a firm made up of the other 2% of the engineers in the business."

He noted it would be difficult for a smaller engineering-oriented firm to market "small ticket" items like peripherals for S/3s and to finance them over as long a lease period as would be necessary.

But, Angier noted, if a firm had the marketing arm it could probably get the lease financing in today's money market. And, needless to say that is where Genesis One could come in, he said.

The firm already has a national sales force and sells equipment made by several different manufacturers, so it could handle lower-ticket items because the selling cost of each item would be spread out across the entire line of equipment the salesman is handling.

In addition, turning to an independent organization for marketing would prevent a lot of headaches for the small manufacturer, he said, and would allow him to reach the market faster than would be possible if he had to set up an organization from scratch.

Easier Than 360s?

"Penetrating the System/3 market," Angier predicted, "will be at least as easy, if not easier than penetrating the 360 market."

This is because the S/3 is basically a less sophisticated system and so the users should not have to worry as much about the possibility of degrading performance if foreign equipment is added.

In addition, a great deal of the S/3 equipment market would be in off-line peripherals, such as card equipment, he noted.

The marketing would have to be completely on a replacement basis, he noted, meaning IBM would install a complete system and the user would gain some experience with it before thinking about turning to outside sources.

Genesis One has been actively looking for firms that are established in the area, he said, but have not found any as yet. However, he noted, there is a possibility that Japanese firms or other foreign producers might have this capability.

In addition, Angier said, the firm is looking at other large growth areas in the computer business in hopes of finding firms that want national end-user marketing and he noted the area of communications terminals, particularly intelligent terminals.

Basically, Genesis One is looking for firms that have proven they can manufacture a product and which probably have sold products in the OEM market for a while, but which are now eyeing the more lucrative end-user market.

Foreign Orders & Installations

The Banque de Paris et des Pays-Bas, S.A., Switzerland, has ordered a Model 6030 system from Honeywell, for operation of private accounts and traditional banking applications.

Nomura Securities Co. Ltd., Japan, has ordered a Univac 1110 to be used as the center of an integrated information complex.

The Caisse Regionale de Credit Agricole Mutuel, a bank in Puy-de-Dome, France, has ordered a Honeywell Series 6000.

The First National City Bank has ordered 100 NCR 399 computers for installation in 22 countries, including Lebanon, Malaysia and Ecuador. The systems will be used to automate the back-office processing of demand-deposit accounts.

The National Iranian Oil Company is installing twin Westinghouse 2500 computers on the Ahwaz-Rey Second Crude Oil pipeline, for use in a supervisory control system.

The French Postal Ministry has ordered a second Postal Address Reader-Indexer System (Paris) from Recognition Equipment France, S.A.

Three Japanese banks, the Osaka Bank of Osaka, the Kyoto Chuo Credit Bank of Kyoto and the Oji Credit Bank of Tokyo, have ordered a total of seven NCR Century 300 systems to monitor installment loans and deposits and to process accounts.

Keio University in Tokyo, Japan, has ordered a Univac 1106 computer system for use in research programs, administration and computer science courses.

Fiducia GmbH, a German data processing center serving a conglomerate of banks, has ordered nine Pertec 3700 computer-output-microfilm systems from Agfa-Gevaert, Pertec Corp.'s European representative.

The National Institute for Nuclear and Particles Physics at the University of Paris has ordered two Cyber 70 Model 72 systems from Control Data Corp. The systems will aid in processing data gathered from scanning devices which photograph vapor paths in bubble chambers.

Zenkyoren, a Japanese concern which handles insurance for agricultural communities, has installed a Univac 1110 system for use in processing policies and statistical work.

The Central Computer Agency in the United Kingdom has ordered a Univac 1106 system to be used by the central statistical office for economic forecasting and research.

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Semiconductor Memories May Increase Market Share

By Molly Upton
Of the CW Staff

NEW YORK – The U.S. independent memory market is expected to grow from $445 million in 1972 to $598 million in 1976, and the seminconductor portion of this market will jump from $55 million to $148 million, Dr. Thomas A. Longo of Fairchild Semiconductor Components Group told a recent meeting of analysts here.

The trend towards more memory in computer systems is evidenced by the 10% to 15% annual growth rate in the industry, while the memory segment is achieving a 15% to 25% increase, he said.

The use of semiconductors is "increasing much more rapidly because they are displacing other forms of memory such as core," he observed.

The disk/drum segment of the market will continue to grow, he said, from $240 million in 1972 to $370 million in 1976. The core sector, however, will decline to almost half, from $150 million in 1972 to $80 million in 1976, he predicted.

By 1976, Longo said he expects the total number of bits of information installed in computer systems will be four times greater than today, with both main memory and mass storage growing at nearly the same rate.

"In main memory, cores are expected to double in volume, while semiconductors are expected to increase by a factor of 10," he said.

"From an industry-wide standpoint, in 1972 there were some six billion bits of U.S. non-captive (non-IBM) semiconductor memory installed in computer systems," he continued.

"In the next few years – probably by 1976 – this is expected to climb to 50 billion bits of memory each year. And depending on our progress in penetrating the main memory areas, by 1980 it could be well over 100 billion bits installed annually," Longo said.

With this increase in volume will come a substantial reduction in price per bit. Although he said forecasting prices in such a volatile industry is difficult, he projected prices for MOS memory to average about 0.2 cent/bit during 1976.

Current prices, he said, are around 0.3 cent/bit in volume, whereas in 1972, the average was about 0.6 cent/bit, he said.

In the bipolar area, he sees prices going from 3 cent/bit today to 0.5 cent/bit in 1976. "This is about equal to the MOS prices of late 1972 so the superior performance of bipolar, competing with MOS price advantages will remain a factor in customers' decisions, he added.

In the battlefield of the main memory market, Longo said he expects solid state technologies beginning to take over by 1975-76, with competition between the semiconductor technologies. He said he sees the battle as a "cost versus performance struggle between N-channel MOS and bipolar."

Mass storage memory, such as disks, film and magnetic techniques, offers an "untapped area of potential," he noted.

Many firms in the industry are working on new device technologies that will bridge the performance and cost gap, now held by virtual memory, between the main memory system and mass storage areas, Longo said.

Development of the magnetic bubble. and other techniques could have "significant impact" in disk and other storage areas, he said.

Over the next four years, Longo sees the marketplace breaking down relatively evenly between bipolar and MOS. In 1972, the marketshare held by semiconductor random-access memories (RAM) and read-only memories (ROM) was $55 million, of which $33 million was in MOS, $22 million in bipolar.

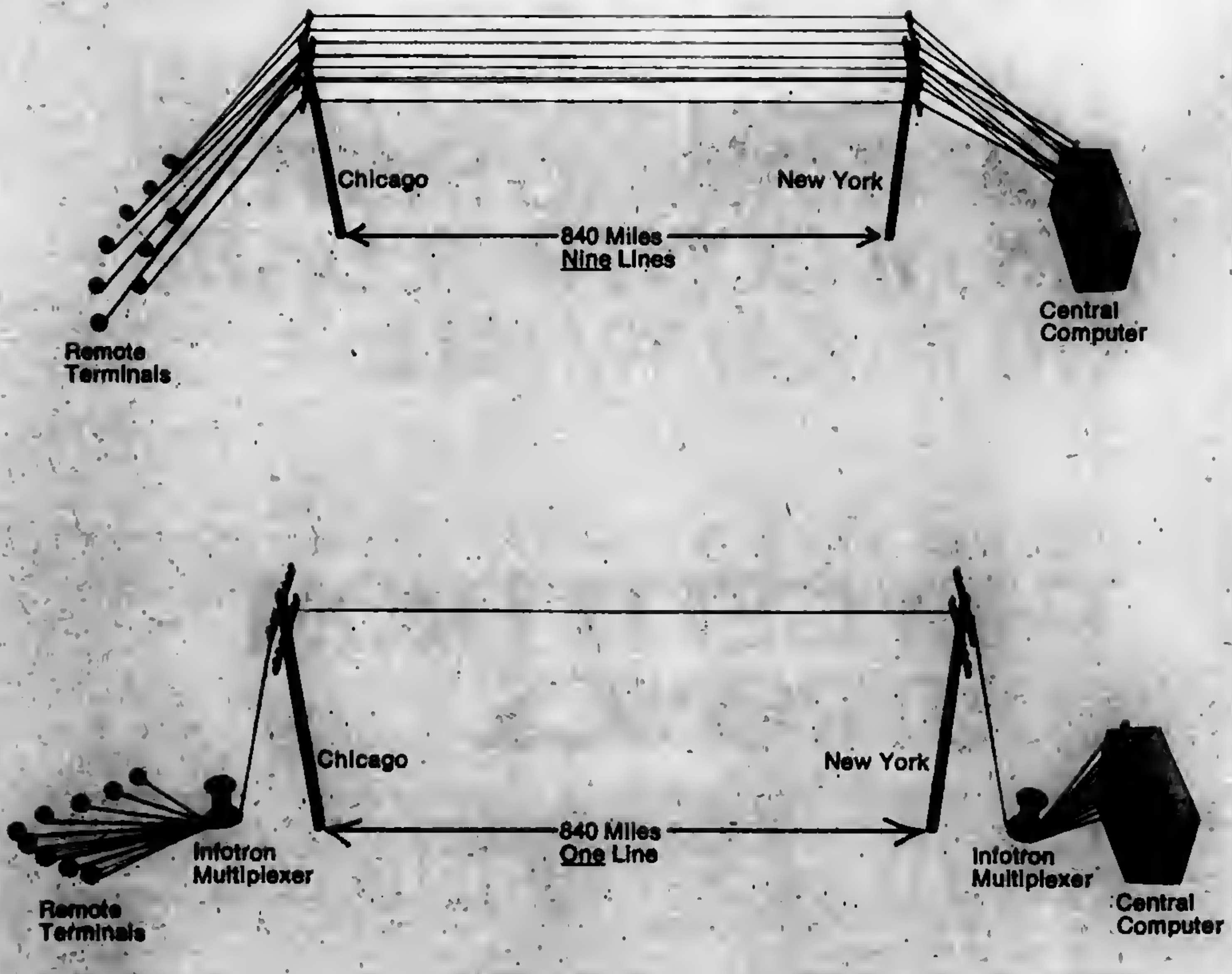
By 1976, he said, MOS sales should rise to $78 million, with bipolar in the $70 million range.

Fairchild Buys Cogar Plant To Expand MOS Facilities

MOUNTAIN VIEW, Calif. – Fairchild Camera and Instrument Corp. has signed a contract to purchase the Wappingers Falls plant which housed semiconductor operations of Cogar Corp.

The facility will be used to expand manufacturing capacity for metal oxide semiconductor (MOS) integrated circuits.

Fairchild also plans to expand its MOS capacity here.



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Road to Dominance — Part I

IBM Papers Project 360 Market Share

This series on market penetration by the IBM 360 series examines analyses made by IBM of the market from 1967 through 1969. Part II on Page 36 looks at the reduction suffered by IBM competitors by 1969. Part III, on Page 37, examines the share achieved by IBM in each sector of the systems market.

By Alan Taylor

Special to Computerworld

The competition against IBM's System/360 during the last years of its marketing life diminished fast, dropping from 36% of the average market to under 20% in the two years before 1970, according to newly available IBM documents released in the Greyhound-IBM suit.

Moreover, the hold over any particular market segment by any of the competitors was unstable, and indicated the IBM umbrella, while possibly acceptable for the competition taken as a whole, was not able to help the fortunes of competitors individually.

To establish a solid base, we must look back to 1967 and survey the markets as seen from White Plains then. IBM did its competitive analysis in seven marketing areas labeled A for the large Model 90 through F for the small Model 20 market (See Figure 1).

At the end of 1967 only in the hardwired Model 75 system area, which had always been an oddity of the 360 range and which had been kept over from nonmicroprogrammed processor times, was combined competition able to sell more equipment in a marketing range than IBM.

Firm	Range	1966/7 Share
Burroughs	A (360/90s, 195s) D (360/50s) E (360/40s)	100% 8% 10%
Control Data	B (360/75s,85s) C (360/65s67s)	31% 12%
General Electric	C (360 65s,67s)	5%
Honeywell	E (360/40s) F (360/25s,30s) G (360/20s, System 3s)	4% 10% 12%
RCA	E (360/40s) F (360/25s, 30s)	10% 4%
Univac	B (360/75s,85s) C (360/65s,67s) G (360/20s, System 3s)	30% 17% 22%

Figure 2. The IBM 1967 figures show competition with more than 4% of any of the marketplaces of the System 360 in 14 cases. These set the scene for the story of 1968/69 competitive activity.

The success stories were in the lower, less powerful systems. A solid block of these existed.

The average market penetration in the area from the smallest 360/20, to the large time-sharing virtual 360/67s was over 70%. Here they were outselling all competition by 2-1, with the fabulously successful Model 50s pulling 88% of the orders in that area.

Analysis

The documents show some confusion and much variation in the competitive situation.

14 Competitors

Even so, there were 14 different cases shown where a specific competitive firm held more than 4% of one of the IBM defined markets (Figure 2).

Undoubtedly, these segments could be used to show that competition was able to grow under IBM's umbrella and possibly disprove the Justice Department's charge that IBM was somehow monopolizing the market. This was in spite of IBM figures showing over 70% IBM occupation of the U.S. Model 20 through 67 markets.

The picture in 1967 was in many ways just one-dimensional. The fortunes of IBM and its competitors were shown only at one point in time.

Events Reveal

Luckily, IBM figures allow us to see what happened to the IBM 20 through 67 70%-penetration block, and what happened to the 14 competitive markets during the next two years.

Theoretically, the idea of system generations should have caused the IBM penetration (as measured by system orders) to decrease during this period, as the new System 370s were about to replace the 360s.

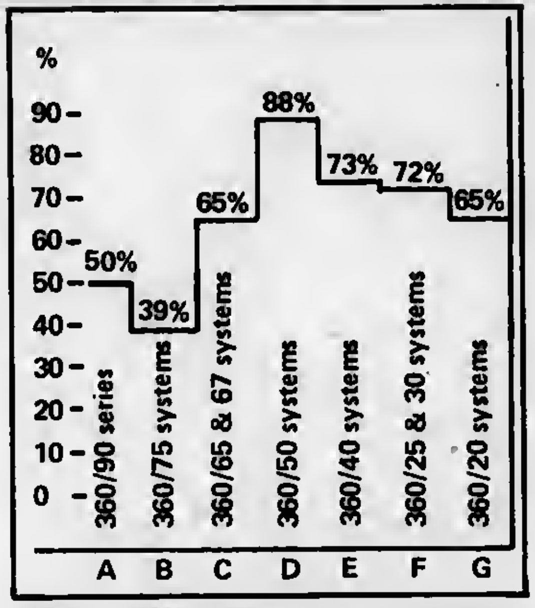

Figure 1. IBM Position in U.S. Computer Markets Before Justice Sued (1966/67). (Source: IBM's Commercial Analysis, Feb. 9, 1970)

What actually appeared to happen, however, was very different for both competition and IBM itself. On page 36, we paint the picture of competition and of IBM itself as the 360 marketing life was closing down.

Australian Post Office Seeks Bids for Network

Special to Computerworld

CANBERRA, Australia – The Australian Post Office (APO) has released a hardware-software RFP for a national computing network based on Sydney and Melbourne as two main processing centers.

Smaller satellite centers in Melbourne, Sydney, Brisbane, Adelaide, Perth and Hobart will be linked by high speed communication lines. The proposal is expected to be worth over $28.5 million.

The bids close June 6 with completion of benchmarks by July 7. Main characteristics of the network are: on-line data entry; direct access storage; and modular programming with a common framework. Hub of the network will be four large systems, two in Sydney and two in Melbourne. These systems will contain approximately 1M bytes of main memory.

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Firm	Range	1966/7 Share	1968/9 Share
Burroughs	A (360/90s, 195s)	100%	-23% Share; Wiped out
	D (360/50s)	8%	5% Share; 37% off
	E (360/40s)	10%	8% Share; 20% off
Average Corporation Position; 52% of 1967 Market Share Gone			
Control Data	B (360/75s, 85s)	31%	17% Share; 44% off
	C (360/65s, 87s)	12%	7% Share; 58% off
Average Corporation Position; 51% of 1967 Market Share Gone			
General Electric	C (360/65s, 67s)	5%	2% Share; 60% off
Average Corporation Position; 60% of 1967 Market Share Gone			
Honeywell	E (360/40s)	4%	5% Share; 25% up
	F (360/25s, 30s)	10%	6% Share; 40% off
	G (360/20s, System 3s)	12%	3% Share; 75% off
Average Corporation Position; 30% of 1967 Market Share Gone			
RCA	E (360/40s)	10%	7% Share; 30% off
	F (360/25s, 30s)	4%	2% Share; 50% off
Average Corporation Position; 40% of Market Share Gone			
Univac	B (360/75s, 85s)	30%	27% Share; 10% off
	C (360/65s, 67s)	17%	7% Share; 60% off
	G (360/20s, System 3s)	22%	6% Share; 70% off
Average Corporation Position; 47% of Market Share Gone			

Figure 1. The significant (4% or above) market shares held by IBM competitors in 1967 are compared with the equivalent holdings for the same companies in the same marketplaces for the following two years.

The Road to Dominance - Part II

IBM Papers Reveal Changes in Market Penetration by 360s Between '67, '69

By Alan Taylor

Special to Computerworld

During 1968/69 the IBM White Plains commercial analysis watch on the 360-competitive marketplace showed some drastic changes compared with 1966/67, particularly at the top and bottom market ranges where competition appeared to have had its strongest hold.

For the top end, the two-year averages ended 1968/69 when compared with the two year averages ended 1966/67, showed IBM had totally captured the suddenly booming super-scale computer market with net orders of 18 Model 360/195s.

This moved IBM's figure from 50% to 100% of the net orders. The two competitors in the marketplace, Burroughs and Control Data, suffered from cancellations of the orders given in 1966/67 for systems making them ineffective in the one area where they appeared to be strongest.

At the low end the introduction and success of the IBM System/3 had boosted the IBM share of the market from 65% to 87%. IBM, a year after the filing of the Justice suit, was now out-selling the combined competition by 7-1 in a marketplace that had also apparently been a secure haven for Honeywell (down by 75%) and Univac (down by 77%).

IBM gains had also been scored in the Model 65 area (increasing its percentage from 64% to over 80%); in the Models 25/30 area (72% to 75%); and in the Model 40 area (73% to 75%).

Even where IBM had suffered a total disaster as it had with the Model 85 – which had not gained a single order in 1969 – the IBM percentage had still increased from 39% to 51%. Nowhere had there been even a slight IBM decline in any System 360 market!

The strong 1966/67 Burroughs showing in the Model 25 through Model 50 marketplaces peaking at 15% against the Model 40 marketplace was vanishing. Although the Model 40 marketplace was expanding 10% a year, the Burroughs sales of the B3500 were coming down. The 1967 peak of 134 Burroughs orders had been reduced to a 1969 figure of only 69 – nearly cut in half.

Analysis

Similarly in the Model 25/30 marketplace, the Burroughs orders, which in '67 had peaked at 165 systems, had by 1969 been cut to only 59 systems.

Nor was the picture much brighter for Burroughs in the Model 50 marketplace. Their penetration had decreased by 37%.

This was discouraging for as a new system, the Burroughs B6500 had been announced some years after the competing 360/50. Clearly, if a six-year-old Model 50 could outsell the B6500, a new IBM announcement could be expected to wipe it out.

Honeywell Orders Halved

Honeywell, the only other non-IBM manufacturer to have apparently achieved a "protected" market (through having sizable entries in three contiguous markets) was also having its problems.

White Plains figures indicated a much faster Honeywell sales drop was occurring than in the equivalent IBM series. By 1969 the Honeywell 200 netted only 50 systems, down by 190 from the '66 peak of 240.

True, these orders were being augmented by the newer Honeywell 125 (similar to the IBM 360/25 augmentation of the 360/30). Even so, this was only taking 36 systems in 1969. Some dwindling support was also available from the Honeywell 1200, now down to 23 from its 1967 figure of 82 orders.

In all, the 1969 figures for the marketplace showed the Honeywell market opposite the 360/25/30s with only 110 net orders, about half its 1967 figures of 201.

The Model 20 type marketplace was one of the two great expansion marketplaces of 1969. It had now tripled in size to 6,000, from the 1967 figures of a net of 1,833 systems.

Honeywell's proportion, however, had not tripled. In fact Honeywell had not even maintained its '67 sales rate, dropping from 275 systems in 1967 to 143 in 1969.

Univac Replaces CDC

In fact the *only* market opposite the System 360, which now looked to be open, was the "B Market" – the 360/75 and 85 market. Here the Univac 1108, Model 2, had sold 18 systems in the past year, abruptly taking over market leadership from the CDC 6600, which was down to only 3 systems in 1969, from 14 in 1968.

The IBM Models 75 and 85 gained 11 orders during 1969, and over the two

(Continued on Page 37)

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Road to Dominance – Part III

IBM Moves to 80% Market Penetration

By Alan Taylor
Special to Computerworld

During the last years of the marketing life of the System 360, IBM's position was analyzed by their own competitive analysts as a part of the competitive process. These figures have now been studied and the results are shown in Figure 2.

This shows the penetration IBM had made in each of the marketplaces in 1967, and by the end of 1969, and the percentage change involved during 1968 and 1969.

Analysis

Going down this market-by-market summary it can be seen that in only one of the seven markets – Market D – was IBM at the 80% level in 1967.

By contrast at the end of 1969, when the 360 was about to be replaced, it had achieved (and indeed over-shot) the 80% market level in three more markets, making a total of four markets – A, C, D and G – where it now held this powerful position.

The total average penetration was also up, according to the IBM figures. While in 1967 the average over the whole marketplace including the 370/75 and up was 64.5%, the new advances had driven market penetration up to a position over 80%.

In fact, as shown by the IBM figures, as the 370 was being prepared for market, IBM was still receiving 81% of the new orders for System 360 markets.

This 81%, which turned out to be the average IBM-recorded penetration right across the 360-board, was mentioned in another part of the same documents containing the IBM figures.

It was defined, fairly explicitly, as being ALMOST COMPLETE DOMINATION – an item that may interest many people who have tried to define this term for years.

This definition occurs in conjunction with the activities of one of the smaller U.S. computer manufacturers, Digital Equipment Corp.

While noting that the competition (offering 44 different computers from a score of manufacturers) had racked up 470 sales against the IBM 1130, the analyst, J.S. Cassidy commented that "DEC continued its almost complete domination of competitive activity in this category. Over 81% of competitions' net orders for the year come from this company's systems."

So – it looks as though IBM had moved forward to "almost complete domination" of the 360 marketplace by the end of the 360 market life, despite the Department of Justice's and the other antitrust suits.

Market	1966/7 Share	1968/9 Share	Comparison With 81% "Almost Complete Domination" Level
A (360/195s, 90s)	50%	100%	Domination Achieved 1969
8 (360/75s, 85s)	39%	56%	ACD still two more years off, if this trand continues
C (360/65s, 67s)	65%	82%	Domination apperently achieved, 1969
D (360/50s)	88%	89%	Domination reteined
E (360/40s)	73%	77%	ACD just four percentage points off
F (360/25s, 30s)	72%	74%	Moving up slowly
G (360/20s System/3s)	65%	87%	Domination Apparently Achieved in 1969
All 360 Market Average	64.5%	81%	"Almost Complete Domination" Achieved in 1969

Figure 2. IBM Market Shares held in 1967 are compared with equivalent shares in 1969.

Market Shares Change

(Continued from Page 36)

year period were solidly in the lead.

Again, this replacement of Control Data by Univac, and the fortunes of Burroughs and Honeywell demonstrated the lack of stability of any manufacturer within any 360 market.

The IBM-created 1969 figures indicated an increasing trend of IBM success in penetrating the total marketplace opposite its 360 line from the System/3 through the giant 360/195.

Still, even though by 1969 IBM had increased its share from the 65% average of 1967 – was this in itself justification for the Justice Department suit?

Mere bigness is not necessarily an evil, according to the law. Nor is growth. What is important is the question of *domination.*

Pertec Names Poppa President

LOS ANGELES – Ryal R. Poppa has been named president and chief executive officer of Pertec Corp. He succeeds Harold A. Kurth, who resigned last December as part of a settlement of a proxy fight waged by dissident shareholders.

Executive Corner

- Joseph J. Ciasullo has been named vice-president and controller of Sperry Univac.
- Joseph D. Koenig has been named a vice-president of Diablo Systems, Inc.

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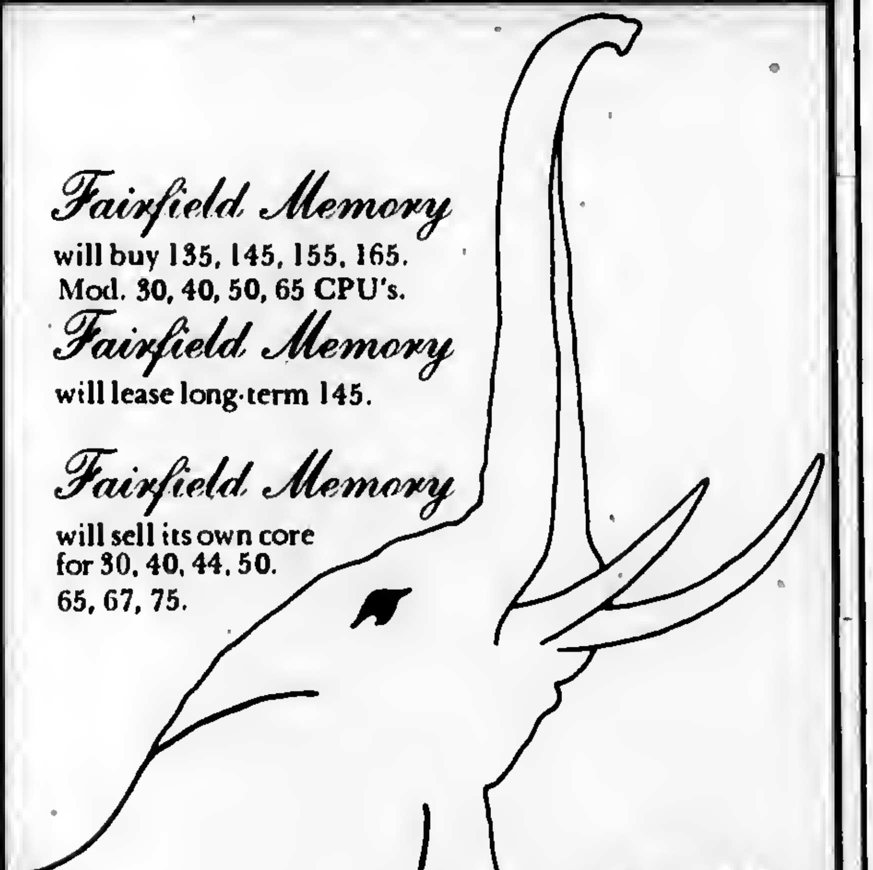
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Honeywell Quarter Earnings Soar 50%, HIS Performance Strong, Analysts Told

By Ken Shonk
Of the CW Staff

WALTHAM, Mass. – Honeywell's executive officers displayed a strong sense of satisfaction with the company's first quarter earnings report at a recent meeting of analysts here. All divisions improved their positions, reported President Stephen F. Keating.

The information systems side of Honeywell enjoyed a stronger first quarter than expected and Keating said indicators for the remainder of the year are strong..

However, he cautioned, "Don't expect earnings to increase in the remaining quarters of the year over a year previous at the same rate earnings improved this first quarter of '73."

Clancy Spangle, executive vice-president and chief of Information Systems, stated he expects a strong year for Honeywell.

"Acceptance of the Model 6000 has turned into a flood of orders," he said, "and the 2000 Series has experienced strong ordering. The value of the 50 and 100 Series systems was also greater than that of any previous year, and the company turned a profit in the minicomputer sector."

First quarter earnings for Honeywell, Inc. were up 50% to $16.9 million from $11.2 million in the year-ago period.

"We think we're in a fairly strong position to take advantage of the upturn in the demand for computer systems and services," he said.

Outlook for 1973

The outlook in '73 points toward a better year than '72 according to Spangle. "Revenues should increase 12% to 15% for the year with the growth rate in the U.S. running 10% to 12% and 15% to 18% outside the U.S. with all of Europe except Italy showing high growth rates."

The large number of Wimmex contract billings contributed to the strong first quarter, officials said. During the quarter 19 of 33 contracted systems were shipped.

Interest income was up 40%, company officials disclosed. Also, the yield of the 2000 Series systems hit its target of 18% to 20%, and the yield of the 6000 Series was much higher than expected since fewer 600s were returned than anticipated and most 400s and 600s were reshipped, they said.

"We're just coming out of a period of product line integration, and we're spending $110 million on R&D.

"Our present R&D approach," noted Spangle, "is that all new designs should be applicable to as wide a use as possible, and that we'll come out with a new line when it is necessary to hold existing customers."

The breakdown on R&D budget expenditures at present is 35% for software, a small amount on advanced research, and the remainder on hardware engineering and development, he said.

Microdata, Interdata Improve Quarter Earnings and Revenues

Two minimakers, Microdata Corp. and Interdata, Inc., both turned in sharply improved performances in recent quarters.

Interdata wound-up the record quarter ended March 30 with earnings of $272,500 or 13 cents a share compared with $210,700 or 11 cents a share in the year-ago period.

The 1972 figure includes a $146,800 special credit. In 1973, the special credit amounted to $43,600.

Revenues rose 35% during the period, to $3.8 million from $2.8 million in the year-ago quarter.

The improved earnings resulted from a combination of increased volume and new production efficiencies, according to President Daniel Sinnott.

More at Microdata

At Microdata, revenues rose 54% in the quarter ended Feb. 28, to a total of $2.3 million compared with $1.5 million in the year-ago period.

Earnings, including a $136,000 special credit, reached $283,985 or 17 cents a share compared with $138,704 or 11 cents a share in the 1972 period, when a $71,934 special credit was included.

Performance for the six months also improved, with revenues rising to $4.2 million from almost $2.7 million a year ago, while earnings totaled $522,565 or 35 cents a share compared with $253,524 or 20 cents a share.

Special credits for the periods were $245,000 in 1973 and $124,696 in 1972.

President Donald W. Fuller noted that component scarcity and in some cases poor quality of components delivered, has caused some additional manufacturing costs and delivery schedule problems during the recent period.

Hazeltine Boosts First Period Net

GREENLAWN, N.Y. – Orders for Hazeltine Corp.'s 2000 video display terminal nearly tripled over those of the 1972 first quarter, and shipments almost doubled, the firm reported recently.

Earnings for the quarter ended March 31 rose to $441,000 or 22 cents a share from $134,000 or 7 cents a share in the year-ago period.

Revenues climbed to $17.9 million from $11.6 million in the same 1972 quarter.

The company effected a 50% increase in first quarter marketing, engineering and related expenditures to support the continued growth of its Industrial Products Division, which makes terminals, automatic editing equipment and color film analyzers.

Shipments Rise 20%

The division's shipments for sale and rental amounted to over $4.4 million, a 20% rise over the 1972 quarter.

The Government Products Division's revenues and earnings increased significantly, the firm said.

Overall backlog rose to $88 million from about $82 million in the year-ago period. The Industrial Products Division's portion of the backlog increased to $11 million from $4 million a year ago and $7.8 million at year's end.

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Model 302F—replacement for 103F. Private line and 1000A, CDT DAA applications $245

Model 310—PC modem for OEM. Originate, acoustic/DAA, carrier detect, 4½x5½x½"... $125

Model 320—PC modem for OEM. Answer/originate, acoustic/DAA, carrier detect, Integral power supply. 4½x10½x¾" $165

Series 330—Replacement for 103A, 103F, 103E, 113A and 113B. Automatic answering with CBS or CBT DAA. 16 modems in a 19" rack. Colored display panel indicates 4 controls and 2 data functions.

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Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, MAY 3, 1973

SOFTWARE & EDP SERVICES

EXCH		PRICE			
		1973 RANGE (1)	CLOSE MAY 3 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1 1/2	- 1/8	-7.6
A	APPLIED DATA RES.	3- 4	3	0	0.0
O	APPLIED LOGIC	2- 3	1 3/4	0	0.0
N	AUTOMATIC DATA PROC	65- 94	74 5/8	+7 1/4	+10.7
O	BRANDON APPLIED SYST	1- 1	5/8	0	0.0
O	COMPUTER DIMENSIONS	2- 5	4 1/2	+1	+28.5
O	COMPUTER DYNAMICS	1- 2	5/8	- 1/4	-28.5
O	COMPUTER NETWORK	2- 5	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	3 1/2	+ 3/4	+27.2
O	COMPUTER TASK GROUP	1- 2	1	0	0.0
O	COMPUTER TECHNOLOGY	2- 3	1 7/8	- 1/8	-6.2
O	COMPUTER USAGE	5- 9	5 3/4	- 1/8	-2.1
O	COMRESS	1- 2	3/8	0	0.0
O	COMSHARE	5- 9	5 1/2	- 1/4	-4.3
N	CORDURA CORP	6- 15	7 3/8	+ 3/8	+5.3
O	DATATAB	3- 4	2 1/4	- 1/4	-10.0
O	EDP RESOURCES	1- 3	1 1/4	0	0.0
A	ELECT COMP PROG	1- 2	1 1/4	0	0.0
N	ELECTRONIC DATA SYS.	35- 56	37 1/4	+ 1/2	+1.3
O	INFORMATICS	3- 6	2 5/8	- 1/2	-16.0
O	I.D.A. DATA CORP	1- 1	3/4	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 7/8	- 5/8	-8.3
O	LOGICON	4- 7	4 5/8	- 1/8	-2.6
A	MANAGEMENT DATA	2- 5	2	- 1/8	-5.8
O	NATIONAL CSS INC	8- 41	26	+1 1/4	+5.0
O	NATIONAL INFO SRVCS	1- 2	1 1/8	0	0.0
P	ON LINE SYSTEMS INC	13- 17	12 3/4	- 1/8	-0.9
N	PLANNING RESEARCH	3- 7	3 3/4	0	0.0
O	PROGRAMMING METHODS	22- 24	22	+ 1/4	+1.1
O	PROGRAMMING & SYS	1- 1	7/8	0	0.0
O	RAPIDATA INC	13- 24	13	- 3/4	-5.4
O	SCIENTIFIC COMPUTERS	1- 2	1	- 1/8	-11.1
O	SIMPLICITY COMPUTER	2- 4	3 1/8	+ 7/8	+38.8
O	THS COMPUTER CENTERS	3- 4	2 7/8	- 1/8	-4.1
O	TCC INC	1- 1	1/2	0	0.0
O	TYMSHARE INC	7- 12	7	- 1/8	-1.7
O	UNITED DATA CENTER	5- 6	4 1/2	+ 1/4	+5.8
N	UNIVERSITY COMPUTING	6- 11	6 7/8	- 5/8	-8.3
A	URS SYSTEMS	4- 8	4 5/8	+ 3/8	+8.8

PERIPHERALS & SUBSYSTEMS

EXCH		1973 RANGE (1)	CLOSE MAY 3 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	16- 34	18 3/8	+2 1/4	+13.9
O	ADVANCED MEMORY SYS	12- 23	13 1/4	- 3/4	-5.3
N	AMPEX CORP	4- 7	4 3/4	- 1/8	-2.5
O	ANDERSON JACOBSON	4- 8	5	- 1/2	-9.0
O	BEEHIVE MEDICAL ELEC	6- 10	8 1/2	0	0.0
A	BOLT.BERANEK & NEW	8- 12	7 3/4	- 1/2	-6.0
N	BUNKER-RAMO	6- 18	13 3/4	-1 3/8	-9.0
A	CALCOMP	9- 13	9 1/2	+ 3/8	+4.1
O	CAMBRIDGE MEMORIES	10- 15	9 1/2	+ 3/8	+4.1
O	CENTRONICS DATA COMP	13- 28	22 1/4	-2	-8.2
O	CODEX CORP	11- 19	11 1/2	+1	+9.5
O	COGNITRONICS	1- 3	2	0	0.0
O	COMPUTER COMMUN.	2- 4	1 3/4	- 1/4	-12.5
A	COMPUTER EQUIPMENT	2- 3	2 1/2	+ 1/4	+11.1
O	COMPUTER MACHINERY	8- 13	8 1/4	+ 1/4	+3.1
O	COMPUTER TRANSCEIVER	2- 6	2	- 1/8	-5.8
A	COMPUTEST	3- 5	4 3/4	0	0.0
N	CONRAC CORP	18- 32	19 1/4	-1 1/8	-5.5
A	DATA PRODUCTS CORP	3- 4	3	0	0.0
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 1/2	- 1/4	-9.0
O	DI/AN CONTROLS	2- 4	2 3/8	0	0.0
N	ELECTRONIC M & M	3- 6	4 1/4	+ 3/8	+9.6
O	FABRI-TEK	3- 5	3 1/4	+ 1/2	+18.1
O	GENERAL COMPUTER SYS	6- 9	5 1/2	- 1/2	-8.3
N	GENERAL ELECTRIC	59- 76	60 1/8	- 3/4	-1.2
N	HAZELTINE CORP	7- 9	7	+ 1/4	+3.7
O	INFOREX INC	12- 23	15 1/4	+ 1/4	+1.6
O	INFORMATION DISPLAYS	1- 2	1	0	0.0
O	INFORMATION INTL INC	11- 15	11	+ 1/4	+2.3
A	LUNDY ELECTRONICS	4- 9	4 3/4	+ 1/8	+2.7
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	17- 28	18 3/4	+ 1/2	+2.7
N	MOHAWK DATA SCI	5- 13	4 3/4	-1 1/8	-19.1
O	ODEC COMPUTER SYST.	3- 6	3 1/4	- 1/4	-7.1
O	OPTICAL SCANNING	2- 7	3 1/2	0	0.0
O	PERTEC CORP	5- 8	5 1/4	+ 1/4	+5.0
O	PHOTON	3- 7	3 3/4	(SUSPENDED)	
A	POTTER INSTRUMENT	4- 9	5	+ 3/8	+8.1
O	PRECISION INST.	2- 6	3 1/2	+1	+40.0
O	RECOGNITION EQUIP	4- 8	5 1/2	+1 1/4	+29.4
N	SANDERS ASSOCIATES	8- 18	8 1/2	- 1/2	-5.5
O	SCAN DATA	2- 6	2 1/8	- 1/8	-5.5
O	STORAGE TECHNOLOGY	17- 34	19 1/2	+1 1/2	+8.3
O	SYCOR INC	9- 13	11 3/4	- 3/4	-6.0
O	TALLY CORP.	3- 14	3 3/4	-1 1/2	-28.5
N	TEKTRONIX INC	34- 53	35	+1 1/8	+3.3
N	TELEX	4- 6	3 7/8	- 1/8	-3.1
O	WILTEK INC	13- 18	12	0	0.0

SUPPLIES & ACCESSORIES

EXCH		1973 RANGE (1)	CLOSE MAY 3 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	7 1/4	0	0.0
A	BARRY WRIGHT	8- 13	8 1/4	+ 1/8	+1.5
A	DATA DOCUMENTS	18- 22	19 1/2	+ 1/8	+0.6
O	DUPLEX PRODUCTS INC	8- 10	7 3/4	0	0.0
N	ENNIS BUS. FORMS	6- 8	5 3/4	0	0.0
O	GRAHAM MAGNETICS	13- 20	12 5/8	- 3/8	-2.8
O	GRAPHIC CONTROLS	10- 12	9 7/8	- 1/8	-1.2
N	3M COMPANY	76- 89	79 3/4	- 3/8	-0.4
O	MOORE CORP LTD	55- 60	57 1/4	-1 7/8	-3.1
N	NASHUA CORP	42- 58	47	+2 1/4	+5.0
O	REYNOLDS & REYNOLDS	43- 51	44	- 1/8	-0.2
O	STANDARD REGISTER	16- 20	17 1/2	0	0.0
O	TAB PRODUCTS CO	14- 23	14	0	0.0
N	UARCO	19- 23	18 7/8	- 3/8	-1.9
A	WABASH MAGNETICS	6- 7	6	0	0.0
N	WALLACE BUS FORMS	21- 26	20 3/4	- 1/4	-1.1

COMPUTER SYSTEMS

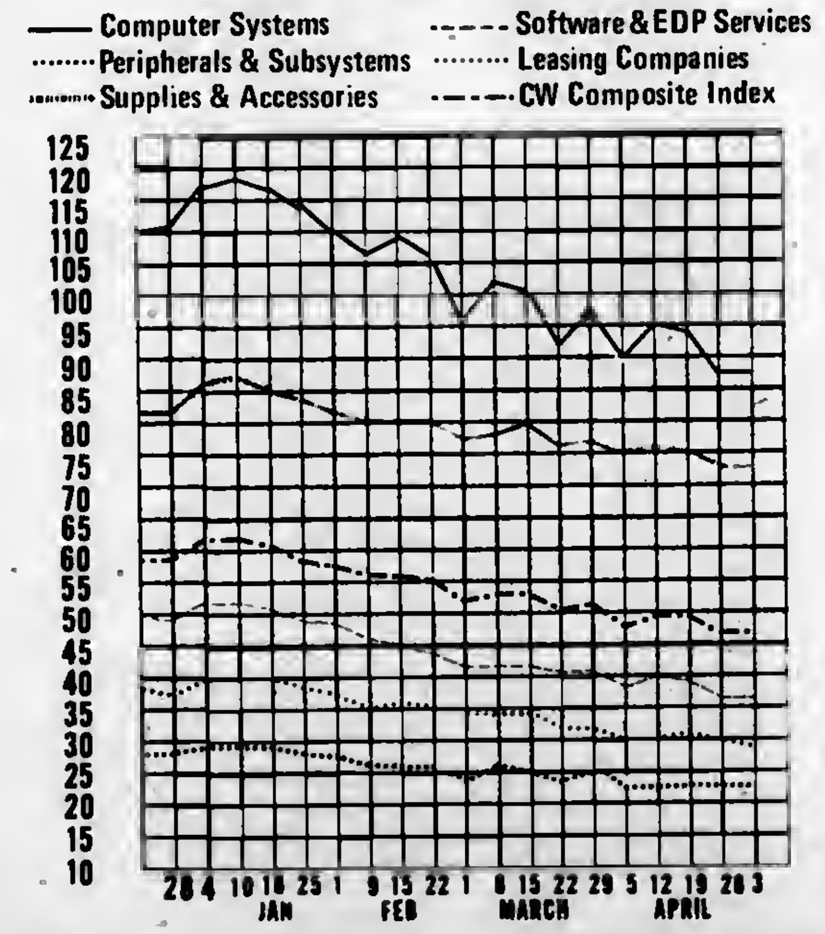
EXCH		1973 RANGE (1)	CLOSE MAY 3 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	215-245	225 7/8	+6 1/4	+2.8
N	COLLINS RADIO	18- 26	18	- 1/2	-2.7
N	CONTROL DATA CORP	42- 62	47 1/2	+1 7/8	+4.1
O	DATA GENERAL CORP	32-131	37 1/2	+3 3/4	+11.1
O	DIGITAL COMP CONTROL	3- 6	2 7/8	- 1/8	-4.1
N	DIGITAL EQUIPMENT	73-105	83	+2 1/4	+2.7
N	ELECTRONIC ASSOC.	5- 9	5 1/4	- 1/8	-2.3
A	ELECTRONIC ENGINEER.	8- 11	7 3/4	0	0.0
N	FOXBORO	24- 32	24	-1 1/8	-4.4
O	GENERAL AUTOMATION	26- 55	31 1/2	+1	+3.2
O	GRI COMPUTER CORP	1- 3	1 1/8	0	0.0
N	HEWLETT-PACKARD CO	77- 95	78	-4 3/8	-5.3
N	HONEYWELL INC	105-139	110 1/2	+ 5/8	+0.5
N	IBM	405-457	424	+14 1/4	+3.4
O	INTERDATA INC	7- 13	10 1/4	0	0.0
N	MEMOREX	6- 19	7	- 1/8	-1.7
O	MICRODATA CORP	6- 10	6 1/8	- 1/4	-3.9
N	NCR	27- 34	34	+1	+3.0
N	RAYTHEON CO	26- 34	27 7/8	+1	+3.7
N	SPERRY RAND	38- 50	40 7/8	+1	+2.5
A	SYSTEMS ENG. LABS	4- 8	3 7/8	- 1/8	-3.1
N	VARIAN ASSOCIATES	13- 20	13 1/8	- 1/4	-1.8
N	WANG LABS.	17- 34	16 7/8	-1 7/8	-10.0
N	XEROX CORP	141-169	152 3/4	+3 3/4	+2.5

LEASING COMPANIES

EXCH		1973 RANGE (1)	CLOSE MAY 3 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	2- 5	2 3/8	0	0.0
O	BRESNAHAN COMP.	1- 2	2	+ 1/8	+6.6
O	COMDISCO INC	11- 17	10	+ 7/8	+9.5
O	COMMERCE GROUP CORP	4- 4	3 3/4	0	0.0
O	COMPUTER EXCHANGE	1- 1	3/4	+ 1/8	+20.0
A	COMPUTER INVSTRS GRP	3- 8	3 1/8	- 1/4	-7.4
O	COMP. INSTALLATIONS	2- 2	2	0	0.0
N	DPF INC	6- 9	6 1/2	0	0.0
M	DATRONIC RENTAL	2- 3	2 3/8	0	0.0
A	DCL INC	2- 3	2 1/2	+ 5/8	+33.3
A	DEARBORN-STORM	15- 26	16 3/8	0	0.0
A	DPA. INC.	5- 8	5 1/8	0	0.0
A	GRANITE MGT	3- 6	2 3/4	- 1/4	-8.3
A	GREYHOUND COMPUTER	4- 6	4	- 5/8	-13.5
A	ITEL	6- 12	6 3/8	- 7/8	-12.0
N	LEASCO CORP	9- 18	10 5/8	+ 1/8	+1.1
O	LEASPAC CORP	3- 8	2 3/4	-2 3/4	-50.0
O	LECTRO MGT INC	1- 2	3/4	- 1/8	-14.2
A	ROCKWOOD COMPUTER	2- 3	1 1/2	- 1/4	-14.2
O	SYSTEMS CAPITAL	7- 15	6 3/4	-1 1/4	-15.6
N	U.S. LEASING	24- 36	25	- 1/4	-0.9

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

TEKTRONIX
Four Months Ended March 3

	1973	1972
Shr Ernd	$.57	$.45
Revenue	59,541,000	49,122,000
Earnings	4,658,000	a3,683,000

a-Includes $835,000 previously treated as special credit.

UNITED DATA CENTERS
Year Ended Dec. 31

	1972	a1971
Shr Ernd	$.35	.....
Revenue	7,799,552	b$6,704,075
Disc Op	.....	446,537
Spec Item	c200,000	d236,145
Earnings	490,974	(1,527,725)

aRestated to reflect operations of Dynafacts, Inc. acquired on Jan. 14, 1972, on a pooling-of-interests basis. b-From continuing operations. c-Credit; tax-loss carryforward credit less writedown of investments. d-Debit; includes costs related to abandoned public offering by acquired company, loss on disposition of data centers and writedown of investments, less tax credit.

DATAMETRICS
Year Ended Oct. 31

	1972	1971
Shr Ernd	$.10	$.19
Revenue	865,253	1,034,706
Earnings	46,946	75,148

ANALYSTS INTERNATIONAL
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.09	$.08
Revenue	1,447,500	954,700
Tax Cred	8,000	28,000
Earnings	72,000	68,600

DATA 100
Year Ended Dec. 31

	1972	1971
Shr Loss	a$3.33	b$4.22
Revenue	c13,082,000	3,884,000
Loss	a5,958,000	b5,043,000

a-Reflects cumulative effect of change in accounting principle. b-Reflects retroactive application of change in accounting principle. c-Includes $3.1 million in sales to Randolph Computer Corp.

METRIDATA COMPUTING
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.79	$.62
Revenue	4,336,000	2,735,000
Tax Cred	128,000	104,000
Earnings	296,000	225,000

TUCSON DATA CENTER
Year Ended Oct. 31

	1972	a1971
Shr Ernd	$.25	$.11
Revenue	486,445	470,372
Earnings	33,440	14,339

a-Restated.

MENTOR
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.03	$.10
Revenue	2,099,240	995,262
Tax Cred	19,000	37,500
Earnings	39,995	79,004

I.D.A. DATA
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.05	$(.01)
Revenue	941,751	821,417
Earnings	41,520	(9,053)

COMTEN
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.11	.....
Revenue	6,482,340	$8,227,601
Tax Cred	108,000	.....
Earnings	219,177	(66,509)

DATATAB
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.21	$.19
Revenue	5,248,519	4,229,490
Earnings	177,083	157,520
3 Mo Shr	.02	.08
Revenue	1,325,247	1,224,618

BRADFORD COMPUTER & SYSTEMS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.18	$.15
Revenue	11,645,908	4,887,622
Tax Cred	9,690	116,820
Earnings	704,024	501,516

COMPUTERVISION
Three Months Ended March 31

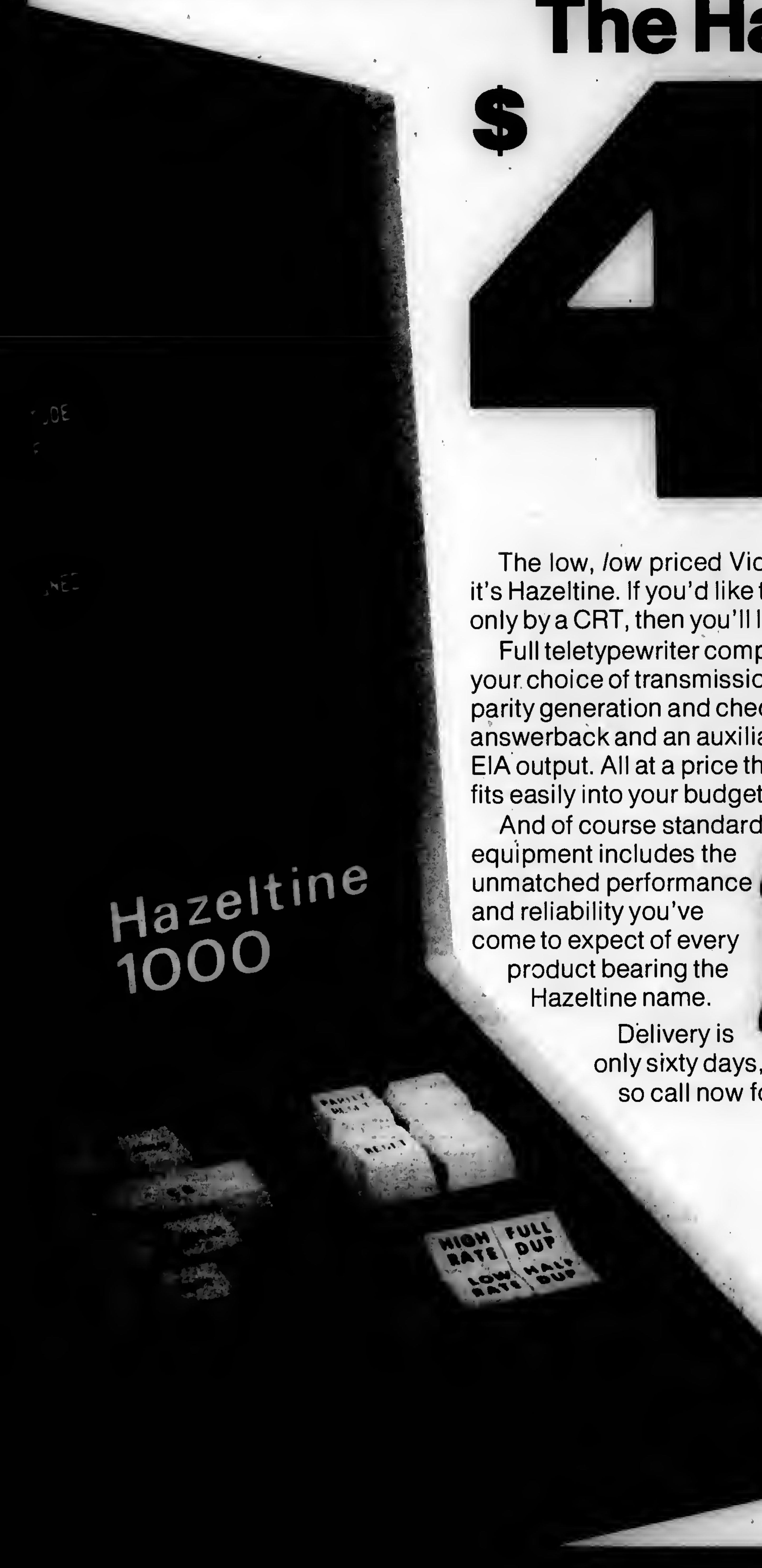
	1973	1972
Shr Ernd	$.14	$.07
Revenue	3,366,000	1,183,000
Tax Cred	.....	51,000
Earnings	303,000	127,000

ECRM
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.59	a$.11
Revenue	5,389,505	1,842,489
Spec Cred	150,300	42,000
Earnings	604,102	100,451

a-Adjusted for eight-for-one stock split in November 1971.

Hazeltine Introduces a New Era in Terminal Economy: Announcing The Hazeltine 1000.



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NEWSPAPER

NEWS IN BRIEF

Sen. Hart to Keynote National Conference

NEW YORK – Sen. Philip A. Hart (D-Mich.) will be the keynote speaker at the National Computer Conference here Monday, June 4 at 10:30 a.m.

Hart is chairman of the Senate Committee on Antitrust and Monopoly, which is currently having hearings on his bill to break up concentrated industries. (See story on Page 3)

Hart has also been active in issues on the environment, civil rights and liberties, and consumer protection. He is chairman of the Senate Subcommittee on Energy, Natural Resources and Environment.

Charges Dropped (Briefly) Against Alleged Criminals

SAN ANTONIO, Texas – It was only a temporary problem, but computers took the blame when charges were "dropped" against some 35 alleged criminals here recently.

Omissions on 35 indictments, making them faulty and thus temporarily invalid, were blamed by local newspapers on "a computer error" and a "computer programming error," but the heart of the problem was a forms-handling error, according to a source in the District Attorney's office.

And the error involved a magnetic tape selectric typewriter (MT/ST), a simple computer at best.

In preparing indictment forms for transcription onto the MT/ST, someone apparently cut off the bottom of the forms, and two lines were thus dropped, the source said.

Aussies Mull Dental ID Index

Special to Computerworld

SYDNEY, Australia – Dental authorities in this country may introduce computerized dental records to help police identify people. The records would be stored in a central computer bank and be used by police as an alternative to identification by fingerprints.

Presidents of all state dental boards will discuss the proposal at a meeting this month.

On the Inside This Week

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AT&T Says 30% Non-Bell Equipment Causing Harm – *Page 19*

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IBMer Disclaims 'Task Forces'

IBM Summons Users in Suit Defense

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – The first IBM employee to be called in defense of the firm in the Telex-IBM antitrust case said last week he had never heard of many of the task forces that Telex described in its presentation of its case.

Francis Rogers, now IBM director of marketing, said he did not know of the existence of such task forces as the Peripherals Task Force, even though he was president of the IBM Data Processing Division at the time it was alleged to have been undertaken.

In addition, on cross examination he admitted he knew of no cost reductions in manufacturing or marketing that made it possible for IBM to reduce the prices for the 1403 printer. He said it had been in use for eight years before the reduction was announced and that the price cut under the fixed-term plan was made after Telex had introduced a competitive product.

In the opening rounds of its defense, IBM also called several users to the stand to show that competition in the DP business was growing and to generally laud the IBM products and services offered.

For example, David Hill, information systems manager of the Chevrolet Division of General Motors, indicated there were 69 suppliers of EDP equipment at GM when he joined the company two years ago, but now there are 116 different equipment suppliers.

Frank Heinzmann, vice-president of computer services at Eastern Airlines said his organization uses products from 35 different suppliers at the present time and competition has been growing.

He also claimed that generally it is not hard to interface outside equipment to IBM systems, even though he admitted that in a few cases Eastern had had to develop interfaces itself for the equipment.

Eastern, he added, got excellent service from IBM and received very good equipment from the firm.

Neal Sullivan, DP director of Rockwell International, noted that his firm had had some trouble with getting service for Telex equipment it had installed and that it was taking out all of the Telex gear it was using. He rated Telex electronic equipment as good, but said the electromechanical gear such as printers was not as good.

IBM's Problems

In his testimony, Rogers also mentioned that IBM took a long time (18 months) to train its salesmen and claimed that after IBM salesmen had made a sale the independent peripheral makers took advantage of that groundwork in order to get their equipment installed.

The three guiding principles of IBM, he stated, were respect for the individual, an effort to give the customer the best equipment possible and a striving for excellence.

The IBM defense should continue into this week with IBM President Frank Cary scheduled as one of the last IBM witnesses after the IBM economists make their presentations.

Equity Investor Suit Says IBM Safeguards Lacking

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – IBM Corp. has been accused of being partly responsible for the Equity Funding Corp. of America scandal in a Superior Court suit filed here.

The class action suit, filed by five Los Angeles residents, seeks over $4 billion in damages.

The suit charges IBM contributed to the scandal by failing to build safeguards into its equipment. It also says IBM neglected to warn the users of the possibility of fraud.

The Equity Funding debacle involved the creation of $120 million in bogus assets and the sale to reinsurers of possibly $2 billion in phony life insurance policies.

Equity Funding officials have been accused of using computers to make up the phony life insurance policies to provide cash flow for the corporation's activities.

The suit named IBM, its affiliates and subsidiaries which manufacture, sell, lease, rent, program, service, repair and operate the computer and data processing equipment as defendants. The suit was filed by attorney Alvin B. Green, who also filed the initial class action suit against Equity Funding for the same five persons representing stockholders, warrant holders, bond holders, mutual fund holders and life insurance policy holders.

A spokesman for Green's office said some sort of legislation may be proposed to prevent similar occurrences. He described the computer as "an instrumentality as dangerous as the Saturday night special handguns."

Green said, "Were it not for the equipment being manufactured as presently constituted and IBM failing to advise the general public of the problem, fraud would probably never have arisen."

Green also said he feels the suit will "serve as a warning to the computer industry that it had better take steps to ensure the public is not defrauded in this manner."

IBM, when it heard of the suit, said:

"The claim is preposterous and could seriously mislead the public. No one should be misled into supposing that companies that supply equipment for legitimate business purposes can be held liable for allegedly fraudulent use of that

(Continued on Page 3)

Defense Move A First for IBM

TULSA, Okla. – For the first time in the history of antitrust suits against IBM, the firm has been forced to present its defense in open court here in the $1.2 billion antitrust suit by Telex.

In all the other antitrust actions against the firm, IBM has either settled out of court before a trial ever began or has managed to have the suit dismissed after the plaintiff presented its case and before IBM presented its evidence (the Greyhound suit).

In the present case IBM also asked the judge to dismiss the action against it after Telex had finished its presentation, but Judge Sherman Christensen overruled the request.

(Continued on Page 2)

Navy Users Told

100% Security Unreachable

By Edward J. Bride
Of the CW Staff

CW Photo by Edward J. Bride

Cmdr. Jan Prokop

NEWPORT, R.I. – "I don't think a system exists that can't be broken," said the head of the Navy's computer selection office recently.

"And I don't think we'll ever reach 100% security," added Cmdr. Jan Prokop, director of the ADP Equipment Selection Office (Adpeso) in the Navy Department.

Occasionally, directors of large computer installations claim they have completely secure systems, Prokop continued, "then some student walks in with copies of their files."

Furthermore, many organizations are "past the point of no return" as far as computer security is concerned: they have no manual files for backup in case security is breached, he said.

Speaking before the fifth annual data processing seminar of a joint Navy user group here, he philosophized that "minimal security can be provided at minimal cost."

Since "we'll never reach a 100% secure installation," Prokop advised computer users to spend their money where it will do the most good in particular situations, such as physical access control and security clearances for personnel.

Related stories on pages 4 and 5.

A guideline to assess the security characteristics of remote terminals is in the early stages, reported Dr. Ruth M. Davis, director of the Institute for Computer Sciences and Technology at the National Bureau of Standards (NBS).

While algorithms for data encription are

(Continued on Page 5)

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IBM Dismissal Bid Hints at Strategy

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – In making a move for a dismissal of the Telex charges against it, IBM may have telegraphed a strategy that could be used later when it asks the judge to find it not guilty of the charges.

In a memorandum supporting its request for dismissal, IBM lead attorney Thomas Barr said that "Telex is seeking to have this court define a relevant market" in a fashion "which is radically inconsistent" with the law and with previous cases.

'Unique Legal Precedent'

The memorandum indicated that IBM felt Telex's basic argument is that IBM monopolized its own product line. "If Telex's theory is accorded any merit," Barr said, "the unique legal precedent will result in potential monopolization liability for most American businesses of any size – each might logically be held to have monopolized his own product line."

Barr also claimed "there is absolutely no support of Telex's novel theory of market definition" in either earlier cases or the Sherman Antitrust Act itself.

In addition, he claimed that in all other cases under the act the market had remained stable for a long period of time.

The most similar case in the past was the DuPont "cellophane" case, Barr said. In that case he noted DuPont was found not guilty.

People in Glass . . .

He also claimed that if the court accepted the Telex definition of the market, then General Motors, Ford and the other car makers would have to be found guilty of monopoly practices since they make all the motors for their own cars.

"Ridiculous as this analysis may appear," Barr said, "it is the necessary outcome of accepting Telex's position. Telex itself analogized the memory of a CPU with an engine in a car . . . yet Telex is claiming that IBM is monopolizing the market for EDP equipment when it is used with IBM central processing units.

"The Supreme Court in 'cellophane' disposed of such a radical theory of market definition. This court should do likewise."

'Slight Changes'

In addition, Barr said the Telex case also shows that equipment used with IBM equipment can also be used with the mainframes of other manufacturers with only slight changes and that therefore it is not equipment made solely for the IBM market as Telex claims.

"Particularly where, as here, Telex has had ample opportunity to place before the court an enormous quantity of documents and many witnesses, this court should dismiss for Telex's failure to prove a market," under rule 41 (B) of the Federal Code, Barr said.

In conclusion, Barr said "the market theory advanced by Telex has no support in the law and is contradicted by the proof in its case . . . equally important, the proof concerning the way Telex markets its own EDP equipment and the proof showing how others market similar equipment, disproves any claim that a 'market' exists for that equipment when attached to IBM CPUs.

"For these reasons, Telex's antitrust claims should be dismissed," Barr concluded.

N.Y. Court Rules Documents Public

NEW YORK – The full court of appeals here has turned down an IBM request that 1,200 documents it filed in the Control Data case be kept secret.

IBM claimed – when the documents were turned over to the Justice Department by Control Data for the government antitrust case – it had accidentally let the 1,200 documents be filed in the case even though they were privileged.

Because the documents had been turned over by accident, IBM had asked Judge Daniel Edelstein, who is presiding over the government's case, to prevent the Justice Department from using the documents.

Edelstein balked, however, and in pretrial order number five claimed IBM had waived its right to keep the documents secret when it turned them over to Control Data. Because of this, he said, they were public documents and could be used by the Justice Department in its suit.

IBM appealed the decision, however, and an original panel of three judges in the appeals court upheld the IBM position claiming the documents should be kept secret.

The Justice Department, however, immediately appealed that decision to the full eight-member court of appeals. That group, in its decision last week, said it did not have jurisdiction over the matter and therefore upheld the Edelstein decision that the documents should be public.

The court of appeals said if IBM wanted to pursue the matter it would have to go to the Supreme Court. IBM has not filed a request with the Supreme Court asking it to take up the issue of the privileged documents, but it has routinely reserved the right to do so in the future.

Is IBM Market Share Declining?

TULSA, Okla. – Using data from the census of companies in the computer industry compiled in the IBM-Control Data antitrust action, an IBM witness last week indicated that IBM's share of the market was actually declining and that competition was growing.

Earlier in the case, a Telex economist had used the same data in a presentation that indicated IBM controlled the lion's share of the business in the independent peripherals segment of the industry.

Daniel Jerbasi, a general partner in Price Waterhouse, the accounting firm which audited the census data, indicated that the census figures show that in 1952 there were only 13 firms in the business and that by 1970 this had grown to 1,773 companies.

IBM's share of the gross revenues in the business were 64.1% in 1952, he said, but he claimed that by 1970 this share had dropped to 35.1% of the gross revenues from data processing.

However, he admitted on cross examination that his firm had never tried to break out the revenues for peripheral products alone or for any other single segment of the market.

In the period from 1952 to 1970 he said that revenues from DP sales and leases had risen 212 times from $48 million yearly to over $10.2 billion in 1970.

In another area, he said the figures showed that of the revenues reported by hardware manufacturing companies reporting revenues of over $5 million the IBM share had also declined. In this category, he said the firm had a 67.7% share in 1952 and only a 44.9% share in 1970.

A First: IBM Gives Defense

(Continued from Page 1)

The judge noted that dismissal of cases could be the correct course of action in some antitrust cases, but said this particular one was too complex to be dismissed before he had heard all the evidence.

He also noted that IBM had specifically requested that its counterclaim against Telex for theft of trade secrets be heard with the Telex case against IBM and indicated he had not yet heard any evidence on this matter.

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At Senate Monopoly Hearings

CIA Head Says Small Firms the Innovators, Not IBM

By E. Drake Lundell Jr.

CW Washington Bureau

WASHINGTON, D.C. – Computer Industry Association President Dan McGurk told Senate investigators last week that most of the innovations in the computer industry came from the smaller firms in the business and not from the dominant firm.

At the second round of hearings on Sen. Philip Hart's bill to break up concentrated industries, McGurk said, "I suspect that most Americans are not aware of the skill and entrepreneurial drive of these small organizations which have introduced major fundamental technical innovations to the computer industry."

It is because of the smaller organizations, he said, that "we have greater capacity and lower cost in data processing.

"It hasn't taken massive concentrations of capital [to design these innovations]. It has required no federal subsidies. . . . but to properly exploit these innovations does require large sums of capital," he added.

The Hart bill singles out the computer industry as one of the five most concentrated industries in the U.S. today. It would call for the restructuring of an industry when the top four companies controlled over 50% of the market or when any one company got over 15% of the industry's revenue in a year.

The bill would also set up a special court to hear cases under the act and to reorganize the industries identified as concentrated.

In his testimony, McGurk noted "the enormous dominance of IBM in business accounting machines has carried over into a comparable dominance of the business computer industry. As a result of this dominance, enterprising and innovative companies have often found a ceiling on their size of around 2% of the applicable market, or have been acquired by larger companies.

"By its control of the marketplace – not by superior technical or productive skill – the dominant firm in this industry has been able to make strong competitive countermoves to any company that begins to threaten its installed base of products," he said.

Help or Hurt?

He also indicated that the argument that IBM helped substantially to reduce our balance of payments problems was open to some question because it had almost as much of its production overseas as in the U.S. The smaller firms, on the other hand, have a higher percentage of revenue producing exports because they cannot afford to manufacture overseas, he added.

Overall McGurk said there is no question "that a reduction in concentration in the computer industry . . . is technically feasible."

But at the same time he said the industry should not come under government regulations, but rather it should be encouraged to deconcentrate on its own.

One method to accomplish this would be to impose a graduated income tax on corporations in concentrated industries, he indicated, which would give the top management in companies that dominate an incentive to decentralize.

"One of the problems with our current antitrust activities is proof of monopoly takes an inordinate amount of time, and at this point in our history such time is not available," he said.

Judge Explains Problems

Judge Philip Neville, the judge in charge of the IBM-Control Data antitrust suit, supported this feeling on the lack of time in his testimony on the problems of managing a large antitrust suit such as the IBM-CDC case.

At a certain point in antitrust cases a judge has to take control or else the company with the most resources will wear the other one down, he said.

Neville told the Senate group the settlement of the case out of court was "most welcome," even though he had spent four years on the pretrial phases of the case.

He indicated it would have been hard to find a jury to sit through the trial, which was estimated to have about a year's worth of testimony.

He said, during the discovery procedures in the case, IBM had microfilmed or copied around 80 million Control Data documents and Control Data had sent 61 people to IBM headquarters to copy about 40 million IBM documents.

He also noted the deposition process – where attorneys from one firm question the employees of the other or its potential witnesses – was a time-consuming one and said that in some cases as much as 15 days was taken in getting a single deposition.

Suit Charges IBM Partly Responsible For Equity Fraud

(Continued from Page 1)

equipment."

IBM is accused in the suit of "carelessly, negligently and wantonly" selling, leasing, programming and renting computer and data processing equipment without any means of safeguarding the public."

This was done, it said, "although defendants know, or should have known that the equipment could be and has been used to defraud the public."

The suit also claims IBM and its affiliates, even though "aware of the danger to the general public, deliberately neglected for business reasons to caution certain customers and the unknowing public of the danger of potentially undectectable fraud being perpetrated through the means of such computer and data processing equipment."

The suit said IBM and its affiliates were aware that without such general warnings the public would depend on the "integrity and accuracy" of computers when dealing with financial statements of companies using them.

The fraud, the suit said, couldn't have been possible without the failure of IBM to design mechanical and procedural means of detecting fraudulent inputs into equipment and failing to safeguard the public in the marketing of the equipment.

The suit seeks over $2 billion in general damages and $2 billion in punitive damages.

In addition, it seeks over $1 million from IBM for the money paid by Equity Funding to IBM to lease the equipment.

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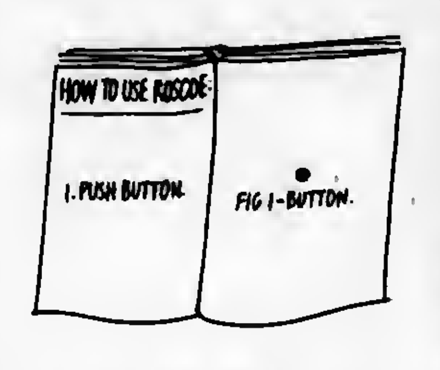
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Passive Entry 'Good Way' To Obtain Sensitive Data

NEWPORT, R.I. – Passive intrusion into an operating system is a "good method" for a criminal to obtain sensitive or otherwise valuable information, according to Cmdr. Jan Prokop, director of the Navy's computer selection office.

The three main methods defined by Prokop at a Navy seminar as "passive intrusion" include electromagnetic pickup (by radiation of signals), wiretapping and hidden transmitters.

To allay any suspicion that he was suggesting only possible, rather than actual methods of intruding into a computer, Prokop gave specific examples of two of these methods.

Regarding radiation from a computer, he said he had supervised a programmer who had a transistor radio in a working space several floors away from the main computer. Nobody knew why the programmer was always first to ask for test-time when the system was idle, until it became known that the programmer could tell, by the static on the radio, when the printer stopped.

Prokop claimed it would be a simple matter to decode the static and obtain copies of whatever messages were being printed. He also suggested this method of eavesdropping was effective for CPUs, other peripherals and communications lines.

He also cited a test case in the Pentagon where a CRT was being read by radiation signals by an unauthorized user several rooms away from the computer.

Prokop also claimed "hidden wireless transmitters had been found inside a CPU at a security agency. These could transmit information to a truck with electronic receiving equipment," he noted.

Modeling Know-How Can Aid Management

NEWPORT, R.I. – "We know enough about modeling to aid in management," although computer hardware currently may be inadequate, according to Harvey J. McMains, director of corporate planning at AT&T.

One prime use of models would be depreciation, wherein a computer model can provide management with a better, deeper understanding of this financial reality, McMains noted.

Another area is "our pool of funds," he said. Financial modeling in this area can be likened to the "theory of dams," McMains said, adding cash flows into a "reservoir." In the case of AT&T, the outflow is $200 million a day, he added.

Optimizing I/O is incompatible with modeling, which is "multidimensional," he stated.

McMains told attendees at a Navy computer user-group seminar here that "present management is not equipped to deal with machine modeling," which is really performed for "strategic support."

Don't gamble with computer leasing

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RCA

No Installation '100% Secure'

(Continued from Page 1)

now being sought, she said, a guideline "in the next calendar year would be a major breakthrough."

She agreed with Prokop that a major problem facing users today is an "increased capacity for computer crime," particularly since there is also an increasing demand for real-time processing in the public services sector of computer usage.

"This is a service economy," she remarked, acknowledging an increasing public demand for accountability in this service environment.

Protecting Operating Systems

Another "big issue left" is that of securing operating systems. Prokop examined two routine manners of "active intrusion" into a system, and three specific areas where operating systems can be breached by "sophisticated" approaches.

"Browsing" and "masquerading" represent the least sophisticated approaches, he noted. The first occurs when a user accidentally discovers another user's password, while the second is an intentional unauthorized access with an illegal password.

Prokop described three other methods:

- "Using trap doors," little places in the operating system where "cracks appear in the cement," such as uncleaned NO-OP instructions.
- "Between-the-lines entry" in a communications environment. This occurs, Prokop said, when one user gets on the system, and the second user (the perpetrator) awaits the opening of files, then transfers the files of the rightful owner to a disk or other storage. The computer, Prokop claimed, "can't tell" the difference between the two users. After storage, the files are printed when the first user has a signedoff.
- "Piggy-back entry." This is accomplished by actually cutting the communication lines and connecting a minicomputer between the rightful user and the computer. When the authorized user calls the computer, the minicomputer answers, while the perpetrator uses the mini to relay his own messages to the computer system.

The mini, in effect, is distracting the authorized user, possibly to the extent that he gets frustrated and "signs off," never realizing a "conversational rapport" is still going on between the perpetrator and the computer, Prokop said.

You've Come a Long Way

NEWPORT, R.I. – Operating systems have come a long way, according to Prof. John Donovan of MIT. At a Navy seminar he cited some specific examples of recent progress in operating systems:

- OS/360 took 2,000 man-years to build.
- TSS took 500 man-years.
- Multics took 50 man-years.

While IBM's TSS was developed in assembly language, Donovan said, Multics, developed at MIT, represents the "operating system of the future," in that it was developed in a high-level language.

Donovan also recalled that a graduate student was assigned to write an operating system similar to IBM's OSMVT/360, and it took the student one-and-a-half months to complete the task.

"This is in the advance level of understanding" which has taken place, he related. Donovan also predicted that the high-level language for operating systems would not be Cobol.

"We now know users are demanding different classes of storage," he said, as well as other conditions that exist in such languages as Algol/68 or PL/I.

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Bill Seeks to Control Texas' DP Acquisitions

AUSTIN, Texas – A bill that would tighten controls over the purchase and rental of data processing equipment by state agencies has been submitted to the State Senate here and approved for floor debate.

The bill would require approval by the governor's office and the state auditor for the purchase or lease of computers and related equipment by state agencies.

Sen. William N. Patman, sponsor of the bill, said the costs of DP equipment purchased by the state have skyrocketed from $1.5 million in 1964 to $8.3 million in 1973. In addition, the state owns over $20 million worth of DP equipment.

"Presently there is no general statute that governs specifically the procedures involved in the acquisition of computers and computer-related equipment and services by state-supported agencies and institutions," Patman said.

Educom to Study Trends In Centralized Computing

PRINCETON, N.J. – The Exxon Education Foundation has awarded $66,000 to the Interuniversity Communications Council, Inc. (Educom) to study the ways in which state agencies have centralized computing services for institutions of higher education and the extent of the trend toward centralization.

"This project will encourage the sharing of information among state agencies and will provide an evaluation of the impact of statewide consolidation and networking on the future of computing in higher education and on the relationship between educational and governmental agencies," said Henry Chauncey, president of Educom.

The study will begin with a survey of developments in all the states to identify the most significant developments. Representatives of the most promising systems will then be brought together to exchange views in a working conference scheduled for the fall of 1973. Results of the study will be published in a report to be distributed to educational institutions and governmental agencies.

News Wrapup

Grading System 'Fails' But Only Temporarily

CENTRALIA, Wash. – An otherwise smoothly running computerized school grading system was recently held up for two weeks due to a bus company error.

Computer printouts of the student grade reports for W.F. West High School were mistakenly shipped to The Dalles School in Oregon when students at The Dalles were on spring vacation, according to Larry Norwood, principal of W.F. West.

While the reports sat in an Oregon bus depot waiting for school to resume at The Dalles, Norwood ordered another set of grades from Computer Systems, Inc.

The second set arrived quickly but when Norwood opened it he discovered the grades for deportment were in the academic achievement column, the effort grades were in the deportment column and the achievement grades were in the effort column.

Another set was ordered and two days later it arrived along with the first set which had been returned by The Dalles.

DP Decides Summer Jobs

LOUISVILLE, Ky. – How would you like to have a computer decide whether or not you got the job? That's what's happening to 840 sons and daughters of General Electric employees here.

GE's employment office put the names of the summer job applicants into a computer and had it pick them out one by one in random order.

Is it fair? This year's number one choice was 902 on the list last year and didn't get on at GE. And this year's number 840, last on the list, was number 165 a year ago and got a GE job.

Legislator Finds 'May' Most Distressing

MADISON, Wis. – "May Day" has never been a more appropriate distress signal than in the case of State Rep. Edward Jackamonis.

Jackamonis has asked the Legislative Reference Bureau to draft a bill altering the state's spring election laws, which would entail the use of the month name May.

Wisconsin has a system under which computers scan the statute books to locate designated words and phrases, ensuring that all sections affected by a new law will be changed.

The computer dutifully scanned the books, but, unfortunately for Jackamonis, did not discriminate between the proper noun May and the verb may. The result was a voluminous printout listing 22,721 references to "M(m)ay," but with no indication as to whether it was an "m" or an "M."

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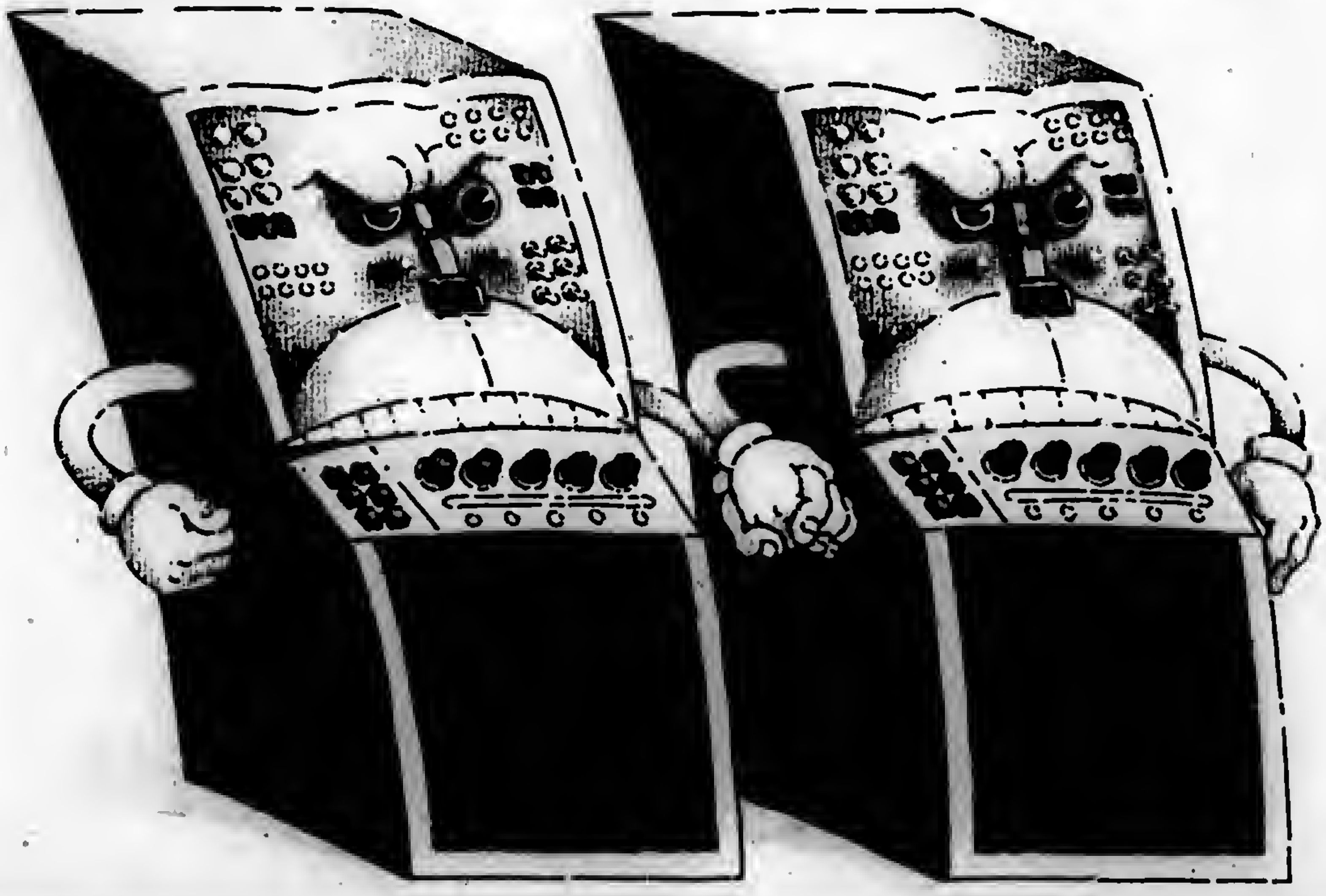

Five-Year Study Finds

Simple Signal Control Enough to Keep Traffic Moving

By Joseph Hanlon

Special to Computerworld

GLASGOW, Scotland – Controlling traffic signals with complex software and large computers is a mistake. Small computers and simple software do at least as well, and often better.

This surprising conclusion comes from five years of research by the Transport and Road Research Laboratory (TRRL) here comparing different forms of signal control.

The simplest computer control, with the same signal timings every day, moves traffic faster than complex "demand responsive" systems that change timings in response to actual traffic. The reason, TRRL said, is that a predetermined set of timings can be optimized for an entire network of signals, while a demand responsive system optimizes each intersection separately. In the latter type of system, time gained at one intersection can be lost at the next.

In any computer-controlled signal system, all of the traffic signals are connected to a central computer, which tells the signals when to change. The question is how the computer decides when signals should change, TRRL explained.

In the simplest form, the computer uses the same set of instructions every day. This schedule is stored in memory, and a digital computer is required for only two purposes: keeping track of timings and monitoring traffic signals to see that they function correctly.

Five Timings

The schedule of timings, however, is determined by the use of a large computer model which takes into account the normal traffic flows at each intersection. Usually there are five basic timings: morning peak, mid-day, afternoon peak, evening and night.

Using TRRL's Transyt to set the timings, this relatively simple form of computerized signaling cut average journey time here by 16% and in West London by 9%, the research group said.

Consider Variations

Such a system, however, assumes that traffic is approximately the same every day, and does not take into account random variations in traffic during the day. By installing traffic sensing devices at each intersection and using a large central computer, it is possible to change the timings to suit the traffic.

TRRL tested this "demand responsive" technique, which uses a basic predetermined timetable and modifies it somewhat to suit traffic. Surprisingly, it produced no additional benefit despite the extra cost, according to J.A. Hillier, TRRL head of traffic engineering.

Next TRRL tried "a complex, fully responsive control strategy known as Plident," Hillier said. It increased journey time by 29% and "brought the traffic in parts of central Glasgow to a complete standstill."

The Glasgow experience is supported by tests elsewhere. In Madrid, for example, a Transyt-optimized fixed-time system decreased average journey time by 9% over a demand response system already in use, the laboratory said.

Big Computers Unnecessary

Traffic experts here argue that big computers are unnecessary for signal systems. They believe a DEC PDP-11 or a small, process control computer such as a Honeywell 316 is adequate.

In Glasgow, for example, TRRL installed a large Marconi Myriad 1 because it planned a wide variety of tests. Now this city finds it can control signals at 80 intersections with only 5% of the machine's time, the researchers said.

There seem to be two reasons why the simpler systems work best. As one expert commented: "An adaptable system like Madrid's ties itself in knots trying to keep up with the traffic, while a fixed time plan fits the traffic to the signals but gets it through faster."

The second factor is that traffic is surprisingly predictable and consistent. Even bad weather or an early closing day does little to change city-center traffic, so that the data used to optimize the fixed time system is almost always correct, traffic experts said.

Hillier also stressed that low-level computerization is highly profitable. The Glasgow system cost $850,000 to install, yet the journey time saved is calculated to be worth $1.2 million each year.

Computers Take the Bite Out of Dental Implants

LOS ANGELES – Computer techniques to improve the design of dental implants as replacements for missing teeth are being developed through a cooperative research program of the University of Southern California's School of Dentistry and Caltech's Jet Propulsion Laboratory, Pasadena.

Preliminary computer models have been developed for evaluating the function of dental implants under normal chewing action. These models will allow researchers to study the stresses and strains set up in each tooth – or its implant replacement – and the jawbone, and to investigate different kinds of implant materials.

The goal of the joint project is to design implants that function as efficiently and safely as natural teeth.

batch processing machine. We have formally designated this service as TS/RJE. Informally, we call it "Scrooge-2," for the way it carefully squeezes every dime you give it.

In Scrooge, the most comprehensive operating system, OS, can be automatically used for execution of batch programs that were developed under the language-compatible CP/CMS time-sharing system.

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(3) You can hook up your own batch-processing 360 to our time-sharing 360/67. You'll get time-sharing response on these priority development jobs, while maintaining a cost-effective operational level.

(4) You can use Scrooge for program development, getting as much as a four-to-one reduction in program development cost.

In addition, there is provision for information flow back and forth between machines, to and from batch terminals as well as interactive types. You can query status and/or cancel batch work. A powerful skeleton processor minimizes the OS job deck that must be stored in an on-line file.

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Societies/User Groups

Computer Week III: 'Working Together'

BUFFALO, N.Y. – "Working together to promote better understanding of data processing within our community" is the theme of Computer Week III, a five-day program of DP-oriented activities sponsored by a group of professional organizations here.

The events, planned for May 21-25 at the Hotel Statler, will be open free of charge to computer professionals, users and the general public. About 25 to 30 vendors will be exhibiting and there will be some special displays for non-DPers to help them become acquainted with computers and data processing.

There will be educational seminars throughout the week on topics which include minicomputer applications, educational uses of computers, systems design, privacy and security and program language selection.

One of the sponsors of the show is a group of local high school students – the Student Cybernetic Laboratory (Scyl) – which will be demonstrating the use of on-line terminals.

The other sponsors of the program, besides Scyl, are the local chapters of the Data Processing Management Association (DPMA), Association for Systems Management (ASM), Association for Computing Machinery (ACM) and The Institute of Management Sciences (Tims).

Information Technology Institute To Explore Management Problems

WASHINGTON, D.C. – An Institute of Information Technology and Management will be held May 22-24 at the American University to explore major problems and opportunities for managers in the use of information technology.

Among the questions to be discussed will be: "How is information technology affecting information systems?"; "How can information systems managers plan for and accommodate major changes in technology?"; and "Impact of information technology on political-legislative processes – implications for management?"

A one-day workshop on design of management information systems will precede the institute on May 21.

Registration for the institute is $250 and $75 for the workshop. Further information is available from Lowell H. Hattery, Director of the Institute on Information Technology and Management, Ward Circle Building, The American University, 20016.

AIIE 25th Anniversary Conference Planned

CHICAGO – The American Institute of Industrial Engineers will be focusing on "NOW: 'New and Old Ways' of solving problems" at their 25th Anniversary Conference, May 23-25 at the Conrad Hilton Hotel here.

For further information contact Technical Services, AIIE, 25 Technology Park/Atlanta, Norcross, Ga., 30071.

ASM Seminar Features 8 Tracks

BOSTON – The thirteenth annual New England Systems Seminar, sponsored by the Bay State, Boston and Mayflower Chapters of the Association for Systems Management (ASM), will be held June 8 at Bentley College in Waltham, Mass.

The program is divided into eight tracks with individual sessions ranging from single lectures to all-day in-depth studies. Some of the tracks include "Input/Output," which will cover man-machine interface and systems design for COM; "Technical Applications," dealing with minicomputer networks in retailing, and "Terminal-Oriented Systems," which will look at hardware and software components, and design, conversion and installation considerations.

Commander Grace Murray Hopper will conduct a session on "Futures in Hardware and Software."

Registration for the seminar is $40. Further information is available from Arnold Canner, Registration Chairman, NESS, c/o New England Nuclear Corp., 575 Albany St., Boston, Mass. 02118.

Next time a high-speed drive ruins that bargain tape you bought, here's a note for your wife:

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Computer Keeps Watch Over Governor's Mail

By Ken Shonk
Of the CW Staff

COLUMBUS, Ohio – A computer watchdog has taken over the job of making sure that the appropriate person on the governor's staff or the appropriate state official sends a reply to over 2,000 letters a week Governor John J. Gilligan receives.

The watchdog system has made real progress in the two months of its existence in reaching the Governor's avowed goal of a more responsive government, Gilligan's press secretary, Robert Tenebaum, said. The amount of mail coming into the governor's office since the system became operational has tripled.

"When we were automating the mail handling system," said J. Tepper, Gilligan's executive assistant for administration, "we set up a system of routing codes for recording the subject matter, the opinions expressed, the origin, the official the letter was referred to, the writer and other information for each letter."

The coded information is then input to become part of the system's data base. When letters are answered, forms are returned to notify the computer. When letters aren't answered the computer sends a reminder to the official the letter was sent to for reply.

The system also has the ability to generate weekly status reports for the governor and to make management reports which break down the governor's mail according to any of a number of classifications such as area, city, county, issues or opinions expressed.

"For instance," Tepper said, "the system could generate mailing labels for all the people who had ever expressed any opinion on environmental issues in the event the governor makes a policy statement on the issue or submits a bill to the legislature."

Tepper also stated the system is a timesaver when compared to the old manual system of mail handling. "The paperwork is actually less, and it's no problem for our large DP center to handle," he said.

N.Y. Weighs Welfare Bill

ALBANY, N.Y. – Governor Nelson Rockefeller recently submitted legislation to have the state take over the administration of welfare and Medicaid programs now under local jurisdiction.

Rockefeller said state administration of these programs "would provide greater opportunity for systems applications, including computerized cross-checks, eligibility determinations and benefit calculations.

He said these functions would help reduce errors and would be necessary to meet stricter federal performance standards that will soon take effect.

The Department of Social Services, in anticipation of the bill's passage, has already retained three companies to develop the state system – IBM, Electronic Data Systems Corp. and Touche Ross & Co.

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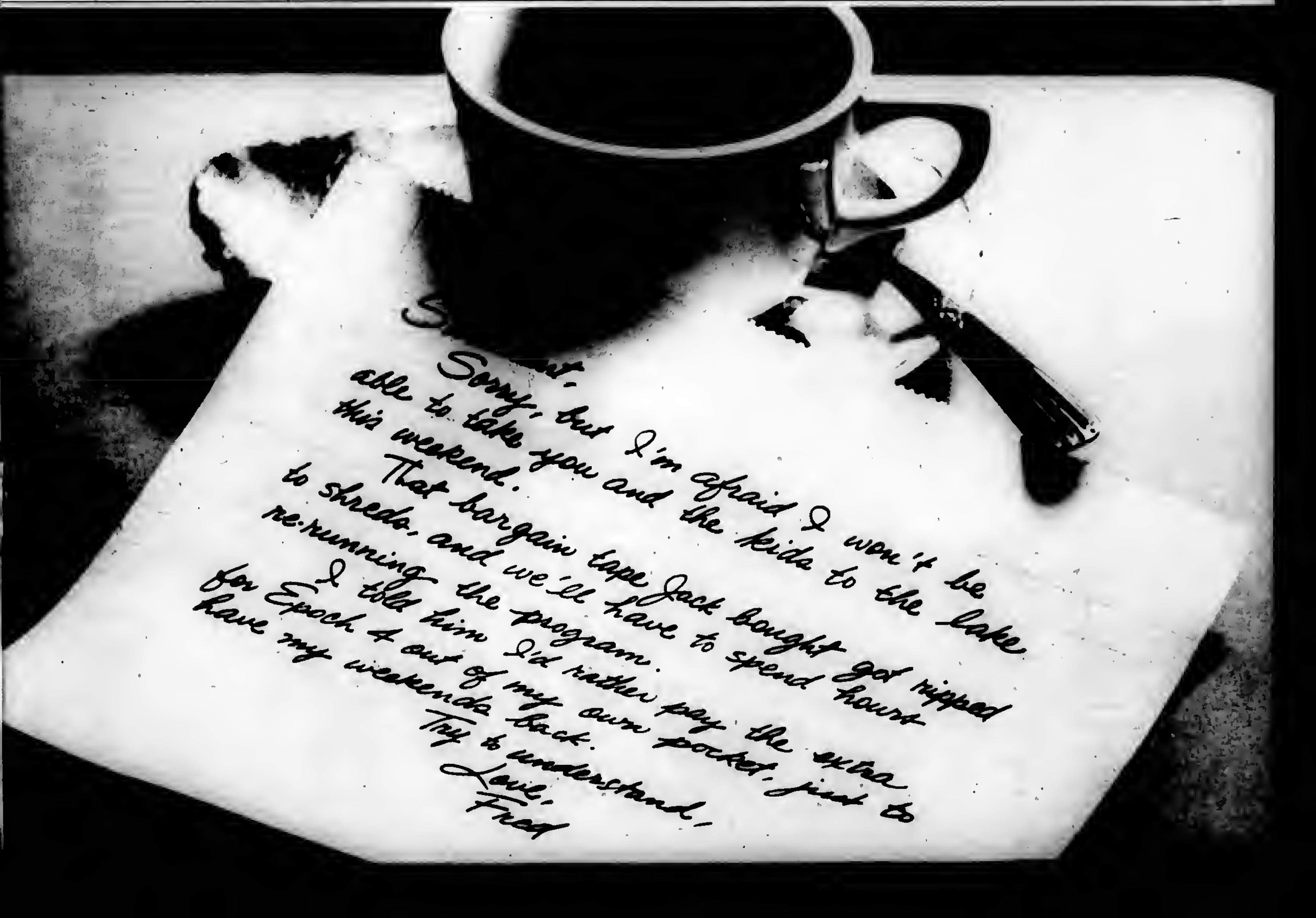


S[illegible]t.
Sorry, but I'm afraid I won't be able to take you and the kids to the lake this weekend.
That bargain tape Jack bought got ripped to shreds, and we'll have to spend hours re-running the program.
I told him I'd rather pay the extra for Epoch 4 out of my own pocket, just to have my weekends back.
Try to understand.
Love,
Fred

Editorials

'Harmful' Statistics?

AT&T has purposely attempted to prove that customer-provided data equipment is harmful to its telephone network. (see related story on page 19).

By finally responding to repeated FCC requests, Bell has come up with some extremely questionable statistics, implying that 30% of all non-Bell equipment causes harm to the network.

But the phone company has provided little conclusive evidence to support its claims. Instead it has relied on an unidentified description of a "typical" computer user, and unidentified photos of independent equipment that might cause harm because of supposedly bad wiring.

But users know the interconnection of non-Bell equipment often provides better performance at lower cost. And neither these users nor their independent equipment suppliers are out to harm the phone network.

AT&T should not be allowed to condemn customer-provided equipment with unsubstantiated claims. No doubt there will always be isolated cases to support any argument. But the FCC should demand that AT&T provide statistically significant data to prove the serious charges it has made.

Who's the Protector?

Is it so hard for the public to understand that computers are only tools that at best can only be used to process data at great speed under the direction of human beings?

The suit filed in Los Angeles Superior Court by five investors of Equity Funding alleges that IBM must be the protector of the people. If we carry this uninformed and misguided logic to its just end, the next suit would be initiated against Bic International because someone used Bic pens to write up a list of fake insurance accounts.

The problem at Equity Funding, and indeed with most of the so-called computer frauds, is extremely simple. Auditors, in the traditional sense of the word, have been outpaced in their knowledge of accounting tools, what they can do and how they can be manipulated by almost anyone in a firm once people realize the auditors are no longer familar with the tools of their trade.

In many business environments, it is impossible for the DP professional to realize his equipment is being used for an illegal purpose. We must all depend on the auditors.

And auditors, not manufacturer and DP professionals, must take the responsibility for protecting the people.

Heads in the Sand

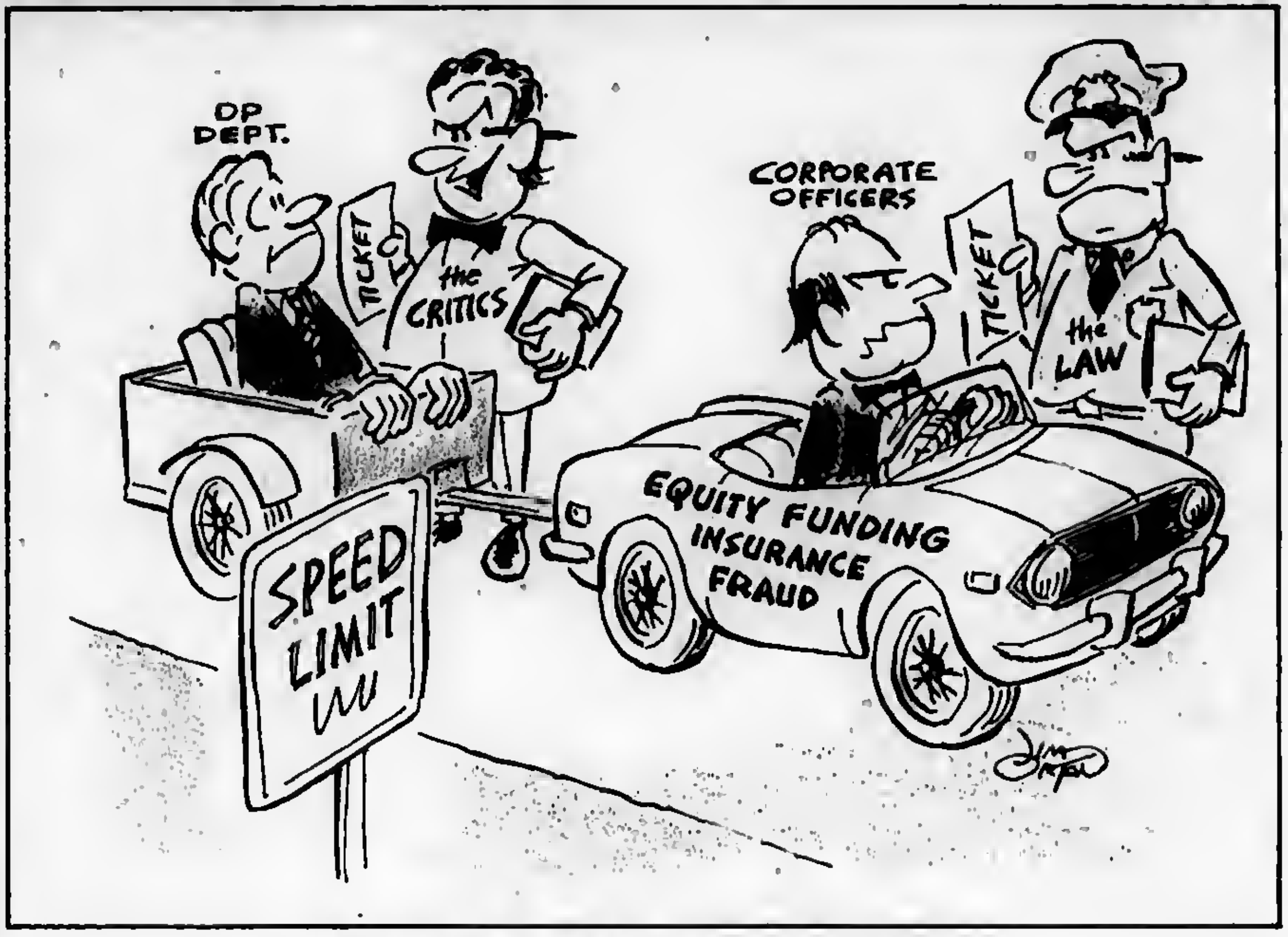
It is time election officials took their heads out of the sand regarding the security and accuracy of punched card and software-based ballot counting techniques.

In a recent survey of county election officers, an incredible 100% rated the security and accuracy of their systems as "good," indicating those topics were not high on their list of worries.

Perhaps it is lack of sophistication regarding the real dangers inherent in such systems on the part of these officials, or perhaps it is just that they have too easily accepted the claims made by the manufacturers of the systems, but it is clear that the systems may not be as accurate or secure as most officials think.

All election officials should take a closer look at their computer-based systems — a close look in which they will not be overawed by technical mumbo jumbo — to determine if they are really secure.

In cases where they clearly are not, the systems should not be used until ways can be found to ensure that they will be accurate and secure.



'Because You're a Passenger, That's Why!'

Letters to the Editor

A Word of Gratitude For Hearty Response

I would like to express my sincere appreciation to the many contributors to *Computerworld* in response to the editorial regarding my letter in the March 21 issue.

The many responses give me some encouragement that the question of an apostrophe or other similar figures in a name is interesting and of concern to many. I shall follow this issue closely and hope that many others will also.

I believe every response deserves my personal thanks and am taking this means of expressing my thanks to each and every one.

Robert M. D'Unger
Arlington, Mass.

And Still More Ideas: It's a Spelling Error

I have followed with interest the commentary and exchange regarding Robert D'Unger's complaints that he cannot get his name spelled correctly on computerized printouts.

There have been a number of fancy excuses why it can't be done. The fact is that it can be done; it is just that provisions were not made in advance to do it. It will cost money to change programs and/or upgrade equipment. but much of the correspondence avoids this point.

The real issue is that to spell D'Unger's name without an apostrophe is a spelling error.

An apostrophe, like all accent marks, indicates that something has been left out. It cannot be dropped. To do so changes the word.

For example, the words *round* and *'round* are pronounced the same. But the apostrophe makes them completely different words. Indeed, the words *won't* and *wont* are not only different words, but in this case, the apostrophe changes the pronunciation.

I defy anyone to tell me that dropping the apostrophe from a word will not change its meaning. And no programmer has the right to change the information he or she is given before passing it along to the computer.

Margaret Dickinson
Brighton, Mass.

CDP Registrations May Be 30% Higher

In a recent article "ASM Explains Why It Left Foundation," [CW, March 28] it was reported that first-time registrations for the Certificate in Data Processing program had dropped from 2,233 in 1970 to around 1,430 this year.

The accurate figure for 1973 first-time registrations is 2,011, some 30% higher than the figure reported in *Computerworld.*

Your figures were obviously taken from an internal DPMA report prepared earlier in the year and was an early estimate.

Donn W. Sanford
Executive Director
DPMA
Park Ridge, Ill.

The 1,430 figure came from public documents issued in January 1973, not from internal ones. The use of the 2,011 figure in computing sales trends of the CDP (as was the context of the article) has certain technical problems, such as the admission in 1973 of CDP candidates without the same experience and the use of a 13-month year. Ed.

CDP Shares DPMA Cost

In the article "Foundation Societies Urged to Pay DPMA $2,500 Each for CDP Exam" [CW, April 4], it was stated that "during the 1969-1972 period. the losses from administering the CDP examination amounted to $40,000." This is somewhat misleading although technically correct.

DPMA would have incurred most, if not all, of these costs even without the CDP program. Included in this figure, for example, is a prorated share of DPMA headquarters' utilities, taxes and salary allocations.

Donn W. Sanford
Executive Director
DPMA
Park Ridge, Ill.

Officially Speaking...

I was quite amazed to read "ASM Explained Why It Left Foundation" – in the March 28 issue of *Computerworld.* Amazed, first, because this seemingly official ASM statement had a date-line of Chicago (not Cleveland), and, second, that the contents were incomplete and out-of-context statements that were contained in a confidential and personal response to one of our members.

I would think we would both be better served if statements concerning ASM were complete, meaningful and truly official. That can be very easily accomplished by addressing inquiries to our executive director, Richard Irwin, at our international headquarters in Cleveland, Ohio. We will do our best to respond and we'll guarantee the authenticity of the responses.

While we believe our research and recent history have led us to the correct decision involving the Computer Foundation, the main point is that jointly we can better help ourselves to serve the systems profession by a more direct and official reporting of ASM's positions.

Harry Ritson
International President
Association for Systems
Management
Cleveland, Ohio

It is difficult for *Computerworld* to disregard documents passed on to us especially when, as in this case, "confidential and personal response" was contained in a letter sent to three people from President Ritson himself on association letterhead. Ed.

'Moving' Grand Rapids

Re: "Time and Motion Studies Get Moving" [CW, April 25], ACTS Computing Corp. is in Grand Rapids, Mich., not Grand Rapids, Iowa.

Philip L. Glazier
Vice-President
ACTS Computing Corp.
Southfield, Mich.

(Other letters and viewpoints on Pages 11, 12, 13 and 14.)

Before Real Crisis Develops

DPers Must Design Set of Professional Practices

The Taylor Report

By

Alan Taylor, CDP

Any profession, including data processing, generally finds out its true technical needs in a time of crisis. The court system, with its elaborate built-in safeguards for judge and prisoner alike, was not designed when everybody thought the judges could always be trusted.

It was designed so the system would work reasonably well even though judges cannot always be trusted. And the principles and procedures involved in protecting everyone against dishonest judges now form a key part of the judicial system.

The medical profession also had its crisis and had to learn to live with it. The doctors' crisis came when people they treated died, particularly when they died suddenly. When the doctor was trusted, this did not matter. But when the doctor inherited wealth as a result of the patient's death, a whole professional ethic was created to allow the system to identify whether or not the doctor had in fact murdered the patient.

From this professional crisis we get the procedures of death certificates, the impropriety of treating one's own family, and other parts of the now-traditional professional method of practicing medicine. And it was designed – as the judicial system was designed – to be effective when the professional concerned was not trusted, rather than when he was trusted.

Both these systems were designed using the special technical knowledge and appreciation that only the particular professional can provide. Only a person knowledgable in law could design the appeal procedures intrinsic in judicial practice.

Only a person knowledgeable in medicine could realize that the practice of not prescribing for your own family where life is threatened, is the only one which could prevent some unlucky doctor from being tried for murder.

In both cases, at the time of crisis when the profession was not trusted – just as data processing is currently not trusted – the professionals turned to their own specialized knowledge to design a system which would be workable even though distrust (and even professional dishonesty) remained.

It takes a thief to catch a thief, and it is simply no good waiting until an untrained society tells a profession what to do.

No DP Crisis, Yet

Currently, the profession of data processing can hardly be said to be in a serious crisis. I know the *Wall Street Journal* is continuing its apparent campaign against DP. I know the credit bureaus and credit cards still make life miserable for data processing people who care about their profession and who cannot answer the questions put to them by ordinary citizens.

But I still cannot believe that this is very serious, and instead regard it all as a forerunner of the coming real crisis.

These minor crises are showing the way people will react when the real data processing scandal breaks.

Equity Funding Life Insurance is not a real data processing scandal. The fraud there was organized by non-data processing people, and carried on through non-data processing means for years. It could have been caught in 1970 and 1971 by the auditors, or by the insurance investigators. I don't think it could have been caught until 1972 at the earliest by any data processing people.

The real crisis will come when a really sophisticated data processing scandal breaks, a scandal that can only be caught by data processors, because it is being handled by real data processing expertise (not just by the use of ordinary job control cards).

There have already been cases which came near to being this scandal, but as yet none of them has been big enough, or touched the necessary sensitive points of the public consciousness.

So we have time to prepare. We have time to design the ethical manner of practicing data processing so that data processing crooks get caught by data processors, and so time to save the honor of the profession itself.

In our preparations, we should consider those inessential items which make it possible for data processing to be "fixed." For instance, the practice of compiling an operational program, and then using the object-code version in the library, is clearly as open to abuse as leaving unstoppered, half-finished bottles of medicine in a doctor's consulting room. We should stop this dangerous habit.

The overhead involved in recompiling the programs in a load-and-go manner, is less than the overhead involved in throwing out thousands of "perfectly good pills which have been exposed to possible contamination."

Just like the need for unquestionably good pills, the need for unquestionably accurate data is important. Therefore the practice of keeping libraries of operationally sensitive programs should be eliminated. The advantages are just not worth the risk.

We should also look to our recordkeeping and recordexamination practices. Is the file that was received this week the same length as the file that was produced last week? Are the control figures controlling the whole of the data or only part of it?

We must look at the facilities that we provide the auditing profession – and look at its knowledge of them. It is standard auditing practice to make contact with knowledgeable people inside and outside the installation.

If, as appears to be the case in Equity Funding, they fail to make contact with data processing people, is this not a matter subject to an official objection to the audit?

There are other practices which also should be eliminated, but these will be dealt with later. For now, it is time to create the special body of knowledge that will turn us into a real profession. And, for that realization, we must accept the Equity Funding case as a blessing in disguise.

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Letters to the Editor

DP Makes Fraud Harder to Commit

The recent stories about the Equity Funding scandal demonstrate the difficulty the media has in accurately reporting events in which computers are involved. The consensus seems to be that someone helped an electronic superbrain carry out a complicated fraud.

Actually, that abused computer made it harder for anyone to commit fraud and easier for someone to detect fraud.

One vital element in certain kinds of embezzlements (insurance, bank loans, installment purchases, etc.) is to alter key programs to have them bypass certain accounts. There are programs available which can spot any differences between a program which has been certified accurate (and is kept under auditor's seal) and the supposed duplicate of it which is running in the computer.

This one check would have stopped the Equity fraud very early in the game. Accounts can be randomly selected by a program and sent through a normal cycle of activity in the computer.

The billing, collection and cancellation printouts can then be compared against predetermined results.

And finally, a program can examine the entire master file (impossible manually in most cases) and calculate the amount that should have been billed over a period of time.

Martin Burack
New York, N.Y.

Can Programmer Make Ethical Judgments?

Three rousing cheers for exposing the Equity Funding "DP Fraud" [CW, April 25] for what it was – a people fraud. And a chorus of boos for *Newsweek*, most of the financial press including *The Wall Street Journal*, Equity's "auditing" firm, the California Insurance Commission and the Illinois Insurance department.

The insurance business, like almost any other business, has become increasingly complex and competitive. So complex in some instances, that the EDP analyst or programmer can no longer be expected to pass judgment on the ethics of a marketing study, a modeling project or even some financial reports.

Just as a programmer can hardly judge the adequacy of an engineering formula for structural bridge design, he cannot be expected to evaluate actuarial formulae or the treasurer's report.

The programmer does his job as outlined in project specifications. And if he is a professional, he does that job to the best of his ability.

Ron Stewart
Manager
Systems and Programming Dept.
United Insurance Co.
Chicago, Ill.

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Generalized Data Base Packages Not Worth Cost/Risk

By Tom Gilb

Special to Computerworld

Viewpoint

I challenge IBM to give well-founded total arguments for the use of generalized data base software (like GIS, IMS, VANDL, DBOMP, CODASYL, DBTG). I have never seen nor heard of any convincing total cost/risk argument *for* a generalized data base package as opposed to a simple self-developed package based on either standard Cobol/Fortran accessible access methods or assembly language coded subroutines, well insulated from calling high level application programmers.

Specifically, the suppliers do not know enough about the following factors in absolute terms, and they know even less about these factors in competitive terms (primarily as opposed to a do-it-yourself approach).

- Portability: To what degree is this software and the associated application programs movable to specified new environments such as future new association with other generalized packages (CICS, DOS/VS, VSAM); new secondary storage devices from same manfuacturer (solid state); other suppliers' equipment and software?

In general it seems that the portability (cost of conversion) is very low compared to alternative techniques.

- Implementability: What does it really cost to evaluate, plan for, learn and program for such a system as compared to other systems? I challenge that assumption as never proven by comparative test.

In fact, it goes strongly against my own experience of building specific data bases based on standard high-level languages, as compared to the lengthy efforts of others to implement "ready made" packages.

- Maintainability: What is the cost of maintaining all aspects of this software as opposed to other methods? What is the cost of not being able to maintain major logical portions yourself? Some of these systems are as complex and demanding as any operating system and should thus require a system programmer staff.
- Operational cost: What do we know about the additional operational cost as a direct or indirect result of making use of such a package. Not only present costs must be considered, but user control over future costs must be considered.

How much more processing time, core storage, etc. is necessary because a generalized package is used (as opposed to a tailored package).

- Software Reliability: Large generalized software systems tend to have an uncontrollable quantity of bugs. Nobody, certainly not IBM, claims he even knows the theory behind software bug control. IBM's OS is completely out of control, it seems.

About seven years after initial delivery the bug rate has grown from 1,000 distinct new bugs reported per release in 1968 to over 11,000 new bugs reported per release, according to counts in IBM's own bug report indexes in 1972.

Some of the most problematic bugs are reported to have occurred in the "simple" data base management method Isam.

What is the real price of these bugs for the generalized data base user? He doesn't have the documentation or the competence to analyze such bugs and repair them in a reasonable time

- Supportability: Which guarantees will IBM give for any given package that they will give full support for that package for a given number of years? Full support means that it will interface with all major developments in the hardware and software sector in this period so that the user will not be forced to abandon it in order to make use of new announcements.
- Data security and reliability: File security (access controlled via passwords) is if anything overdone for most users in the present packages. A far more serious problem is accidental destruction of data and records within a large and complex data base.

I believe that the tools in the present software implementations are grossly inadequate to detect and automatically correct most of the random errors caused by hardware failure, software failure, application program bugs and human error. Most systems have some recovery/security features, but I believe that these are too general and too costly compared to some alternative techniques.

This is not necessarily IBM's fault but it does not provide sufficiently detailed design technique literature as a supplement to the generalized systems so that the user can carry out his "user responsibilities" (as defined by IBM in the data base package manuals) adequately.

The result is that many users will carry out their end of the reliability design of the data base inadequately, while hoping and believing that IBM has done this for them.

Tom Gilb is a consultant in Oslo, Norway.

Letters the Editor

Special DP Task Force Unrelated to Doctors Group

Re: "Medical Record Problems Probed" in the April 25 issue.

Washington state doctors may have started investigating problems of computerized medical records. I know of a number of individuals who are indeed interested.

Most definitely, however, they had nothing to do with the special task force to develop legislation concerning the maintenance of confidentiality of computerized records. This task force was originated by the Washington State Medical Record Association, a professional group affiliated with the American Medical Record Association and totally unrelated to the physicians' professional association in this state.

Lynn Regudon
Chairman, Task Force on Legislation
Washington State Medical Record
Association
Seattle, Wash.

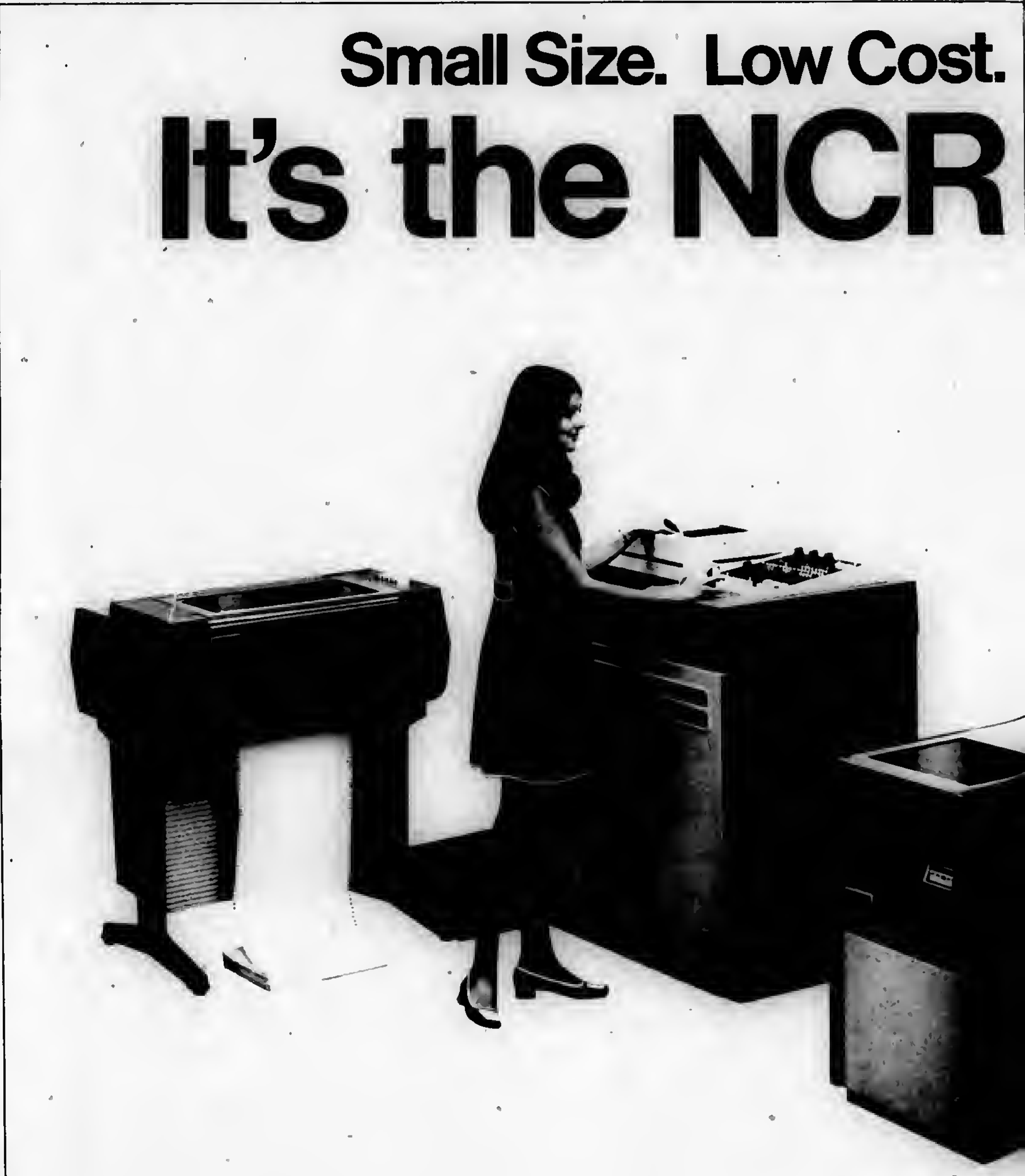
Anyone Selling $60 Mini?

Re: April 11 article "Hardware 'Available' for $60 Mini."

Where can I get a $60 mini? I'd like the challenge of developing my own software.

Carl M. Vigil
Schertz, Texas

The reference was made by Claude Kagan at Western Electric, Box 900, Princeton, N.J. 08540. Ed.



Descriptive Billing Expensive

By Kenneth E. Rohan
Special to Computerworld

In regard to the article entitled "The Professional's Viewpoint – More Description Needed in Descriptive Billing Uses," [CW, May 2] Joseph Rigo's comments may render descriptive billing less cost-effective than country club billing.

Country club billing requires the credit-card organization to return all sales receipts along with the monthly bill to the cardholder. This means the organization must maintain a file of the incoming receipts for each and every cardholder on a monthly basis, which is an expensive proposition and the reason why many are leaning toward descriptive billing.

Rigo is absolutely correct when he says "a descriptive bill should be sufficiently detailed so that the person receiving it knows what he or she is being billed for."

Unfortunately, the cost of storing and printing such information on a monthly basis by the credit-card issuers could be equal to or greater than present-day country club billing costs. We are rapidly moving into the era of the credit-card reading terminal. The best place to capture total sales information is at the point-of-sale. Data would be available at the merchant's terminal and be easily transmitted to the central computer of the credit-card issuer.

Viewpoint

Hence, credit-card issuers who do not or cannot make use of credit-card reading terminals, will be hard-pressed to come up with an adequately described bill. Their only salvation may be a system whereby incoming sales receipts are recorded on video-tape during the course of a given month, sorted by image and cardholder sequence at billing time, and send printed copies of the cardholder's actual sales receipts.

Kenneth Rohan is director of Kenro Management Associates, Oceanside, N.Y.

Letters to the Editor

CDP Examination Performs Service To Profession

"Useless," "dead," "too easy" and "never work" are a few of the phrases I've read in *Computerworld* recently regarding DPMA's CDP examination. It seems to me that skeptical people assuredly used these same phrases in commenting on the Wright hrothers' attempt to get off the ground.

Having taken the 1973 CDP exam, I offer the following comments:

It is absurd to state that "cramming from one of the study guides" can insure easily passing the exam. The study guides are "reviews" by nature and unless there is the necessary supporting experience, they are just so many words.

The exam is a good objective evaluation of an individual's DP and general management skills. The majority of my associates (eight of us took the exam) appreciated the objectivity and worthiness of the questions.

Classroom and seminar preparation for the exam and/or passing it assuredly demonstrates a broader DP knowledge level.

A CDP has evidenced a quest for professional certification – the true professional is the first of his profession to seek this certification.

He has also shown a broader base from which to adapt to the DP environment and the ability to place DP in its proper perspective with the other functions of operating a business.

While I too feel the exam must be time-phased to be more relevant, I am convinced that DPMA has performed a great service to our profession in pioneering this certification program. I am also convinced that DPMA will maintain the exam, improve it and develop it into the equivalent of any profession's certification.

Michael D. Campion
Project Leader

Inso Systems Corp.
Manufaoturing Systems
Neptune, N.J.

Competent Hand-Holding Can Make the Difference

Re: "It's the Hard Way to Break Into DP" [CW, March 28] and "Holding Hands Can Be Painful" [CW, April 25].

Perhaps the problems encountered could have been greatly lessened by choosing the right vendor.

We converted from a service bureau to an IBM System/3 Model 10, with very little help from the service bureau. However, the support from IBM was nothing less than fantastic. They literally held our hand every step of the way, from training, to conversion, to production. The only difference was the competence of the people holding our hand.

I find it very hard to believe that any vendor still in business would allow its customers to write one superprogram designed to do all. Mounds of experience are not needed to know that some sort of data base is imperative.

Perhaps the extra rental charge incurred from going with the "giant" should be viewed in a different light: Is it really worth the monetary savings to get a system that doesn't work for you?

Thomas E. Negola

Garwood, N.J.

RPG Efficient, Economical

I have been reading several letters to the editor in the past two issues of *Computerworld* concerning RPG languages.

It is my belief that the authors of these letters are not as knowledgeable of the true power of RPG as their letters would insinuate.

Norman F. Allen wrote [CW, April 25] that he believes an RPG installation is an "operational nightmare." He points out that the company involved in the operation could develop "heart failure due to some key personnel involved in the RPG program going on vacation." Any organization that is so reliant upon any individual, be it an RPG programmer, Cobol or any other language, is in itself a failure.

Before anyone criticizes RPG languages, I recommend they be involved in paying all expenses connected with data processing. RPG is a management tool geared for an efficient and economical method of producing the necessary reports and results.

It is time that the RPG language be given full exposure as to its capabilities and efficiency. Perhaps the biggest injustice performed was to call the 360 version of RPG, RPG. This has caused many persons to equate the 360 version to the old 1400 version (which was by far no competition to the current version).

Philip J. Pesapane
President

Computer Procedures Corp.
Valley Stream, N.Y.

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Century 101.

Now small and medium size businesses can have the big kind of computer power they need to grow.

The newly released peripherals for the NCR Century 101 processor are small in size and low in cost, yet they provide the power and versatility of units twice their size.
This basic 101 system, including processor, card or paper tape reader, line printer, and one dual platter disc unit covers no more space than 2½ feet by 10 feet! It can be placed in rooms where larger computers just won't fit. And, because it generates little heat, air conditioning requirements are minimal.
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The 101 processor, heart of the system, includes features like a high-speed memory that can expand in practical increments from 16K to 64K. An optional multiplexor that provides control for 10 communications lines, with no increase in cabinetry. Seven-way to nine-way simultaneity. And many other features just as significant.
Later, as your business grows, you can expand this modular system to meet increased information requirements. Larger capacity disc units and higher speed printers can be added if and when you need them.
For the price, this new system from NCR offers big performance for businesses on the grow. Average systems range from just $1820 to $3800 per month!
Call your local NCR office for the specific advantages your business can expect from this newest member of the NCR Century family.

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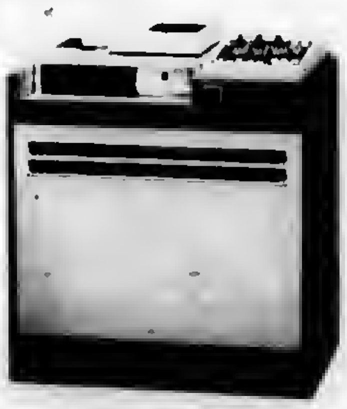
lightweight, pedestal type LINE PRINTER turns out 300 lines of crisp printing per minute.



the 101 PROCESSOR features high speed expandable memory, optimum hardware/software efficiency, dramatic throughput capabilities. CONTROL CONSOLE facilitates communication between operator and processor. Hard working CARD or TAPE READER (COT) assures fast, reliable coded input.

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It's a big, big family adaptable to almost any situation.
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microcomputers
on-line systems
office copiers

Letters to the Editor

Afips Report Refers To New DP Entrants

The letter from Steven R. Weber in the May 2 issue of *Computerworld* suggests that the American Federation of Information Processing Societies (Afips) drew the wrong conclusions about the availability of trained computer personnel in its recent report entitled, "The State of the Computer Industry in the United States" [CW, April 11]. Unfortunately, Weber appears to have rushed into print without reading the Afips report.

The only conclusion on manpower included in the Afips report is, "In view of the growth of formal programs in computer education, it appears that within a decade such sources should be able to fill the needs of the computer industry for new entrants even if industry requirements grow at the rate of 10% per year."

There is absolutely nothing inconsistent between this statement and that of the Advertising Council that the lineage of help wanted advertising for data processing personnel is at a high level. The Afips conclusion refers to the next decade and it addresses the new entrant situation, not the need for experienced personnel.

Bruce Gilchrist
Executive Director
Afips
Montvale, N.J.

Keypunch Replacement: A Success Story

Re: the article in the April 11 issue about keypunch replacement.

Our firm has been successfully converting keypunch input operations to 2260 on-line entry for the past three years and have at this time completely converted the operation.

Some of the jobs include order entry, order update, customer master file addition and change, price change, accounts receivable, accounts payable, inventory entry and activity detail, payroll, department transfer functions and other forms of entry.

We have experienced *no* decrease in speed of entry of 8,000 to 9,000 items daily and have found it to be more accurate because of the immediate verification.

R.A. Hoover
DP Manager
Coastal Data Inc.
San Francisco, Calif.

'An Operator Mounted The...WRONG TAPE'

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Every day, in thousands of data centers throughout the country, this same scene is repeated. It can be prevented. Valua Computing has developed a new and different approach to Tape Library Control. The VALU-LIB system will tell your tape librarian which tapes to withdraw to get the best multiprogramming schedule, and then generata tha labels, if you'd like!

OS/OOS, standard, non-standard and unlabelled tapes – they're all the same to VALU-LIB.

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It's a big, big family adaptable to almost any situation.
With over 50,000 already installed!
Teleprinters for administrative tasks.
High-speed buffered systems for full-service banks
and savings institutions. Smart terminals that
communicate with computers and each other.
All displaying those fine old Olivetti family traits
of ingenuity, great design and terrific service backup.
(There are Olivetti branch offices all over the U.S.
with trained personnel on call!)
Ask us for a proposal on your next terminal installation
Join the family.

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electronic billing systems
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office copiers

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Every day, in thousands of data centers throughout the country, this same scene is repeated. It can be prevented. Value Computing has developed a new and different approach to Tape Library Control. The VALU-LIB system will tell your tape librarian which tapes to withdraw to get the best multiprogramming schedule, and then generate the labels, if you'd like!

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☐ CALL ME FOR

NAME________

COMPANY________

ADDRESS________

CITY________

TELEPHONE________

Random Notes

AED Programming Language Available for Univac 1108

WALTHAM, Mass. – A Univac 1108 version of the AED programming system is being offered by Softech, Inc.

The system consists of a compiler for the AED programming language, and various libraries and support programs.

With this offering, AED is now available for the CDC 6000 series, Univac 1108 and IBM Systems/360-370, as well as for various minicomputers.

Programs developed in AED are transportable between any of these systems.

Purchase price for AED-Univac 1108 is $15,000 and includes one year's maintenance and a program of user training, from 391 Totten Pond Road, 02154.

Cullinane Output Packages Linked to RDMS Data Base

BOSTON – Cullinane Corp. has announced that all its report-producing systems are now operational with UCC's "RDMS" data base system for banks.

Concurrent with this announcement, the firm stated that Market-EDP-Analyzer is available for use with data base systems such as IMS, Total, RDMS, Bomp and Alis.

Cullinance Corp. is at One Boston Place, 02108.

Basic Added to Datapoint 2200

SAN ANTONIO, Texas – Datapoint has announced an extended Basic language processor for the Datapoint 2200 intelligent terminal. It is a stand-alone system requiring a 16K Version II Datapoint 2200.

This implementation of Basic includes a floating point arithmetic package, support for two dimensional arrays of strings or numbers, internal subroutines and error recovery techniques. Other languages on the Datapoint 2200 include Databus, Scribe and an Assembly Language. Datapoint is at 9725 Datapoint Drive, 78284.

Terminal Users Write Letters

NEW YORK – Personalized form letters can be generated on-line, from original draft and definition of addressee list through final typing, under the Word/One service from Bowne Time Sharing Inc.

Working at a terminal, the user creates the master letter and specifies where personalized inserts should be made. The master letter is merged with a pre-stored name/address list that also contains the specific information to be inserted. The final letters can be produced on the user's teletypewriter or, in case of a large mailing, on Bowne's high-speed line printer.

Bowne operates Word/One in the eastern U.S. and is based at 345 Hudson St., 10014.

New Cobol Feature

Users Can Pick Collating Sequences

By Don Leavitt

Of the CW Staff

WASHINGTON, D.C. – Cobol programmers would have very broad powers to specify, program by program, the collating sequence to be followed during the execution of their logic, and the code set to be used by the files being processed, under changes voted into the language by the April meeting of Codasyl's Programming Languages Committee (PLC).

The change was requested by the American National Standards Institute Committee X3J4, which later voted to include a restricted version of the new capability in the proposed Cobol standard revision [CW, April 4]. Action on the collating sequence feature was handled on a priority basis to answer a number of user requests received during the open comment period, X3J4 chairman Robert Kearney of Bell Labs noted.

Even the restricted implementation should make both programs and files "far more transferable than they have been up till now," according to PLC secretary William Rinehuls of the U.S. Air Force, who proposed the change.

Cobol is supposed to make programs transferable and there has been movement in that direction, especially since the 1968 Cobol standard. PLC has the job of defining Cobol as a complete language system; X3J4 extracts what it feels is a workable subset of the whole language, refines it into a voluntary standard

But prior to the latest PLC action, the collating sequence used by programs has been determined by the "native" code set of the computer system on which the programs were developed, and they could not be altered to match the sequence scheme of a different code set.

Override 'Native Mode'

Now the programmer will be able to override the "native mode" bias of whatever compiler and machine combination he is using. PLC voted to give the programmer both static and dynamic capabilities to specify the setting he wishes. X3J4 added just the static facility to the upcoming Cobol standard revision.

The static option allows entry of a completed COLLATING SEQUENCE IS clause in the Environment Division, so that the compiler could shape comparisons and other sequence-dependent instructions for the code set being used. The dynamic option would allow the clause to be completed or changed just prior to program execution, or even in the middle of a run.

PLC voted to allow many possible ways to complete the COLLATING SEQUENCE IS clause, including a "native mode" sequence that is peculiar to the implementation, or one that is user-defined through a string of literals listed in exactly the sequence required. X3J4 accepted all the options, except those that only pertained to the dynamic capabilities.

While user control of collating sequence focused primarily on the Nucleus of the Cobol language, related capabilities were also added to the Sequential I/O module and to the Sort/Merge. These will allow the program to work with tapes and other non-mass storage files coming from or going to systems working in codes other than the one to which the user's program is "tuned" through the Nucleus entry.

User control of collating sequence, especially with the user-defined feature, is expected to allow placement of records in precisely the sequence the user wishes, regardless of the mix of numerics, alphabetics and special characters the control field may contain. An EQUATE capability will allow the user to determine exactly where, for example, the 797 Corporation, or du Pont, or D'Unger belong on his files.

'Valu-Lib' Runs Tape Library, Can Interface With Scheduler

CHERRY HILL, N.J. – A magnetic tape library control system that differs from most others by including an interface to both a scheduling package and a job accounting system, is now available for both OS and DOS/360 users, from Value Computing Inc.

Valu-Lib accepts data from IBM's System Measurement Facility (SMF) under OS, or from feedback cards generated by DOS operations. It creates, changes and deletes information from a Workload Control File, and produces a Tape Retention Report and a daily Scratch Tape report.

The Control File has three basic sections, one of which hold the number, manufacturers' names, locations and reporting exception limits of the tapes to be controlled. It also includes volume serial number information to identify the specific tapes, and job information to identify the applications – and programs within the applications – in which each tape is to be used.

When used with Value's Scheduler package, the file produces a "tape pulling" list to notify the operations staff which files will be needed over various periods in the future. Later, it also produces gummed labels for external identification of the files created during the just-completed processing.

Even without Scheduler, Valu-Lib can generate a tape pulling list based on frequency codes built into the control file records. This list is in job number sequence rather than scheduled-time sequence as it is through the link-up with Scheduler, a Value spokesman noted.

In stand-alone mode, Valu-Lib can also print gummed labels as tapes are created. These labels can include prompting comments to show, for example, that a given reel is the last of five making up a large file.

The system is written in Cobol and can be used in either OS or DOS environments. It requires 50K bytes of memory, spool-in/spool-out capability, 50 cylinders of disk storage and, if SMF is used, a tape for that data. The price is $4,000 for DOS, and $6,000 for OS users.

Value Computing is at 496 North Kings Highway, 08034.

Package Builds GCOS/TSS Tests

McLEAN, Va. – Tesdata Systems Corp. has developed a Load Generator System that allows Honeywell H600/6000 GCOS/TSS installations to test configurations under large user loads. The testing package pinpoints the conditions under which response time degrades to an unacceptable level – as defined by the user.

Need for the Load Generator became apparent, Tesdata explained, as a result of work the company is doing for Honeywell that will enable GCOS/TSS installations to support as many as 180 simultaneous terminal users. Those and other changes to the operating system will be released in October, Honeywell said.

Regardless of how large a terminal load is being generated – and Tesdata noted that actual jobs are created, not simulated – all the testing under Load Generator is done from one on-line terminal. Output consists of user response time data for each generated activity.

The Load Generator allows the user to measure exactly what effect a change in configuration, whether internal buffer size or device used for program swapping, will have on response time.

The package enables an installation to perform hardware checkouts and to pinpoint malfunctions that may only occur with very heavy user loads.

The Load Generator has been successfully installed on both H600 and H6000 single and dual processor systems, he added, and the package is now available for a lease price of $1,000/mo or under a 20-year license for $15,000.

Tesdata is at 7900 Westpark Drive, 22101.

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T/S on PDP-11/45

DEC Puts 32 Users on Maximum RSTS/E Configuration

MAYNARD, Mass. – PDP-11/40 and 11/45 minicomputer installations are able to support as many as 32 simultaneous terminal users working in an enhanced Basic, with the extended version of the RSTS time-sharing system (RSTS/E) now available from DEC.

RSTS/E requires a minimum configuration of 40K words of memory which would allow one user to work in as much as 16K words – twice the previous limit, or two users to work with 8K words. Maximum configuration is 124K words, a company spokesman noted.

The superset of original Basic provided by RSTS/E is called Basic-Plus and includes:

- Record I/O, which allows each user to access disk files both randomly and sequentially, and to adjust buffer spaces and disk allocation techniques to optimize throughput.
- Virtual memory arrays that can consist of integer, floating point and character data.
- On-line access to all system peripherals, including shared use of files where appropriate.
- Language extensions to permit more sophisticated program logic than the original, low-key language would allow.

Larger Arrays

The array processing under RSTS/E allows the user to store arrays larger than available in real memory out on disk and to maintain and use them as if they were stored in real memory. Swapping of the parts being utilized is completely transparent to the user, DEC said.

While RSTS/E permits as much as 16K words to be allocated to a single user, it does not require that all users get that much space. The system manager can, for example, limit users to no more than 8K so that the system resources are in fact shared in a reasonable way, and not "hogged" by one or two jobs.

Under a job control system that is part of the supervisor, programs can be chained from on-line disks without operator intervention, to simplify execution of complete applications.

RSTS/E permits the use of mixed core and semiconductor memory to reduce the time spent in system overhead. Users are encouraged to load their RSTS/E Basic interpreter and the run-time system in a 16K word segment of semiconductor memory – with cycle time of 450 nsec – while the application programs utilize standard core memory – with cycle time of 900 nsec.

Typical system costs range from $82,000 to $195,000. An $85,000 system is configured around a PDP-11/40 with 40K words of core memory. Peripherals include a fixed-head system with 256K words of storage and a moving-head disk system with 1.2M words, two DEC tape units and eight line interface units. Terminals are not included.

The $195,000 system is configured with an 11/45 with 64K words of core memory, a floating point processor and 16K words of semiconductor memory.

Peirpherals include 40M bytes of moving-head disk storage and 512K words of fixed-head disk storage, tape drive, 300 line/min. printer and 32line interface units.

20 Users, 124K Words Supported by 'Mumps' From Software House

WAKEFIELD, Mass. – Mumps, a multiuser timesharing operating system and programming language first developed for hospitals but now being applied in non-health care operations as well, has been enhanced by Automated Health Services Inc. (AHS) to run on the DEC PDP-11/45.

By shifting Mumps to the top of the '11" series, AHS has been able to utilize DEC's memory management system to control core addresses above 28K, the effective limit on the smaller PDP-11s. Now, 20 or more interactive users can work with Mumps concurrently on the 11/45 which has an effective core of 124K, the company said.

Mumps was created for applications requiring sophisticated data base management and rapid information retrieval. It uses unique file structures called "globals," which are processed like sparse arrays. The new Mumps allows the user to work with blocks within "globals" and these may be created, modified, deleted or moved from one file to another without having to handle the entire array.

Memory segmentation. for large-scale systems is available, AHS noted, and interprocessor communications facilities permit a Mumps-based 11/45 to be linked to other CPUs for more flexible operations.

Application programs are available in the Mumps language, especially in hospital-related functions, but innovative users have applied Mumps to work in other projects including, for example, control of a containerized shipping operation, AHS said.

AHS can install Mumps on any DEC PDP-11 with at least 16K core and a CP clock for time-slicing, a disk and a backup storage media, and terminals, including either teletypewriters or CRT devices. The Mumps software, exclusive of application packages, is $10,000.

Programs for clinical laboratory information processing, hospital administrative functions, clinic managements, patient interviewing and multiphase health testing control and documentation are among the applications which AHS can tailor to a user's specific needs.

AHS is at 607 North Ave., 01880.

Seven Areas to Gain GE On-Site Support

BETHESDA, Md. – GE's Technical Services Operation, providing on-site support, custom software and specialized systems development for users of Mark III remote-computing services, has been extended into seven metropolitan areas. New offices are being set up in New York, Chicago, Atlanta, Houston, Boston and Los Angeles. The original office at 7735 Old Georgetwon Road, here, will continue to serve the Washington, D.C. area, a spokesman noted.

The service should be "especially useful" to firms confronted with unusually complex applications or seeking to optimize their use of GE resources, he added.

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Datapoint delivers at Executive Data

Executive Data Systems, Inc., Cedar Rapids, Iowa, is a national leader in supplying computer utility services to the health care field. Currently over 100 hospitals and health centers are subscribers to Executive Data's computing services for applications in general administration, patient accounting, medical diagnosis, laboratory analysis and many other critical areas. The great majority of Executive Data subscribers are now utilizing Datapoint 2200 systems and printers as on-site terminals for data entry, for data communications (to Executive Data computers in Cedar Rapids) and increasingly for on-site data processing.

Why Datapoint? "The Datapoint 2200 meets the needs of our hospital and health center clients more fully and more satisfactorily than any other computer system," notes Don Olson, Executive Data president. "Its full programmability and the availability of DATABUS, a high-level programming language, makes it easy to adapt the system to the varying data entry requirements of our clients. On the 2200's video screen we can display the precise format for data to be entered, which, combined with programmed error checks, virtually eliminates input errors. Since the 2200 is as easy to use as a typewriter, there's no need for special operator training as with a keypunch machine. During the day the transmission of data to our central computer occurs automatically, without the need for manual dialup. Similarly, needed management reports are sent out automatically from our central computer during the night to an unattended 2200 printer, ready for management to use the very next morning, when the information is really timely and useful."

Every hospital and health center has varying needs for computer service, which can range from simple bookkeeping to sophisticated computerized analysis. Executive Data's approach is to provide these services on a modular basis. "Because the 2200 is a fully programmable general computer, it can handle much of the burden of editing and pre-processing of data," said Mr. Olson. "This relieves much of the overall processing load on our large central computer systems. Additionally, as hospital users grow more sophisticated and demand more and varied applications, we expect to see the Datapoint 2200 used more frequently as a supplemental independent processing unit."

The Datapoint 2200 and associated peripherals have delivered the goods for Executive Data Systems and its numerous hospital subscribers in a variety of applications in data entry, data communications and dispersed data processing. Prices on this unique system begin as low as $6,040. For information on how this capability can be put to work in your operation, contact the Datapoint sales office nearest you or write or call: Datapoint Corporation, 9725 Datapoint Drive, San Antonio, Texas 78284.

Datapoint

"The Datapoint 2200 has been a key factor in the continued growth of Executive Data and in our ability to provide the finest computing services in a modular and economic fashion to our clients. As the health care field grows more aware of the capabilities of our service in combination with Datapoint systems, I anticipate a steady rise in the number of our subscribers and in the processing volume we undertake for them."

Don Olson, President,
Executive Data Systems, Cedar Rapids, Iowa

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Data Briefs

Incoterm Sees Bell CRT Cost '500% Below' 3270

WASHINGTON, D.C. – AT&T's Model 40 CRT will be priced between "400% and 500%" lower than comparable IBM equipment. The Model 40 will cost between $3,000 and $3,500 while an IBM 3270 system costs about $16,070, according to Incoterm Corp.

The comparison was included in a letter to the Federal Communications Commission from Incoterm, which had previously told the FCC that the Model 40 marked the Bell System's entry into the area of data communication terminals [CW, Feb. 21].

AT&T responded that the proposed CRT, to be built by Teletype Corp., was not a data processing service [CW, March 28]. Incoterm said the AT&T reply was "evasive and misleading."

The independent CRT firm said "AT&T's real interest is . . . data processing . . . where the primary function of the Model 40 would be for the generation of inquiries and the reception of data from a central computer."

Modem Operates Automatically

TARZANA, Calif. – Novation, Inc. is offering an automatic answer/originate data modem which has unattended data reception capability.

The ATM-103D is Bell 101C and 103 compatible, and was designed for Teletype and TWX users, as well as Data Phone service.

The equipment features self-testing capability, optional voice capability, on-line local mode, echo mode and selectable full/half duplex.

Installation requires no modifications to the Teletype unit, the firm said, and all access is through normal connectors and terminals.

The unit costs $550 and should be available within a month from 18664 Oxnard St., 91356.

Concentrator Handles 32 Channels

NORWOOD, N.J. – Timeplex's C-32 Data Channel Concentrator can handle up to 32 channels which share up to 16 computer ports.

The C-32 is designed to connect data from modems, terminals or multiplexers on a first-come, first-served basis, making the connections in response to such signals as Data Terminal Ready, Ring Indicator or Request to Send.

The C-32 requires no speed or code programming and can switch asynchronous or synchronous data at rates up to 9,600 bit/sec.

Prices for the Timeplex C-32 start at $3,250 and delivery is 60 days. The firm is at Box 202, 65 Oak St., 07648.

Harris 4705 Replaces IBM 270Xs, 370Xs

DALLAS – Harris Communications Systems Inc. has introduced the 4705 communications controller which is described as a replacement unit for IBM's 270X, 3704 and 3705.

The 4705 can operate on the multiplexer channel of 360/370 mainframes and features faster internal speeds than the IBM 3705. The Harris unit has a 1 µsec read-write time compared with 1.2 µsec for the 3705. And the read-only memory operates in 250 nsec compared with 400 nsec on the 3705, according to a Harris spokesman.

The 4705 has a separate console printer while the 3705 normally uses the host CPU console. The Harris controller can utilize either a Model 33 KSR Teletype or a Cope 1035 which is equivalent to an IBM 2741 teleprinter. With these two options, the user can load his emulator and/or diagnostics using either paper tape or magnetic tape input, in addition to utilizing the host console.

The 4705 responds to IBM system addresses, commands and data sequences in the same manner as IBM controllers and it can operate with Btam, Qtam and Tcam without programming modifications, according to Harris.

The controller supports both two-wire and four-wire facilities and handles both synchronous and asynchronous lines from 45.5 to 9,600 bit/sec. A typical system supporting four bisynchronous and 20 asynchronous low-speed lines will cost about $1,276/mo.

Rentals will be about 12% below the 3705 while purchase prices will be about 15% less than the IBM unit, a spokesman estimated. First deliveries are scheduled for June.

Harris is at 11262 Indian Trail, Box 44076, 75234.

'30% Causing Harm'

AT&T Blames Non-Bell Equipment

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – About 30% of the customer-provided communications equipment interconnected to the phone system is actually causing harm to the network, according to AT&T.

In a submission to the Federal Communications Commission, AT&T said customer-provided equipment has "a higher trouble rate" than phone company equipment. Customers with non-Bell units "tend to call the telephone company when they experience a problem . . . and this results in a diversion of telephone company repair personnel" away from maintaining Bell equipment.

In a letter sent to the FCC's common carrier bureau, AT&T said 8.5% of users with non-Bell equipment on interstate private lines "are applying signal power in excess of the established criteria, thereby degrading the service of other customers." The criteria used for determining the harm were based on a report by the National Academy of Sciences on interconnection issued in 1970.

"A significant number of users of customer-provided equipment are causing harm to the telecommunications network both on private line and switched network services," AT&T said. To remedy the situation Bell said "it is clear that preventive network protection rather than corrective action is needed to ensure that services . . . for all users are not degraded . . . ."

In a two-month period during 1972, Bell said 10,224 trouble reports at installations using non-carrier equipment on both dial-up and private lines were studied. In 48% of these cases the "source of the trouble was found to be in the customer-provided terminal equipment."

This represented "almost 30,000 unnecessary dispatches of our repairmen to tell the customer his equipment was at fault." But at the same time Bell admitted that 38% of the trouble calls were caused by telephone company equipment.

In the 4,973 cases where customer-provided equipment was to blame, 30% were actually causing harm to the phone network, Bell told the FCC.

Citing a "case history," AT&T said a "computerized inventory control system for a food store chain" with independent data sets "in Missouri" had experienced "excessively high error rates." The data set supplier "made an effort to solve the problem by increasing the signal power of the customer-provided data sets through the installation of amplifiers on the circuits." The amplified signals were "30 to 100 times the proper adequate level," Bell claimed.

The amplifiers were "generally installed between the data set and the [Bell] Data Access Arrangement" so the network was protected from the harmful effects, the letter said.

Some of the amplifiers were installed between the DAA and the line but there were "few such connections" and the resultant harmful effects were "not readily identifiable," AT&T said.

But the high error rates continued and "after a lengthy investigation," the problem was traced to a "timing problem between the customer's computer and his data sets," AT&T said.

As part of its comments, AT&T included photos of independent data sets where it was possible that "hazardous voltages" could be applied to telephone lines. The data sets shown in the photos were not identified, although they were described as "commercially available."

Asked by *Computerworld* whether AT&T would identify the non-Bell equipment which was claimed to be defective and/or the Missouri data user who had excessive error rates, an AT&T spokesman said the company had no comment.

An FCC spokesman said the commission could ask the phone company to provide more details but a decision had not yet been made.

NCR 255 Checkout Terminals Handle Store Transactions

DAYTON, Ohio – NCR has introduced an interactive minicomputer-controlled terminal system designed to handle supermarket checkout operations.

The 255 system includes the 726 mini and a terminal that includes an MOS read-only memory. The procesor operates in real time with the checkout terminals handling transaction data on a character-by-character basis.

The 255 system is modular and will allow later addition of scanning equipment to detect the recently approved Universal Product Code when a majority of supermarket products are marked with the symbol. In addition, the system can be equipped with a remote display for management, electronic scale and coin dispensing equipment.

Each terminal prints out customer receipts, calculates taxes, allows for coupon redemptions, gives food stamp credits and performs all arithmetic functions associated with the checkout transaction.

The 255 system can supply management with complete operating data including volume of sales by item, hourly sales totals, operator productivity and sales by department.

The basic processor includes 20K 16-bit words which can be expanded in 4K increments up to 32K. The mini costs $13,000 and the basic terminal is priced at $2,895.

A check endorsement option adds $300 to the terminal price. Up to 48 "devices" including terminals and options can be handled by one processor. First deliveries are scheduled for this fall.

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GENERAL AUTOMATION 18/30 DMS

See DMS in Booth 2201 at the National Computer Conference.

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Tektronix Adds CRT Unit

BEAVERTON, Ore. – Tektronix has introduced a CRT terminal and hard-copy unit to its line of displays. The 4023 adds a video display to the firm's earlier storage tube devices.

The 4023 has a capacity of 1,920 characters (24 lines, 80 char./line) on a 12 in. screen.

Editing features include insert character and line, delete character and line, replace, erase to end, erase input and erase page. There are also tab, back tab and repeating character keys.

Forms can be "ruled" with an optional package that draws solid horizontal and vertical lines. Visual field formats include inverted field, blinking field, blanked field, reverse field, blinking reverse field and dim field.

Logical formats include transmit, non-transmit, protected, non-protected and numeric only.

The Tektronix 4023 is priced at $2,995 or $98/mo including maintenance.

Hard Copy

The 4632 hard-copy unit can be interfaced with the 4023, as well as Hazeltine, Sanders, IBM 3270 and other similar display terminals. The 4632 is priced at $2,950 or $98/mo and will be available for first deliveries in October.

First deliveries of the 4023 CRT are scheduled for July. The firm is at Box 500, 97005.

AUERBACH Publishers Announces a monumental achievement: Martin L. Rubin's "Handbook of Data Processing Management"

Years in the making, Handbook of Data Processing Management is a compendium embracing every stage of this difficult art—from the first conception of a system to preliminary analysis, system design, programming, documentation, installation, operation and, finally, cessation.

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CDC Multistation Has Printer/CRTs At Remote Sites

MINNEAPOLIS, Minn. – Control Data has introduced 714 multistation terminal systems for users who need multiple display/printer capability. The systems are designed for communications line efficiency at remote sites.

The multistation configurations use the 714-122 display which handles eight lines of 80 characters or the larger 714-123 which displays 16 lines of 80 characters. Both displays offer either 63 or 96 Ascii characters.

The multistation systems offer two types of printers, the 711-120 non-impact unit for desk-top use and the 711-121 impact printer which handles up to six copies. Both printers operate at 30 char./sec.

Two controllers are available. The 714-10 is designed for sites with minimal printout requirements while the 714-20 multibuffer controller handles up to seven printers simultaneously.

A 714 system can be configured with up to 15 printers and/or displays on one controller. A typical configuration of five displays, two non-impact and one impact printer will cost from $30,810 to $34,810 depending on equipment. One year lease prices for the same configuration without maintenance will range from $810/mo to $903/mo. First deliveries are scheduled for the fourth quarter of 1973.

User Gets 'Addicted' To Teletypewriters

KANSAS CITY, Mo. – In setting up communications capabilities, users should plan for expansion, because once the capability is available, people become "addicted" to the system and want more, panelists at a communications session of Computer Caravan/73 agreed.

Dave Nordlund of the University of Kansas noted that after a professor has had a teletypewriter in his office for about four months, he "can't possibly live without it, and wants five more."

One has to begin with the basics, but good planning can avoid making expansion a "traumatic experience," he said.

Frequently, new applications require different facilities, warned Don Class of the Kansas City Police Department.

Users should take a careful look at "how to divide terminals on lines," Class cautioned. "It's very easy to overload a line and then you have to pay an installation charge."

He said his department has always underestimated demand. "Show the users something and they want double that amount," he said.

Bits & Pieces

Varian Printer/Plotters Attach to CDC Computers

IRVINE, Calif. – Varian Data Machines has announced an interface which can connect its Statos 3110 or 3111 printer/plotter to any CDC 3000, 6000 or 7000 series computer.

Varian said the interface plugs into standard CDC data channel cables. It has I/O that mates with the I/O connector on the Statos unit.

Statos is an electrostatic printer/plotter capable of 1,000 line/min.

The interface sells for $12,000. Delivery is 30 days from 2722 Michelson Drive, 92664.

Calculators Have Program Memories

LOS ANGELES – Computer Design Corp. has extended its line of portable microcomputers with two scratchpad calculators which each feature two, 80-step program memories.

The hand-held models are the 324 Scientist and the 344 Statistician.

The units are battery operated, have multiple storage registers, and calculate to 13 digits. The Scientist features mathematical and trigonometric function keys while the Statistician offers statistical operations.

Deliveries of the $895 Scientist and the $1,095 Statistician are scheduled to begin in April.

Computer Design is at 12401 W. Olympic Blvd., 90064.

Microfiche Unit Makes Multicopies

NORTH BERGEN, N.J. – Automated, programmed, multiple-copy printback from microfiche is possible with the Three/Four Enlarger/Printer, according to a spokesman for Cradco, Inc.

The Three/Four produces printout from NMA or Cosati format microfiche and will accept certain aperture card and jacket formats, he said.

Working from either a 98-image or 60-image fiche, users can make from one to 10 8-1/2 in. by 11 in. prints in succession from each fiche image.

Average cost per copy has been set at 2 cents for 8-1/2 in. by 11 in. copies and 4 cents for the 11 in. by 17 in. copies.

Cradco is located at 4100 West Side Ave., 07047.

Viewer Has 1,000-Hr Life

MOUNTAIN VIEW, Calif. – Quantor Corp. has a 3/4-size microfiche viewer with a 1,000-hour lamp life.

This extended lamp life is about eight times longer than lamps in currently available viewers, the firm's spokesman asserted.

The Quantor 305 costs $169 from 520 Logue Ave., 94040.

Good Support Cited

First MRX-40 Replaces IBM 360/20

By Ronald A. Frank
Of the CW Staff

MAHWAH, N.J. – A northern New Jersey service bureau for public schools has a 48K CPU with 60M bytes of on-line disk storage. The machine looks very much like an IBM system but it is one of the first Memorex MRX-40 systems.

Educational Reading Service Inc. has had the MRX-40 since late last year. It was running a Model 20 from IBM but more capacity was required, according to Paul Bultmeyer, vice-president.

IBM proposed a System/3 and the user also considered a Model 30 on third-party lease, in addition to a 370/115 and 125. But the MRX was more cost-effective Bultmeyer said. The larger capacity MRX-40 costs about $5,000/mo.

Although there have been some start-up problems with the system, the user said he is satisfied with its performance. Among the initial operating problems was a jamming condition with the Memorex printer. But field personnel installed a tension device on the unit and it now operates better in many respects than the IBM 1403, Bultmeyer said. One of the features that appeals to him is the crisper type font, he added.

Educational Reading was using IBM's Basic Programming Support (BPS) operating system on the Model 20 and conversion to the MRX/OS operating system was accomplished with a converter program supplied by Memorex.

The converter took the IBM-compatible RPG source decks, and produced an MRX-compatible card deck which could then be assembled on the new CPU, Bultmeyer explained.

Some Software Difficulties

As with any new system, some software problems did crop up. Educational Reading had a software system that generated blanks in some records, but the Memorex RPG did not recognize the blanks and zeros had to be generated into these records, he said.

But despite the start-up problems, Bultmeyer said Memorex gave him around-the-clock support that he described as being at least as good as the service available from IBM.

Although the Memorex machine appears to have faster throughput, exact comparisons are difficult. One of the biggest advantages is the increased available on-line disk storage, according to Bultmeyer. The Model 20 handled 2311-type disks while the MRX 40 runs with larger 2314 disks, he said. The 20 had a total disk capacity of 10M bytes while the Memorex system can handle up to 90M bytes.

Another advantage of the Memorex system is its capability to run dual partitions. Educational Reading expects to have a new output spooling package from Memorex within six weeks. This could double throughput when combined with the additional 30M bytes of storage that he has ordered, Bultmeyer said.

With the dual partition operation, the user may later add on-line communications. And a Memorex computer-output-microfilm system could be added to the printer channel to cut output jobs by 90%, Bultmeyer said.

Educational Reading services public schools with accounting, library circulation records, report cards, attendance summaries and other administrative DP support.

Bultmeyer acknowledges that being a pioneer of the MRX-40 has created some difficulties. At present his software is about 80% converted to the new system. But he said the conversion and hardware support has "really impressed" him, and for future mainframe upgrades he would seriously consider a larger MRX-50.

Computerized Publishing System Merges Text With Illustrations

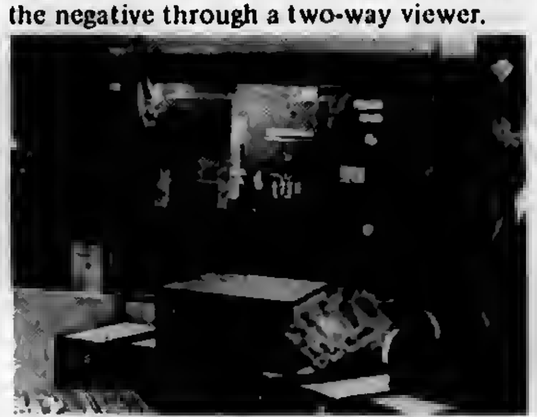
BURBANK, Calif. – A modified micropublishing system developed at Lockheed Aircraft Corp. to meet its technical publications needs, has the ability to merge optical illustrations stored on conventional photographic negatives with digitized text.

"Most computerized publishing systems store both the text and the illustrations in digitized form on magnetic tape," said Ralph Flygare, a Lockheed spokesman. "Storing illustrations in digitized form requires a large number of tapes and is really a costly approach.

"To save on tapes and expense, the resolution of the illustrations is reduced, resulting in poor quality illustrations. The use of photographic negatives eliminates poor quality and saves on expenses," he said.

A computer code keys the photographic negatives into the system, and the Form Slide, a mechanical handler, accesses the photographic negatives when the code calls for them.

A modified computer-output-microfilm machine then allows the movie camera, which normally takes pictures of what is presented to it on a CRT display, to flash the negative through a two-way viewer.



Charles Voorhees, inventor of the Lockheed system, enters text into the machine via magnetic tape which is then presented to a motion picture camera on a CRT.

Lockheed developed the system over a four-year period, using teletypewriter input for the data and handling the system on its 360/65 with 512K memory.

Programs for the computerized publishing system are written in Cobol.

Lockheed has licensed Database, a division of Media Images Corp., Los Angeles, Calif., to service other publishers or to install the system on either a lease or a walk-away basis.

A spokesman for Database estimated that for a user who already has a central computer, installation costs for the system would run from $250,000 to $500,000.

Database is located at 3435 Wilshire Blvd., Los Angeles, 90005.

S/3 Add-On '25% Off IBM Price'

ORANGE, Calif. – IBM System/3 users can obtain a core memory add-on at a "minimum cost savings of 25% compared to core memory from IBM," according to a spokesman for Business Systems Technology, Inc. (BST).

The BST/3 can be used either as an add-on or replacement memory for IBM-supplied memory above the basic 8K bytes initially provided with the System/3.

The memory is housed in a 6 in. by 18 in. by 24 in. enclosure which contains the power supply and up to 64K bytes in increments of 8K and 16K bytes. Optionally, the memory can be connected to the system by a cable up to 10 feet long.

Performance, according to the firm, is identical to that of IBM System/3 memory. Further, all diagnostics and system software are the same, meaning that no user program changes are required, the spokesman added.

Installation is promised in "approximately two hours" and complete maintenance provided by BST is included in the rental price.

Plans are available to users to lease or purchase the BST/3. In the case of purchased memories, maintenance contracts are available.

BST is located at 747 West Katella, 92667.

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2260 DUCS 3270

We are pleased to announce the availability of DUCS-V (Display Unit Control System - Version 5). DUCS·V will concurrently support both the IBM 2260 Display Unit as well as the IBM 3270 Display Station in a local environmant. The 3270 Display Stations are simulated in 2260 mode with no alteration necessary to the user's programs. The basic DUCS·V Program (2260 support only) is a licansed program product available from C F S, INC. for a monthly lease fee of $25.00. The DUCS·V 3270 simulator feature is also a licensed program product availabla for an additional $15.00 per month. The 3270 Simulator may be added to any DUCS·V Systam subsequent to the initial installation of DUCS·V without usar re-assembly or linkage editing.

DUCS·VI will be availabla during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancaments of the IBM 3270 System.

Requests for DUCS·V should be submitted to C F S. License agreements, DUCS·V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goran.

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'Cheaper and Better'

University Building Computer

PITTSBURGH, Pa. – A professor and his students at Carnegie-Mellon University are building a general-purpose computer that they say is "sixteen times more powerful than most computers available today, and should be one-fifth to 1/10 the cost of those few which are as powerful."

Known as the Carnegie-Mellon Multi-Mini-Processor the computer is actually a coordinated group of 16 PDP-11-based minicomputers, each with its own memory box, but capable of sharing memory with the other units.

The smaller units linked together are much less expensive than the big machines which would be needed to perform comparable work, Dr. William Wulf said, because "the major cost of building computers today is the hardware – the frame, switches, power supply – not the electronics."

The PDP-11s were purchased for the project because buying them was cheaper than making them, Wulf added. Most other parts of the processor-complex were built by students and university staff.

One of the most complicated jobs was devising a master switch to control access to the various memory boxes, Wulf asserted.

The switch routes a problem to the appropriate memory box, and in cases of conflict, insures that only one processing unit can address a memory box at a time. However, the switch allows independent access to other memory boxes at the same time.

Wulf feels his computer is superior to standard machines which he defines as uniprocessors because they can perform only one function at a time and handle a job by doing various steps in sequence.

Because these uniprocessors can only work on one portion of a job at a time, Wulf said, "there are a number of bigger problems that we cannot do on them."

Real-Time Speech

One example he cited is real-time speech understanding, a task to which the processor-complex will be applied.

"To understand a limited vocabulary, computers now take 10 to 20 times real time. In other words, the time it takes the computer to understand a spoken word is 10 to 20 times longer than it takes to say it.

"If we can reduce this time with our multi-mini-processor then we'll be able to talk to the machine to give it commands."

Another application cited as ideal for the computer-complex approach is better weather forecasting and radar flight control.

Wulf said a single "uniprocessor" takes about 36 hours to sift through the data needed to produce a 24-hour national weather forecast, thus making the forecast obsolete before it is completed.

The students also developed their own compiler called Pliss.

With Wulf and the students into the second year of their efforts, he sums up the present situation by stating, "We have a small version of the hardware working and the major compiler is essentially finished. Work is continuing to build the full-scale computer and iron out any remaining bugs in the system."

Professor William A. Wulf holds a printed circuit board and overlooks plans for other boards going into the university-built computer.

Modular Medical System Based on HP2100 Mini

WALTHAM, Mass. – Monitoring critically-ill patients, calculating and analyzing single or bi-plane angiograms, interpreting ECGs, and measuring and displaying forced vital capacity functions and respiratory parameters can all be done by Hewlett-Packard's Medically-Oriented Data System (Mods) for cardio-pulmonary applications.

The system is based on the HP2100 minicomputer using HP Real-Time Executive software which features multiprogramming capability with priority scheduling. The use of terminals stations, such as the Cardiac Catheterization Laboratory Station, for collecting and displaying data gives the system modular flexibility, Hewlett-Packard said, allowing customization and gradual upgrade. Mods could eventually be interfaced to a Medical Information Network, the firm added.

The cost of the basic system, the HP2100 with the Executive Software is in the range of $70,000. Each station/function terminal with the software needed runs $15,000 to $20,000. Other peripherals are additional.

The Medical Electronics Division of Hewlett-Packard is at 175 Wyman St., 02154.

Programmable Word Processor Uses Cassettes

NORTH BILLERICA, Mass. – The Linolex/WP from Linolex Systems Inc. is a text preparation and word processing system built around a programmable microprocessor.

System components include a video display screen, typewriter keyboard and three digital cassettes.

The cassettes serve two functions: storing text typed by the operator and storing programs that allow the typist to edit and perform various automatic operations such as underlining.

The word processing system is capable of handling a variety of output devices including a 30 char./sec printer, IBM Selectric, or 165 char./sec matrix printer. An optional feature allows simultaneous creation or editing of one document while another is being printed.

A communications attachment permits the unit to serve as transmission system or terminal to another computer.

Price of the Linolex/Word Processor is $17,900 from 5 Esquire Road, 01862.

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First-Time User Suggests Go Slow, Maintain Control

NEW YORK – The guiding principles for small businesses with their first computers are to go slow and maintain management involvement, according to Edwin Stalzer of Karlana Knitwear Ltd.

"I had no idea how computers worked, but decided we would have to be responsible for deciding on such a large investment," Stalzer, vice-president and treasurer, said.

With the principle of self-responsibility, Stalzer began looking at different computers and trying to learn what the selection parameters should be.

"Initially, the two main considerations were cost and simplicity of operation. But soon support became paramount. If we were going to 'go it alone' we needed support, especially in the start-up period.

"Thus, even though IBM was more costly than other options, the local sales force and support personnel impressed us and the decision was made to order an IBM System/3 Model 10."

The Small Systems User

The initial configuration consisted of the central processor with 8K bytes of core memory, a 300 line/min printer and punched card equipment.

"I knew eventually I wanted to go to disk," he related, "but I did not want to make this move until I was sure that the company could handle what we had."

Stalzer started out with simple applications such as entering the number of sales for each style the company produced.

"It was important to me that we wrote our own software because we knew what information the company could use. If you use a canned package, sometimes you find yourself coming to conclusions based on reports that are almost but not quite what you want," he said.

From the initial programs, the company started to expand to more applications. At the same time, Stalzer discovered an unforeseen problem.

The problem was recognizing that the computer was only a tool.

"It was very easy to get caught up in the computer's operation. When we wrote the first few applications, we were here to all hours of the night and became emotionally involved in the operation. When they would work, it was a personal triumph, when they failed we felt it a personal afront," he said.

"But we forced ourselves to be patient and to go slow. Each operation had to be complete before we went on to the next," he explained.

Hospital Writes Its Own Software

FAYETTEVILLE, Ark. – A small computer system using software written mostly by internal personnel is being used to keep Washington General Hospital's inventory costs under control.

As pressure builds to account for dollar expenditures, Washington General has felt it necessary to maintain effective levels and develop better controls of actual stocks.

The key to effective control, according to William Cooper, hospital controller, is a system that provides a close look at investments in general stores and strives to distribute costs more equitably among the departments using the various supplies, equipment and machinery.

Before the computer application, these efforts were bottlenecked in a somewhat hit-and-miss manual card file inventory system, he related.

A new computerized system was written for the hospital's small computer that covers approximately 3,500 items in general stores.

The Perpetual Inventory Control (PIC) was developed within Washington General's own DP department.

Files Already There

One of the earlier applications, general ledger, tied in closely with the new PIC system because the general ledger files maintained by the computer were already set up to maintain costs by department.

Under the new system, computer control was established for each purchase order written by the hospital's purchasing department. For each item purchased, the orders indicate whether the articles will be maintained in general stores inventory or identify the operating department that will take immediate delivery.

After orders are issued, information on the purchased items is punched into cards and entered into disk files maintained by the computer. The NCR Century 100 has two interchangeable disk packs with a total capacity of 8.4M characters.

The computer can interrelate data from these files for processing purposes and to produce analytical reports. Thus, for example, information on open purchase orders can be included with data on stocks on hand for complete status reporting.

As purchased items are received at the hospital, packing slips are sent to the data processing department. From these, cards are punched which when processed by the computer will remove the items from the purchase order file and place them in a record for unpaid inventory. In this file, pricing is based on purchase order information, which includes estimates of costs which cannot be pinpointed, such as shipping charges.

This unpaid inventory file functions as a valuable accounting expedient, Cooper said. It makes it possible to deliver the articles to general stores or the using departments immediately.

This file shows the articles as being in stock in the hospital, but the unpaid file also acts as an accounting suspense file. Costs are carried on an estimated basis until they are known specifically. This facilitates implementation of an actual cost accounting system.

Costs can be allocated to proper accounts exactly when invoices are received. The actual books of account of the hospital carry no estimates or material cost variances.

When invoices are received, cards are punched with actual costs. When these are processed, items are removed from the unpaid inventory file and allocated in one of two ways:

- Items being charged to specific departments are allocated to the appropriate general ledger cost accounts.
- Items being retained in general stores inventories are charged as actual costs to this inventory account. Then, when these items are issued from inventory stocks, they will be charged to the departments at average costs based on actual prices.

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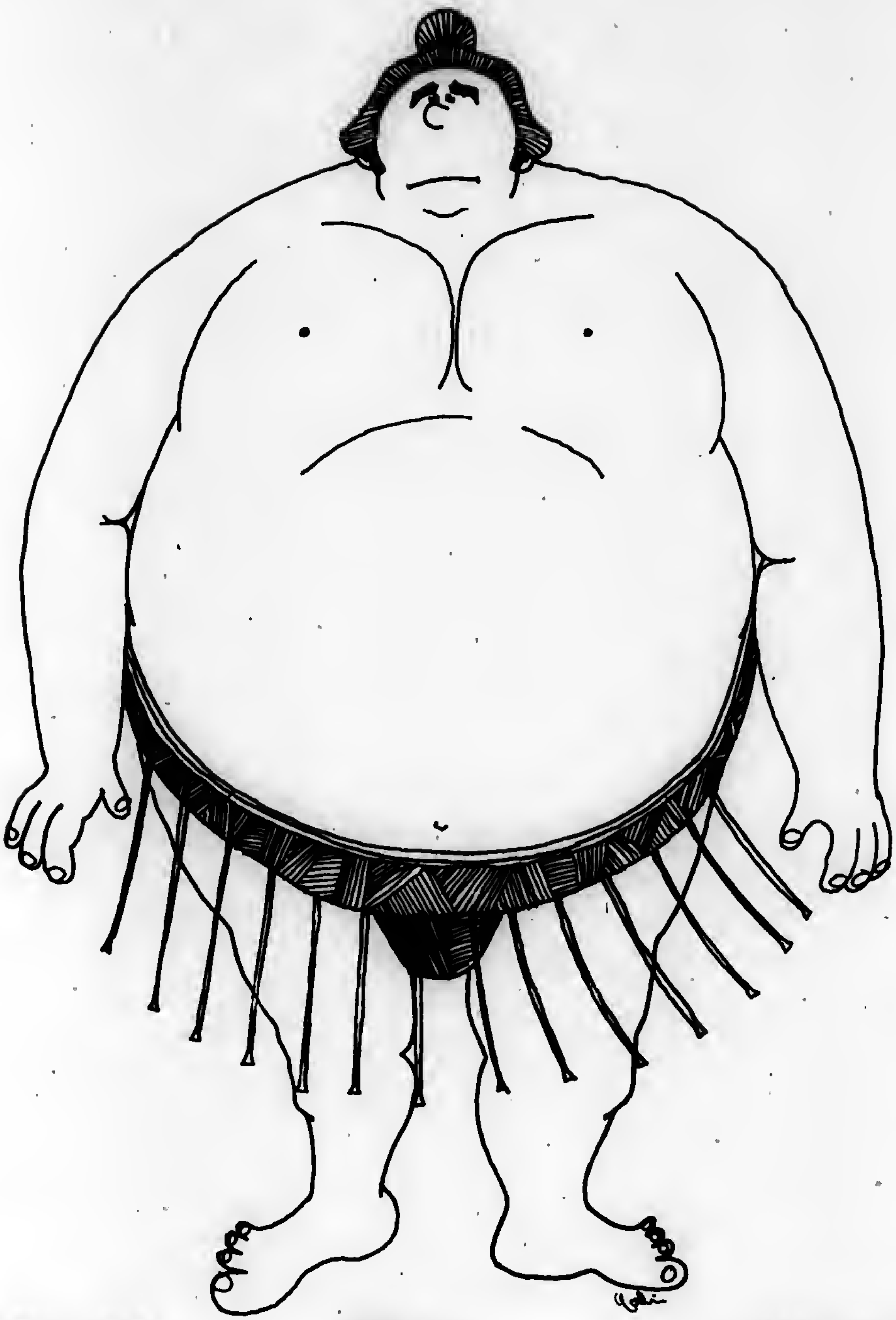

New heavyweight in the Japanese Computer market:

And in English, it means "Computer Weekly." Whatever you call it, *Computerworld*'s new sister publication is an excellent vehicle for selling EDP products and services in the large and expanding Japanese EDP market. Here are some of the reasons why:

- **Shukan Computer** is a joint venture of *Computerworld* and Dempa Publications, the leading Japanese publisher of electronics information services. With the combined resources of the two companies, Shukan has the largest news gathering organization of its kind in the world.
- **Shukan Computer** is the only newsweekly for the fast-growing Japanese computer community.
- Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.
- Shukan lets you in on the action in the world's fastest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 11,237 in 1971; 11,000 minicomputers installed, up from 1,670 in 1971; and 3,000 industrial systems installed, up from 1,086 in 1971.
- Is this growth likely? The latest census of general-purpose systems revealed that there were 14,806 systems installed as of September 1972, a one-year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 23.1%, respectively. And more than 50% of these new systems were American made.
- It is true that there are import restrictions. But Japanese vendors and users can get permission to import almost anything they want and need. As a result, 1972 imports were over $360 million.
- Advertising in Shukan is easy. With *Computerworld* representatives across the U.S. to assist you, it's easy to place space in Shukan. For a small fee, we can translate and type-set your ad from English to Japanese. To get more facts, just send in the coupon.

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CI Notes

Univac Lands Army Award

WASHINGTON, D.C. – Univac has landed a contract valued at $28.9 million from the General Services Administration, on behalf of the U.S. Army, to supply computers and peripheral equipment for the Army's message switching network.

Under the contract, Univac will supply 9400s and peripherals for 27 automated communications message processing systems comprising the Army's Automated Telecommunications Center.

Telex-IBM Transcripts Available

ENCINO, Calif. – Wonder what's happening at the Telex/IBM trial, but haven't got time to sit through it? The Computer Industry Association has set up a copying and distribution service which supplies documents and/or transcripts filed in the case daily.

Transcripts are running about 200 pages each day and sell for 20 cent/page. Trial subscriptions are available and can include a choice of documents or transcripts or both. Copies of individual documents are not available. CIA is at 16255 Ventura Blvd, 91316.

GTE to Build SSA Network

WHITE PLAINS, N.Y. – GTE Information Systems Inc. has landed a five-year, $18 million contract from the Social Security Administration.

The award is for the development and installation of a nationwide data communications network for handling monthly security income payments.

Inforex Gets Soviet Order

BURLINGTON, Mass. – Inforex has received an order valued at over $300,000 for key-to-disk equipment from the Soviet Institute of Automation and Control Technology in Moscow.

The majority of the order is scheduled for second quarter 1973 delivery.

The sale is a result of a marketing agreement for Communist countries with Siemens AG of West Germany.

Supershorts

Okidata Corp. has announced its first export to Japan of American-made peripherals: Applied Magnetics Corp. disk systems.

– – –

Spefry Remington has increased by $546,505 its order for Redactron Corp. editing typewriter equipment to be delivered between August and December 1973.

– – –

Saah-Scania has signed a marketing agreement with Metrimpex, the Hungarian Foreign Trade Organization. The pack designates Saab-Scania as a main supplier of DP equipment to Hungary and provides for cooperative ventures with Hungarian firms.

60% Replacements

Report Shows Shipments Up 24% in '72

By Molly Upton
Of the CW Staff

NEWTON, Mass. – Shipments by U.S.-based computer manufacturers grew almost 24% to reach $8.9 billion in 1972, but a large part of the volume was attributable to replacement shipments, according to International Data Corp.'s *EDP Industry Report.*

Up to 60% of U.S. shipments in 1972 were for replacements, or as IBM calls the phenomenon, "discontinuances," the market research firm said. On a worldwide basis, replacements accounted for 50% of shipments, the report noted.

Although the large number of replacements boosts shipment levels, the report noted, the "cost of manufacturing is not offset by additional rentals.

"The customer benefits, but the manufacturer doesn't add nearly so much new revenue-producing capacity for his expended buck. And in massive doses, it hurts," the report said.

But the retirements phenomenon has peaked, and IDC projected it will decline to about 40% of shipments by the end of 1973, and hold relatively even in the range of 35% to 40% of shipments during the next five years.

Revenues Rose

Revenues of U.S.-based computer manufacturers rose almost 17% during the year to $14.5 billion, which is a large improvement from the 10% growth recorded in 1969, '70 and '71, although still below the 30% days of the late sixties, the report observed.

IDC looks for the revenue growth rate to continue, as users begin budgeting for long-range teleprocessing applications.

Total revenues of U.S.-based firms could double to $28.6 billion by 1977, with the impetus from the trend to teleprocessing, the report said.

Revenues to U.S.-based firms from general-purpose computers will almost double by 1977, from $9.7 billion in 1972 to $18.4 billion, while revenues from dedicated computers will triple, going from $560 million to $1.7 billion in 1977, IDC said.

Revenues from independent peripherals, based on shipments rather than OEM sales, are projected to more than double, from $780 million to $1.75 billion, according to the firm.

In the DP supplies section, revenues will grow from $1.2 billion in 1972 to $1.8 billion in 1977, IDC said.

Batch and on-line services are expected to leap from $1.8 billion in 1972 to $4.1 billion in 1977, while contract and packaged software revenues are expected to grow from $410 million to $860 million over the next five years, according to the report.

IBM Share Declines

Although IBM led, as usual, in worldwide shipments among U.S.-based manufacturers, its market share declined, according to IDC.

IBM accounted for 65.2% of 1972 shipments, or $5.8 billion, holding a 63.5% share of the installed base at year-end 1972, for a total of $28.5 billion.

During 1972, the industry averaged a 10% increase in its installed based, whereas IBM's 1972 rise in installed base was only 6%, IDC said.

In addition, a $380 million buying splurge by third-party lessors of IBM 370s helped decrease IBM's U.S. rental vs. sales base to the 50% level, down 5% from last year, the report noted.

The plug-compatible segment of the market shipped $410 million in equipment, or 4.6% of total shipments during the year, and showed a 33% increase in installed base by the end of 1972. This sector now has installed equipment valued at $1.2 billion, or 2.6% of the $44.8 billion total, IDC said.

How Others Fared

Honeywell shipments, valued at $745 million, accounted for 8.4% of the total 1972 shipments by U.S.-based manufacturers.

With a 14% rise in its installed base over 1971, HIS had $4.5 billion of equipment in use, or 10% of the total installed base, the report said.

Univac/RCA placed third in terms of installed worldwide base, IDC said, having shipped $485 million or 5.5% of total shipments. The installed base totaled $3.4 billion at year-end or 7.6% of the total, showing a 7% rise over the firm's 1971 position.

Burroughs shipped $425 million of equipment, accounting for 4.8% of shipments, and at year-end 1972 held 4.5% or $2 billion of the installed base, which is a 15% rise over its 1971 position, according to IDC.

Control Data Corp. accounted for 2.9% of total shipments, for $255 million and held 4.2% or $1.8 billion of the base, also showing a 15% gain from last year's base, the report said.

NCR had 2.4% of the total installed base, and showed shipments of $215 million or 2.4% of the year's shipments.

Digital Equipment Corp. scored a 46% change in its installed base during the year, IDC said, with 1.5% of the total base by year-end 1972 or $690 million.

Shipments by DEC during the year totaled $195 million or 2.2% of the total.

Others, which includes mini-makers, shipped $300 million during the year, accounting for 3.4% of total shipments. Their market share totaled 3.7%, an increase of 25%, for a total hase of $1.6 billion, according to the report.

European Terminal Market Ripe For Rapid Growth, Study Finds

LONDON – The number of terminals installed in Europe in the next four years will show a sharp upward trend, according to a report prepared by Logica Ltd., a British market research firm.

By 1977, there will be more than 300,000 general-purpose terminals in use in Western Europe, almost four times the number installed now. In Eastern Europe, the number will grow by a factor of nine, the report indicated.

The UK, Germany and France together account for 75% of the terminals now used on-line in Europe, according to the report entitled "The European Market for Computer Terminals 1973-1976."

The report cited the UK as having more terminals installed than any other European nation, hut predicted the higher growth rates of France and Germany will have compensated for this by 1977.

The predominance of types of terminals vary from country to country, the report said. In the UK and France, there are about twice as many keyboard printers as CRTs, while in Germany there are more CRTs.

France has more remote-batch terminals than Germany, and the UK leads France and Germany in the use of accounting and computing terminals, the study showed.

The report also investigated the preference of certain industry segments for types of terminals, and found that transportation, distribution and finance account for about half the CRTs installed in Europe.

These sectors, as well as service bureaus and central governments, use about half of the keyboard printers installed.

The independents seem to have more of a market in the area of keyboard printers than in CRTs, remote-batch and accounting terminals, the study indicated.

For example, only one-third of the keyboard printers installed in Europe are supplied by the mainframe computer manufacturers, while mainframers supply between two-thirds and three-quarters of the CRTs, remote-batch and accounting units in use.

The survey found the European market rebounding from the recent recession, with the present installation rate higher than was anticipated in 1971. However, it noted, the number of terminals installed is 10% less than had been forecast 18 months ago.

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Orders & Installations

The city of Baton Rouge, La., has ordered an NCR Century 251 multiprogramming system for use in a law enforcement program and general accounting.

Gold Circle Discount Store, Danbury, Conn., has installed a Pitney Bowes-Alpex Spice electronic register system.

Folcy's, a division of Federated Department Stores in Houston, Texas, has ordered 797 NCR 280 retail data terminals and associated equipment including three NCR 725 computers.

Engelhard Minerals & Chemicals Corp., Cherry Hill, N.J., has ordered a key-to-disk system from Logic Corp.

H.J. Wilson, catalog store chain, has installed 119 Pitney Bowes-Alpex Spice registers in its nine stores.

Tube Turns Corp., Louisville, Ky., has Implemented a Data Technology Industries' Cobol compiler.

The National Shawmut Bank of Boston has purchased an Automated Tape Library Accounting System (Atlas) from GTE Data Services Inc.

St. Paul Computer Center, Baltimore, Md., has ordered a Univac 9480 for use in hospital patient accounting and other business operations.

The Lutheran Hospital Society of Southern California has ordered a Univac 1106 system to form the base of an information system serving seven affiliated hospitals.

Mohr Distributors, operators of Mohr-Value general merchandise stores in Missouri and Illinois, have ordered over 100 NCR 280 retail data terminals and 12 NCR 723 data collectors to convert all its stores to electronic point-of-sale terminals.

Lutheran Mutual Life Insurance Company, Waverly, Iowa, has purchased a TCC Life/70 total information service.

Report Advises Banks to 'Go Slow' On Buying Automated Teller Units

NEW YORK – Banks have been advised to carefully evaluate the costs and benefits of automated teller (AT) systems, in a report issued by management consultants Coloney, Cannon, Main & Pursell, Inc. (CCMP) here.

The firm recommended delay and study by banks. It predicted that machine costs will likely decline by as much as 30% within two years; that second generation machines will make obsolete today's AT systems; security problems will be solved within the next few years; and regulatory constraints on using ATs off-premise may be relaxed.

Although manufacturers have estimated the automated teller market to reach the range of 10,000 to 100,000 units by 1980 with a value of from $250 million to over $1 billion, the report cautioned that "few banks will be able to justify automated tellers on economic grounds alone and a large majority may not be able to justify them at all."

The firm called the automated teller marketing rationale "almost as hypnotic to bankers as to the manufacturers themselves."

'320 New Customers'

CCMP estimated that "to cover the first year's operating cost of $16,000 for one off-line automated teller unit, the unit would have to draw $800,000 in deposits or about 320 new customers."

For banks installing numerous AT units, the report noted: "The first-year operating costs for 10 on-line machines – $225,000 – roughly equals one fifth of net operating income for the average $100 million bank and easily exceeds total annual operating costs of three average branches in rented quarters.

"Although prevailing opinion concerning ATs is both noisy and optimistic, we firmly believe it is largely unwarranted, at least for the next few years, and most banks that are lured into large-scale machine purchases will find that considerable risk accompanies the decision to buy," observed senior consultant Brooks T. Chamberlin.

Need Answered?

"To date we have seen no firm (much less compelling) evidence that these machines actually answer a need, that the consumer population as a whole will accept them or use them enough to cover the substantial investment required to purchase and operate them," the report said.

However, the firm sees success for ATs used in selected situations such as providing services in areas that cannot support a full branch or in servicing specific customer groups such as travelers at airports or workers in industrial parks.

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Dennis G. Sisco—Marketing Manager

Five British Firms Planning NCC Exhibits

NEW YORK – The British are coming – to the National Computer Conference (NCC) here June 4-8.

Five British firms, as well as the Business Equipment Trade Association, will be exhibiting at the Coliseum. The British exhibit is jointly sponsored by the trade group and the government Department of Trade and Industry.

The firms include: Altergo Ltd., Computer Cooperatives Ltd., Computer Technology Ltd., Mastertape (Magnetic) Ltd. and Process Peripherals.

The exhibit will feature data storage, visual display units, data transmission and other peripherals units.

"The British computer industry is now growing vigorously again and in an increasingly international environment expects to make serious sales in the U.S. market – particularly in specialist sectors of the market where Britain has some very competitive products to offer," a spokesman for the trade association commented.

Study of Electronic Funds Transfer Systems Underway

CHICAGO – A study to determine the near-term business opportunities in Electronic Funds Transfer Systems (EFTS), supplemented by an examination of the end-user market and its impact on information systems suppliers, is being conducted by Booz, Allen & Hamilton.

"The ultimate success of the information systems market in EFTS is directly related to whether there is an end-user market for bank EFTS services," a spokesman said.

The study will investigate five areas: corporate funds transfer, consumer funds transfer, point of sale, preauthorized payment and direct payroll deposit.

STC Explains Promptness In Announcing New Unit

By Molly Upton
Of the CW Staff

LOUISVILLE, Colo. – Within a week of IBM's announcement of its Model 3420 high-density tape drive, Storage Technology Inc. indicated it too had designed a 6,250 bit/in. tape unit.

The alacrity with which STC made its announcement left some industry observers wondering how STC could be so prompt.

The answer, according to E.T. Ringkjob, director of advanced development at STC, was that STC already had solved many of the technical problems of designing a 3,200 bit/in. subsystem, and had been working on a 6,400 bit/in. unit since learning from "customers and customer prospects that IBM was preannouncing a new IBM high-density (6,400 bit/in.) tape subsystem to them."

In April 1972, STC announced the ST3500/3800 which used densities of 3,200 bit/in. with a data transfer rate of up to 800 kbit/sec.

'Modified Development'

During the summer and fall, STC learned of IBM's plans to bring out a 6,400 bit/in. unit, so STC "modified its development objectives of the high-density program from 3,200 bit/in. to 6,400 bit/in.," Ringkjob said.

"When IBM finally announced 6,250 bit/in. on March 7, 1973, STC had solved all the technical problems pertaining to the higher density and was ready to announce its own 6,250 bit/in. subsystem," he said.

Some of the key techical problems which had to be solved, according to Ringkjob, were:

- "The high accelerations and decelerations required with a 0.3 in. gap. To achieve this without using the 'backhitch,' a complete redesign of the capstan system was required using many new components. Redesign of the tape path was also required.
- "The 0.3 in. gap and potential head contamination. This demanded a redesign of the head. Specifically, the read gap to write gap spacing and the head contour were changed.
- "The high number of flux change/in., up to 11,000 flux change/in. This required redesigning all the read and write electronics.
- "High susceptibility to contamination problems. This is because the head-to-tape separation is much more critical with 6,250 bit/in. and required a redesign of the tape cleaning mechanism.

Although STC does not yet have the definition of IBM's 6,250 bit/in. format, "which obviously will become the de facto industry standard," the firm has designed its unit to "allow for fast modification of the format" to conform with IBM's once it becomes known, Ringkjob said.

Some of the steps used to allow for fast future modifications in the format were, according to STC:

- "Using a read-only memory to perform the group translation in the group-coded recording. To change the translation operation only requires replacing the ROM chips.
- "Designing a generalized data flow in the skew buffer and error-correction area. This makes it adaptable to any error-correcting scheme with minor modifications in the control circuitry."

Honeywell Stockholder Bid To Nominate Thieu Fails

MINNEAPOLIS, Minn. – A resolution calling for Honeywell to get out some of its military business and a motion to elect Nguyen Van Thieu, president of South Vietnam, to the board of directors were defeated at the Honeywell annual meeting.

A proxy statement recommending that the board of directors propose an amendment to the bylaws providing that the "company shall not develop or produce antipersonnel weapons," introduced by the national Clergy and Laity Concerned (Calc), was defeated by a vote of 15.6 million votes to 224,795 votes.

Thieu was nominated from the floor at the meeting by Paula Giese of Minneapolis, who said Honeywell had "served Thieu's interests in Southeast Asia and its weapons have helped prop him up."

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Univac Credited In Record Year At Sperry Rand

NEW YORK – The Univac Division was credited with playing a large role in helping Sperry Rand achieve record earnings and revenues for the year and quarter ended March 31.

"Sperry Univac computer systems continued as the largest and fastest growing source of revenues, income and new orders for Sperry," Chairman J. Paul Lyet said.

Earnings Up 49%

For the year, Sperry Rand earnings rose 48% to $90.1 million or $2.62 a share compared with $60.8 million or $1.77 a share in 1972.

Revenues climbed 22% to $2.2 billion from $1.8 billion a year ago.

In the quarter, earnings reached $29.2 million or 85 cents a share compared with a restated $20 million or 58 cents a share in the year-ago period.

Revenues totaled $635 million compared with $549.8 million in the 1972 period.

Sperry's effort to maintain its position as a leading government supplier has paid off in accelerated levels of revenue, profits and orders including several recent large commercial-type computer contracts, Lyet said.

New Orders

New orders for computer systems from domestic commercial customers increased almost 50%, the firm said, adding that Sperry Univac's worldwide installed computer base now exceeds $5 billion.

Lyet also cited "significant improvements in the company's operations as well as broadly stronger demand for Sperry's product lines especially in the domestic and international commercial markets as being most responsible for the record results."

Strong performances were turned in by other product areas such as the New Holland agricultural equipment, Sperry Vickers fluid power systems, Sperry guidance and control systems, and Sperry Remington consumer products, the firm said.

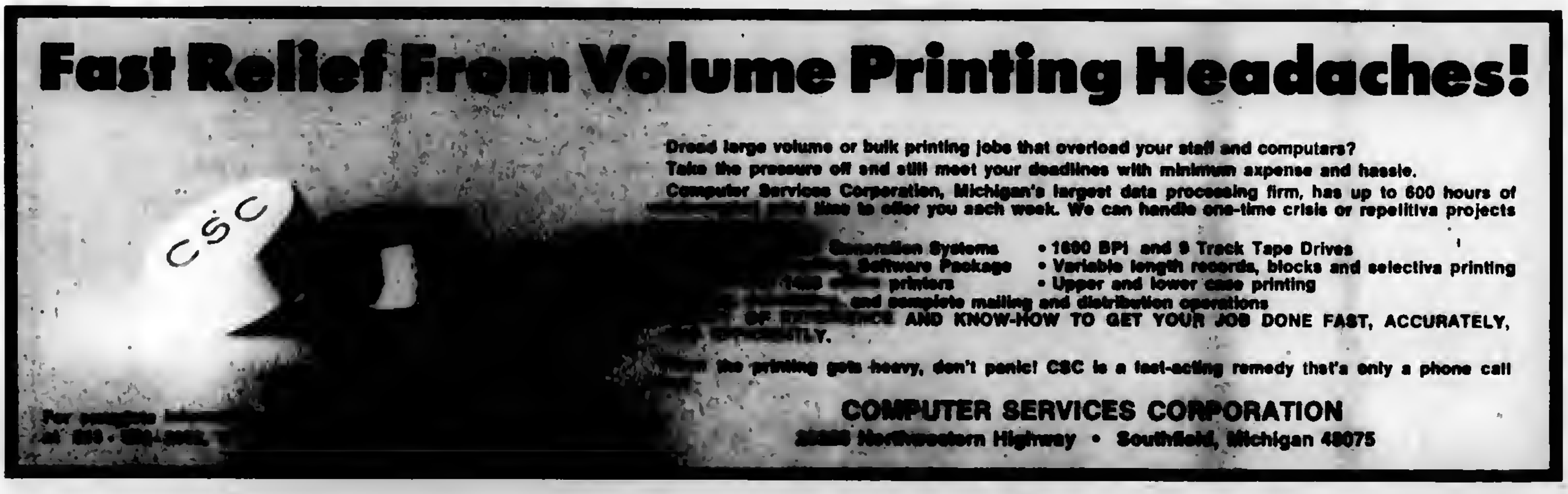
Decision Data Cuts Loss

HORSHAM, Pa. – Decision Data Corp., manufacturer of 80- and 96-column card equipment, continued to cut its losses in the first quarter ended March 3.

Loss for the period totaled $396,000 or 13 cents a share compared with $548,000 or 26 cents a share in the year-ago period. The loss in the immediately preceding period was $570,000.

Revenues soared to $3.4 million from $117,000 a year ago.

Shipments were also up in the quarter to 1,080 units compared with 804 units in the preceding quarter.



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DEC Third Quarter Earnings Rise 68%

MAYNARD, Mass. – Digital Equipment Corp. managed a 68% increase in earnings on a 41% rise in revenues during the third quarter ended March 31.

Demand was good across the board for small-, medium- and large-scale systems, DEC said.

In the quarter, earnings reached $6.2 million or 56 cents a share compared with $3.7 million or 36 cents a share in the year-ago period.

Revenues rose to $67.4 million from $47.7 million in the same 1972 quarter.

Nine Months

For the nine months, earnings totaled $14.2 million or $1.31 a share compared with $10.2 million or $1 a share in the comparable 1972 period.

Revenues were $179.2 million, up from $131.1 million in the 1972 period.

The 1973 earnings figures include about 5 cents a share attributable to currency revaluations, DEC said.

The firm has expanded its work force, principally in the manufacturing and field service segments, and employment at the end of the quarter reached about 11,800 people, the firm said.

Beehive Posts Earnings Gain In Six Months

SALT LAKE CITY, Utah – Record quarterly revenues sparked continuing increases in earnings for Beehive Medical Electronics, Inc.

In the six months period ended March 31, Beehive earned $204,314 or 22 cents a share compared with $24,302 or 3 cents a share in the year-ago period. Of the total per-share earnings for the half year, a record 12 cents a share was generated in the second quarter alone, according to President Warren B. Clifford.

Revenues totaled $1.5 million, up 92% from $789,550 for the same period last year.

This represents the sixth straight profitable quarter for the company and a continuance of an upward earnings trend following the first full profitable year in fiscal 1972, Clifford said.

Backlog as of March 31 totaled about $3.7 million, he added.

Tally Reports First Quarter Loss; Bank Extends Credit Line One Month

KENT, Wash. – Tally Corp. gained one month in which to search out a new source of short-term credit, when the National Bank of Commerce, Seattle, extended to May 31 its termination date of short-term credit to the peripherals manufacturer.

Tally President James E. Navarre told stockholders at the annual meeting that the firm's ability to continue operations depends on obtaining additional financing.

The firm sustained a loss in the first quarter ended April 1 of $335,175 compared with a loss of $222,022 in the same quarter a year ago.

Revenues rose to $3.1 million from $2.8 million in the same 1972 quarter.

Navarre said he expects Tally will be profitable in the second quarter if "it receives no significant customer cancellations resulting from the adverse announcement about financing; if it incurs no major work stoppages through the failure of vendors to supply parts; if it is not required to reduce personnel; and if it obtains additional financing in the near future."

Tally has intensified efforts to reduce operating expenses by lowering overhead levels, consolidating certain operations and selling a money-losing subsidiary . . . ," he said.

Tally recently sold its EDP Division to Standard Logic Inc. The division manufactures disk memory units.

Nickels & Dimes

Data 100 has completed the first portion of a financing involving the private sale of 10-year 8% subordinated convertible debentures, which amounted to $7.9 million. The second portion is expected to amount to $2- to $3-million, the company said. The financing will enable the firm to extend its bank lines of credit and eliminate a public financing that had been scheduled for later in 1973, a spokesman noted.

$$$

In April TEC paid its first semiannual dividend, which is in addition to the firm's 10 consecutive annual dividends.

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Foxboro President Earle W. Pitt told shareholders he sees shipments becoming increasingly heavy in the second quarter and half, which would support his earlier forecast of $165 million in sales.

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Applied Data Research had its second consecutive quarter in which sales topped $1 million.

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Name game: Terminal Equipment is now Tycom. Signetics Memory Systems, subsidiary of Corning Glass Works, now calls itself Scientific Micro Systems. It recently sold its semiconductor plant to Signetics, another Corning subsidiary, and will concentrate on the application of microelectronics to end user products.

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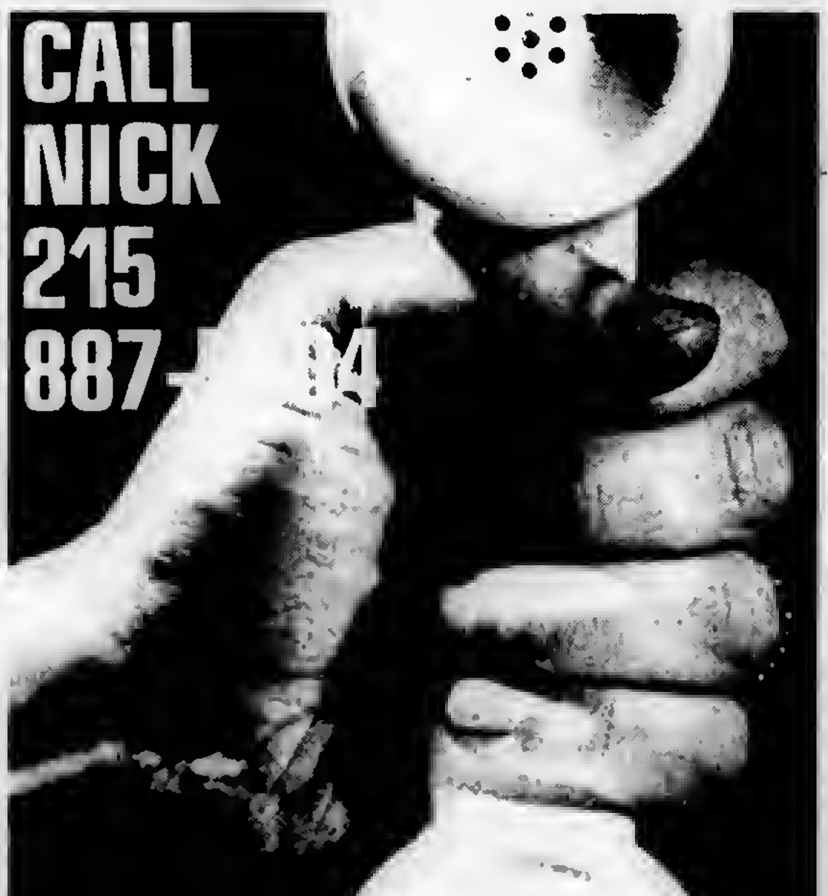

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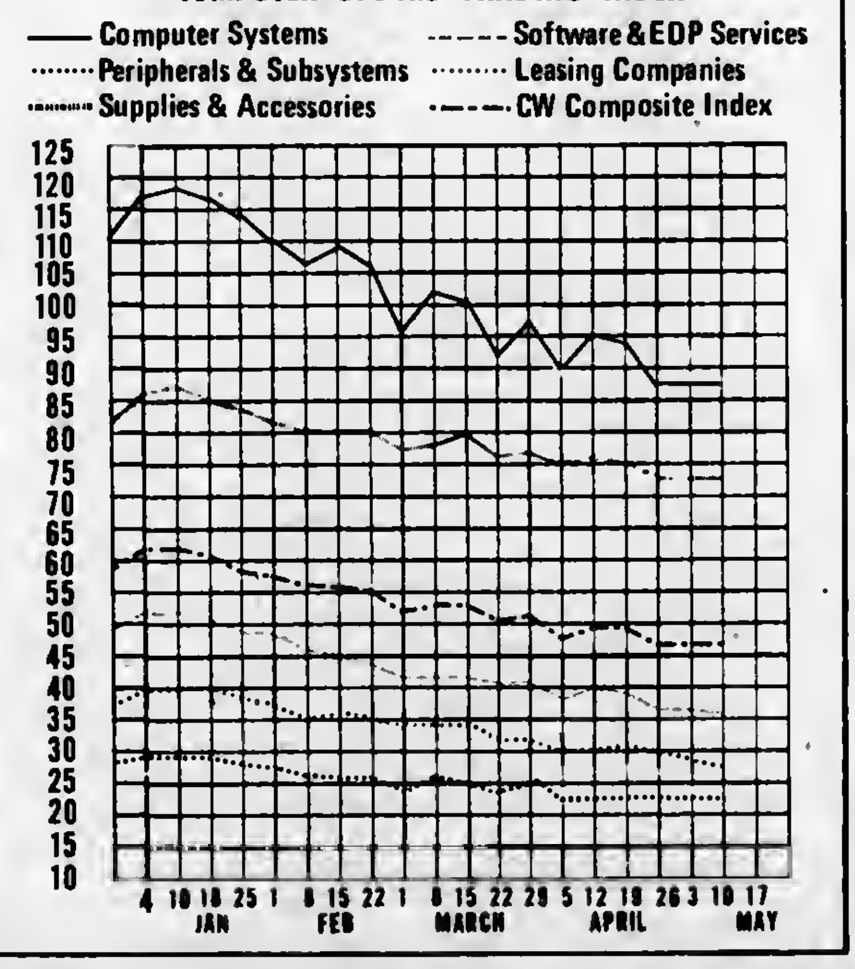
Cambridge, Mass 02139

CLOSING PRICES THURSDAY, MAY 10, 1973

EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 10 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 2	1 1/4	- 1/4	-16.6
A	APPLIED DATA RES.	3- 4	2 3/4	- 1/4	-8.3
O	APPLIED LOGIC	2- 3	1 5/8	- 1/8	-7.1
N	AUTOMATIC DATA PROC	65- 94	73 3/4	- 7/8	-1.1
O	BRANDON APPLIED SYST	1- 1	5/8	0	0.0
O	COMPUTER DIMENSIONS	2- 5	4 1/4	- 1/4	-5.5
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	2- 5	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	3 1/8	- 3/8	-10.7
O	COMPUTER TASK GROUP	1- 2	1 3/8	+ 3/8	+37.5
O	COMPUTER TECHNOLOGY	2- 3	1 3/4	- 1/8	-6.6
O	COMPUTER USAGE	5- 9	5 3/4	0	0.0
O	COMRESS	1- 2	1/4	- 1/8	-33.3
O	COMSHARE	5- 9	5 3/8	- 1/8	-2.2
N	CORDURA CORP	6- 15	7 3/4	+ 3/8	+5.0
O	DATATAB	3- 4	2 1/4	0	0.0
O	EDP RESOURCES	1- 3	1 1/8	- 1/8	-10.0
A	ELECT COMP PROG	1- 2	1 1/4	0	0.0
N	ELECTRONIC DATA SYS.	35- 56	39 1/8	+1 7/8	+5.0
O	INFORMATICS	2- 6	2 3/4	+ 1/8	+4.7
O	I.O.A. DATA CORP	1- 1	3/4	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 3/4	- 1/8	-1.8
O	LOGICON	4- 7	4 1/4	- 3/8	-8.1
A	MANAGEMENT DATA	2- 5	2	0	0.0
O	NATIONAL CSS INC	8- 41	25	-1	-3.8
O	NATIONAL INFO SRVCS	1- 2	1 1/8	0	0.0
P	ON LINE SYSTEMS INC	13- 17	14 3/4	+2	+15.6
N	PLANNING RESEARCH	3- 7	3 1/2	- 1/4	-6.6
O	PROGRAMMING METHODS	22- 24	23 1/4	+1 1/4	+5.6
O	PROGRAMMING & SYS	1- 1	7/8	0	0.0
O	RAPIDATA INC	13- 24	12 3/4	- 1/4	-1.9
O	SCIENTIFIC COMPUTERS	1- 2	1	0	0.0
O	SIMPLICITY COMPUTER	2- 4	3 1/2	+ 3/8	+12.0
O	THS COMPUTER CENTERS	3- 4	2 3/4	- 1/8	-4.3
O	TCC INC	1- 1	1/2	0	0.0
O	TYMSHARE INC	7- 12	7 5/8	+ 5/8	+8.9
O	UNITED DATA CENTER	5- 6	4 1/4	- 1/4	-5.5
N	UNIVERSITY COMPUTING	6- 11	6 1/8	- 3/4	-10.9
A	URS SYSTEMS	4- 8	4 3/4	+ 1/8	+2.7
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	16- 34	16 1/8	-2 1/4	-12.2
O	ADVANCED MEMORY SYS	8- 23	8 1/4	-5	-37.7
N	AMPEX CORP	4- 7	4 1/2	- 1/4	-5.2
O	ANDERSON JACOBSON	4- 6	4 1/4	- 3/4	-15.0
O	BEEHIVE MEDICAL ELEC	6- 10	7 1/2	-1	-11.7
A	HOLT,BERANEK & NEW	8- 12	8	+ 1/4	+3.2
N	BUNKER-RAMO	6- 18	14 5/8	+ 7/8	+6.3
A	CALCOMP	9- 13	9	- 1/2	-5.2
O	CAMBRIDGE MEMORIES	10- 15	11	+1 1/2	+15.7
O	CENTRONICS DATA COMP	13- 28	22 1/4	0	0.0
O	CODEX CORP	11- 19	13	+1 1/2	+13.0
O	COGNITRONICS	1- 3	2	0	0.0
O	COMPUTER COMMUN.	2- 4	1 5/8	- 1/8	-7.1
A	COMPUTER EQUIPMENT	2- 3	2 7/8	+ 3/8	+15.0
O	COMPUTER MACHINERY	8- 13	8 1/4	0	0.0
O	COMPUTER TRANSCEIVER	2- 6	1 7/8	- 1/8	-6.2
A	COMPUTEST	3- 5	4 7/8	+ 1/8	+2.6
N	CONRAC CORP	18- 32	18 7/8	- 3/8	-1.9
A	DATA PRODUCTS CORP	3- 4	2 3/4	- 1/4	-8.3
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 5/8	+ 1/8	+5.0
O	DI/AN CONTROLS	2- 4	2 3/8	0	0.0
N	ELECTRONIC M & M	3- 6	4	- 1/4	-5.8
O	FABRI-TEK	3- 5	3	- 1/4	-7.6
O	GENERAL COMPUTER SYS	6- 9	5 3/4	+ 1/4	+4.5
N	GENERAL ELECTRIC	59- 76	61	+ 7/8	+1.4
N	HAZELTINE CORP	7- 9	7 1/8	+ 1/8	+1.7
O	INFOREX INC	12- 23	15 1/2	+ 1/4	+1.6
O	INFORMATION DISPLAYS	1- 2	3/4	- 1/4	-25.0
O	INFORMATION INTL INC	11- 15	11	0	0.0
A	LUNDY ELECTRONICS	4- 9	4 7/8	+ 1/8	+2.6
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	17- 28	19 3/4	+1	+5.3
N	MOHAWK DATA SCI	5- 13	4 7/8	+ 1/8	+2.6
O	ODEC COMPUTER SYST.	3- 6	3 1/4	0	0.0
O	OPTICAL SCANNING	2- 7	3 3/4	+ 1/4	+7.1
O	PERTEC CORP	5- 8	6 3/4	+1 1/2	+28.5
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	4- 9	4 1/2	- 1/2	-10.0
O	PRECISION INST.	2- 6	3 1/2	0	0.0
O	RECOGNITION EQUIP	4- 8	5 1/4	- 1/4	-4.5
N	SANDERS ASSOCIATES	8- 18	8 5/8	+ 1/8	+1.4
O	SCAN DATA	2- 6	2	- 1/8	-5.8
O	STORAGE TECHNOLOGY	17- 34	17	-2 1/2	-12.8
O	SYCOR INC	9- 14	13 1/2	+1 3/4	+14.8
O	TALLY CORP.	3- 14	3 1/2	- 1/4	-6.6
N	TEKTRONIX INC	34- 53	36 3/4	+1 3/4	+5.0
N	TELEX	4- 6	3 3/4	- 1/8	-3.2
O	WILTEK INC	13- 18	11 3/4	- 1/4	-2.0
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	6 3/4	- 1/2	-6.8
A	BARRY WRIGHT	8- 13	8	- 1/4	-3.0
A	DATA DOCUMENTS	18- 22	20	+ 1/2	+2.5
O	DUPLEX PRODUCTS INC	8- 10	7 3/4	0	0.0
N	ENNIS BUS. FORMS	6- 8	5 3/4	0	0.0
O	GRAHAM MAGNETICS	13- 20	13 3/4	+1 1/8	+8.9
O	GRAPHIC CONTROLS	10- 12	10 3/4	+ 7/8	+8.8
N	3M COMPANY	78- 89	83	+3 1/4	+4.0
O	MOORE CORP LTD	55- 60	57 7/8	+ 5/8	+1.0
N	NASHUA CORP	42- 58	48 1/4	+1 1/4	+2.6
O	REYNOLDS & REYNOLDS	43- 51	44	0	0.0
O	STANDARD REGISTER	16- 20	17	- 1/2	-2.8
O	TAB PRODUCTS CO	14- 23	12 1/2	-1 1/2	-10.7
N	UARCO	19- 23	18 3/4	- 1/8	-0.6
A	WABASH MAGNETICS	6- 7	5 3/4	- 1/4	-4.1
N	WALLACE BUS FORMS	20- 26	20 1/4	- 1/2	-2.4
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	215-245	222 1/8	-3 3/4	-1.6
N	COLLINS RADIO	18- 26	20 1/4	+2 1/4	+12.5
N	CONTROL DATA CORP	42- 62	45 5/8	-1 7/8	-3.9
O	DATA GENERAL CORP	32-131	40 1/4	+2 3/4	+7.3
O	DIGITAL COMP CONTROL	3- 6	3	+ 1/8	+4.3
N	DIGITAL EQUIPMENT	73-105	86 3/8	+3 3/8	+4.0
N	ELECTRONIC ASSOC.	5- 9	5 1/8	- 1/8	-2.3
A	ELECTRONIC ENGINEER.	8- 11	7 5/8	- 1/8	-1.6
N	FOXBORO	24- 32	25 5/8	+1 5/8	+6.7
O	GENERAL AUTOMATION	26- 55	36	+4 1/2	+14.2
O	GRI COMPUTER CORP	1- 3	1 1/4	+ 1/8	+11.1
N	HEWLETT-PACKARD CO	74- 95	79 1/8	+1 1/8	+1.4
N	HONEYWELL INC	105-139	109 5/8	- 7/8	-0.7
N	IBM	405-457	410 1/2	-13 1/2	-3.1
O	INTERDATA INC	7- 13	10 3/4	+ 1/2	+4.8
N	MEMOREX	6- 19	6 1/8	- 7/8	-12.5
O	MICRODATA CORP	6- 10	5 3/8	- 3/4	-12.2
N	NCR	27- 35	33 5/8	- 3/8	-1.1
N	RAYTHEON CO	26- 34	28	+ 1/8	+0.4
N	SPERRY RAND	38- 50	40 3/4	- 1/8	-0.3
A	SYSTEMS ENG. LABS	4- 8	3 5/8	- 1/4	-6.4
N	VARIAN ASSOCIATES	13- 20	13 1/8	0	0.0
N	WANG LABS.	17- 34	17	+ 1/8	+0.7
N	XEROX CORP	141-169	154 3/4	+2	+1.3
	LEASING COMPANIES				
A	BOOTHE COMPUTER	2- 5	2 1/4	- 1/8	-5.2
O	BRESNAHAN COMP.	1- 2	2	0	0.0
O	COMDISCO INC	11- 17	9 1/2	- 1/2	-5.0
O	COMMERCE GROUP CORP	4- 4	3 3/4	0	0.0
O	COMPUTER EXCHANGE	1- 1	5/8	- 1/8	-16.6
A	COMPUTER INVSTRS GRP	3- 8	3 1/8	0	0.0
O	COMP. INSTALLATIONS	2- 2	1 5/8	- 3/8	-18.7
N	DPF INC	5- 9	6	- 1/2	-7.6
M	DATRONIC RENTAL	2- 3	2 1/4	- 1/8	-5.2
A	DCL INC	2- 3	2 1/4	- 1/4	-10.0
A	DEARBORN-STORM	15- 26	16 7/8	+ 1/2	+3.0
A	DPA. INC.	5- 8	5 1/8	0	0.0
A	GRANITE MGT	3- 6	3	+ 1/4	+9.0
A	GREYHOUND COMPUTER	4- 6	4 1/8	+ 1/8	+3.1
A	ITEL	5- 12	5 1/4	-1 1/8	-17.6
N	LEASCO CORP	9- 18	10 1/2	- 1/8	-1.1
O	LEASPAC CORP	2- 4	2 1/4	- 1/2	-18.1
O	LECTRO MGT INC	1- 2	3/4	0	0.0
A	ROCKWOOD COMPUTER	2- 3	1 5/8	+ 1/8	+8.3
O	SYSTEMS CAPITAL	7- 15	6 1/2	- 1/4	-3.7
N	U.S. LEASING	24- 36	24 3/4	- 1/4	-1.0

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

COMDISCO
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.26	$.10
Revenue	5,286,079	2,771,588
Earnings	285,011	98,501

ELECTRONIC MEMORIES & MAGNETICS
Three Months Ended March 31

	1973	a1972
Shr Ernd	$.27	.....
Revenue	24,743,000	$16,621,000
Disc Op	.....	(19,000)
Tax Cred	744,000	.....
Earnings	1,700,000	(635,000)

a-Restated.

NATIONAL CSS
Year Ended Feb. 28

	1973	1972
Shr Ernd	$1.37	$.52
Revenue	16,659,057	11,109,321
Tax Cred	707,000	261,000
Earnings	1,486,026	556,868
3 Mo Shr	.43	.17
Revenue	4,598,843	3,175,899
Tax Cred	232,985	83,859
Earnings	464,119	187,433

WANG LABORATORIES
Three Months Ended March 31

	1973	1972
Shr Ernd	$.26	$.22
Revenue	12,919,741	9,751,895
Earnings	1,042,051	889,598
9 Mo Shr	.44	.50
Revenue	32,994,081	26,110,703
Earnings	1,760,806	2,003,314

DATA CONTROL SYSTEMS
Three Months Ended Dec. 29

	a1972	1971
Shr Ernd	.....	$.05
Revenue	$1,130,000	1,529,000
Tax Cred	.....	15,000
Earnings	(19,000)	44,000

a-Revised.

DATA GENERAL
Three Months Ended March 17

	1973	a1972
bShr Ernd	$.17	$.10
Revenue	11,160,000	6,330,000
Earnings	1,396,000	768,000
6 Mo Shr	.32	.17
Revenue	20,987,000	11,646,000
Earnings	2,648,000	1,381,000

a-Restated. b-Adjusted to reflect a 200% stock dividend in March 1973.

MICRODATA
Three Months Ended Feb. 28

	1973	1972
Shr Ernd	$.17	$.11
Revenue	2,251,028	1,462,332
Tax Cred	136,000	71,934
Earnings	283,985	138,704
6 Mo Shr	.35	.20
Revenue	4,232,487	2,652,160
Tax Cred	245,000	124,696
Earnings	522,565	253,524

INTEL
Three Months Ended March 31

	1973	a1972
Shr Ernd	$.31	$.09
Revenue	9,557,000	3,913,000
Tax Cred	.....	114,000
Earnings	893,000	232,000

a-Restated to include operations of Microma, acquired in June 1972.

SYCOR
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.47	.....
Revenue	15,650,078	$8,353,833
Tax Cred	570,000	.....
Earnings	1,150,909	(1,415,855)

DPA
Three Months Ended Feb. 28

	1973	1972
Shr Ernd	$.19	$.13
Revenue	10,068,000	8,207,000
Earnings	564,000	323,000

APECO
Three Months Ended Feb. 28

	1973	1972
Shr Ernd	$.07	$.12
Revenue	30,984,200	27,278,300
Earnings	801,500	1,170,200

MOHAWK DATA SCIENCES
Nine Months Ended Jan. 31

	a1973	a1972
Shr Ernd	$.01	$.28
Revenue	b104,415,000	87,025,000
Earnings	55,000	1,610,000

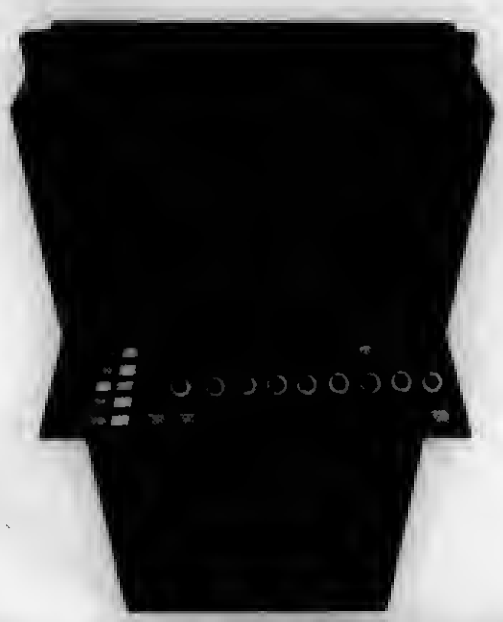
a-Includes the results of operations of Colorado Instruments, Inc., Marshall Data Systems, Inc. and Elastolabs Corp., acquired Sept. 3, 1971, Jan. 11, 1972 and Jan. 12, 1973, respectively. b-Includes approximately $7 million from sale of rental equipment to Randolph Computer Corp.

NICOLET INSTRUMENT
Year Ended March 30

	a1973	1972
Shr Ernd	$1.00	$1.05
Revenue	5,700,000	2,876,832
Earnings	450,000	447,354

a-Preliminary; includes operations on a consolidated basis of Federal Scientific Corp., acquired July 1, 1972.

FOR $26,123 A MONTH, IBM WILL RENT YOU THIS:



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NEWSPAPER

CW Photos by Ronald A. Frank

AT&T's Dataspeed 40 display terminal is demonstrated by Cheryl Kaye who holds up hard copy of data on the screen.

Products on Parade At ICA Conference

By Ronald A. Frank
Of the CW Staff

BOSTON – AT&T chose the annual conference of the International Communications Association (ICA) last week to introduce its Dataspeed 40 CRT terminal.

The Bell display unit was one of the equipment announcements by several suppliers at the communications users' show.

Paul Sternberger, system research manager with Dow Jones, checks out Western Union Data Services' Model 33 MSR tape cassette terminal with Brad O'Brien.

Among the products shown, GTE led the parade with a programmable display, key-entry system and a communications management system. Western Union Data Services Co. added a magnetic cassette buffer to the Teletype Model 33, while Interdata showed a store-and-forward message-switching configuration of its Model 50 CPU.

The ICA conference also included presentations by the major common carriers about existing and planned services as well as seminars and technical sessions dealing with interconnection, proper operating procedures for communications managers and regulatory discussions.

Characterized as an evolutionary extension of previous equipment supplied by Bell's Teletype Corp., the Model 40 is a modular partial LSI system with keyboard display/printer (KDP); keyboard display (KD); and receive-only printer configurations.

(Continued on Page 2)

256K-Byte 360/30 Under OS Increases Multi-Job Capability

By Michael Weinstein
Of the CW Staff

MILWAUKEE – There are presently around 5,000 users in the U.S. operating IBM 360/30 systems under DOS. Sometime this month, these users will be joined by at least one 360/30 user operating under OS Version MFT II with four times the memory of the largest standard IBM-supplied system 360/30 yet paying about 30% less rent.

The entire system is being installed by Commerce Group Corp. (CGC) here and consists of the central processor, 256K bytes of core memory, maintenance and software support, according to a company spokesman.

"An historical view held by many users is that OS will not run efficiently on a small machine as it requires much more overhead than DOS," the spokesman said.

"While it is true that our 360/30 running under OS has more overhead, the inclusion within the system of 256K bytes of memory enables the user to enjoy all the benefits of OS including improved handling of direct access space and improved utilization of main storage," the spokesman indicated.

15 Jobs Simultaneously

But possibly the major advantage to users running under OS is that it allows up to 15 jobs to be run simultaneously, he added. Under DOS, users are limited to three partitions and thus can run only three jobs at any one time.

The firm does not envision users running the maximum of 15 simultaneous jobs, but can see definite benefits from running five or six.

"Because of the inherent superiority of OS, the multi-job capability will not degrade as the user adds more job streams, and so for a six job-stream operation the Model 30 user can realize greater capabilities," he added.

The firm was hesitant to discuss actual benchmarks on the system being installed but said complete statistics should be available to interested users in June.

The spokesman did say a preliminary set of evaluations indicated the "super-30" would easily compete against the smaller end of the 370 line, even though the 370 machines have a markedly faster internal speed.

Sole Source Vendor

In offering the new system, Commerce Group is buying all the needed ingredients and will become a sole source vendor.

(Continued on Page 2)

Cary Admits IBM Hired Some Competitor Engineers

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – IBM moved to press its counterclaim in the Telex antitrust suit here last week, but Telex lawyers managed to turn the tables on IBM when IBM Chairman and President Frank T. Cary was called to testify.

In the counterclaim, IBM charges that Telex hired IBM employees in order to gain access to confidential IBM information. But under questioning by Telex attorneys, Cary admitted that IBM itself had hired engineers from competitors, particularly in the semiconductor area, and he hinted it had done so to catch up with developments in its competitors' laboratories.

Cary admitted IBM was lagging behind such organizations as Bell Laboratories and Texas Instruments in the development of field effect transistors for computer systems, and that during that time (late 1960s) IBM had hired engineers from those organizations.

Floyd Walker, the lead Telex attorney, introduced into evidence a document that he said was a "scorecard" kept by IBM on its hiring program of key engineers from these other companies.

Earlier in the counterclaim activity, IBM called Richard Wilmer, an engineer with the firm's San Jose Plant, to testify he had been offered a 25% salary increase as well as a $100,000 bonus by Telex to work for Telex to develop a 3330-type disk drive.

What hardware, software are on IBM's drawing board? Page 4. Frank Cary talks about IBM's bad year. Page 3. Telex claims IBM's practices cost Telex $361 million in the marketplace. Page 25.

The bonus, he said, would have resulted if he was able to develop the 3330-type system within 18 months after coming to Telex and he would have gotten another $1,000 bonus if he was able to build and have installed 50 or more of the units within one year after the completion of development.

He said he told the Telex ex-

(Continued on Page 3)

Controllers in 6025 CPU

Low End of H6000 Grows

By Michael Weinstein
Of the CW Staff

WALTHAM, Mass. – Honeywell has added a new computer to the low end of its Series 6000.

The Model 6025 is designed for present H400 and large H200 users who want to upgrade to multi-job streams, time-sharing and network processing.

Competitively, the 6025 is designed as an alternative to IBM's 370/135 and 370/145, Burroughs' B-4700 and Univac's 9700 and 1106, a firm spokesman said.

To make the move to a 6025 more appealing, Honeywell is providing several transmission programs including Cobol-to-Cobol file-to-file translations and assembly language-to-Cobol conversions covering IBM 360, Univac Series 70, Honeywell 200, 2000 and 400 computers.

For those users moving up within the Honeywell line, peripheral interfaces are common between the 400 and newer 6025.

System architecture of the 6025 features a 1.2 µsec semiconductor main memory in configurations of 320K, 384K and 512K bytes.

Following the lead of IBM, the controllers have been integrated into the mainframe. The Inte-

(Continued on Page 2)

On the Inside

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Watergate Spawned Fear of '72 Vote-Count Fraud

By E. Drake Lundell Jr.
CW Washington Bureau

WASHINGTON, D.C. – With the tales of Watergate and other Republican political sabotage tactics rampant during the late stages of last year's Presidential campaign, officials in the McGovern for President situation room here became increasingly concerned that there would actually be tampering with the vote-counting process itself, especially in computerized vote systems.

"At first it was just a matter of academic concern, but when the reports started trickling in of the possible extent of sabotage to the election process, we really became worried," one of the planners remembers.

"We were especially worried about the large computerized counties," since a change in the count by a small amount there could have a large effect on the outcome of the campaign, according to Eli Segal, an official with the campaign at that time.

Because of this fear, the campaign set up a special section to deal with possible computer frauds in the vote-counting process and to hire an outside consultant to give seminars in several states on what to look for in possible vote tampering, he said.

Segal said, however, that the effort was "too late and too short of money" to really be

(Continued on Page 5)

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Products on Parade at ICA Show

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The Model 40 will operate at 1,200- or 1,050 bit/sec in Ascii code. It includes a display buffer memory with a capacity of 72 lines of 80 characters each. In addition to scroll and blink features, the CRT has a cursor to allow the operator to see a "reverse image" (black character on white cursor background) of the character in the buffer.

The terminal has a Home key that can be triggered remotely to allow unattended retransmission of data. First deliveries are scheduled for August of this year with three-month delivery cycles projected for 1974, AT&T said.

The Dataspeed 40 will later include a cluster capability to allow multiple displays to share a line. In addition, a wide platen printer, larger memory size and a tape cassette compatibility are under consideration. The initial model will be compatible with the Bell 4210 magnetic cartridge unit now available with teletypewriters.

The Model 40 will not be available from Bell for customer-provided data sets, according to an AT&T official.

This decision was based on similar configurations involving teletypewriters where the telephone company must have control from the terminal out to the line in order to properly maintain the system, the official added.

But an OEM version will be supplied by Teletype Corp. at a later date and will be interconnected with non-Bell data sets.

Built-In Diagnostics

To facilitate maintenance, the Model 40 contains extensive built-in diagnostics to allow internal functions to be displayed on the screen by Bell field personnel. Among the type of functions that can be monitored on the screen are vertical and horizontal alignment, character generation and test messages for line problems.

The KDP will cost about $175 to $195/mo; the KD version will be priced at $110 to $125/mo; and the RO model will cost $105 to $120/mo. Bell has not yet filed a tariff for the CRT but the first interstate application is expected later this year.

Sometime in 1974 a synchronous model will be added to the initial Ascii version. When the cluster capability is introduced, a controller/multiplexer unit will be part of the configuration, an AT&T source said.

CW Photo by Ronald A. Frank

Penny D'Antonio, GTE systems programmer, developed the software for the Generalized Communications System introduced at the show.

Among the other products introduced to the more than 400 users at the conference was a cassette version of the Model 33 TTY from Western Union Data Services Co.

The Model 33MSR single-cassette unit can be used in conjunction with the teletypewriter's paper tape to duplicate the capabilities of dual-cassette terminals, according to the Data Services Co.

For this type of application, the paper tape can be used as the "format buffer" with the cassette serving as the storage buffer. The 33MSR can transmit at 1,200 bit/sec and can retransmit data under remote CPU control for polling applications.

The KSR model will cost $116/mo while the ASR unit will cost $129/mo. One-year lease rates for the same units are priced at $108 and $121, the company said. First deliveries are scheduled for August.

GTE Display

GTE Information Systems included a programmable CRT system and a Generalized Communications System data management system as part of its line of equipment introduced at the show.

The 7800 is plug-compatible with IBM 360/370 programmable CRT systems, and the binary synchronous system can be used in both cluster and stand-alone configurations. Prices for the stand-alone model start at $130/mo.

The data management system combines hardware and software to give the user a complete communications/file management system.

The system features the Tempo II processor (now called the IS 1000) with up to 64K words of storage. A typical configuration including six Videomaster displays, processor with 24K words, 22M bytes of Ampex disk storage and necessary software will cost about $110,000, a spokesman estimated.

Honeywell Adds to Series 6000

(Continued from Page 1)

grated Control Unit contains disk and unit record control functions in addition to the system controller and the Input/Output Multiplexer. Magnetic tape controls are external to the central processor.

A major feature of the 6000 Series is the ability to run in a multiprogramming mode. The General Comprehensive Operating Supervisor (GCOS) common to the 6000 Series allows users to run concurrent multidimensional processing – local and remote batch, transaction processing, message-switching, time-sharing, direct program access, interactive remote job entry and on-line document entry – all from a common data base.

Some of these functions (remote batch, transaction processing, time-sharing, message-switching and direct program access) are performed by software resident in the Front-End Network Processor (e.g. Datanet 355).

Two software systems – GRTS and NPS are available for this purpose.

Module Courdinates

Coordination of all I/O operations between peripherals and the central processor is supervised by an input/output multiplexer (IOM) module. Data is transferred at about 1 Mbyte/sec.

The 6025 operates with standard 6000 Series peripherals and can be connected with either the Datanet 305 or Datanet 355 communications processors.

A minimum 6025 system configuration might consist of a central processor with 80K words of memory, console, printer, card reader, three tape drives and two DSU190 disk drives (200 Mbytes on-line storage) and would rent for $18,000/mo on a three-year lease.

A typical system configuration with communications capabilities would rent for about $21,000/mo on a three-year lease with a large system renting for about $29,000/mo.

360/30 Under OS Stores 256K Bytes

(Continued from Page 1)

"We are not suggesting to users that they get the central processor from one source, the memory from another and the software and support from us. We intend to provide everything in one package," Burton said.

The OS Model 30 (central processor and 256K-byte memory), will be offered to users on a three-year leasing arrangement for about $3,500/mo with maintenance extra.

A more typical system including three 2314-type disk subsystems, four tape drives, printer and card equipment will lease for about $7,600/mo from 6001 N. 91st St., 53225.

A 360/30 with 64K bytes of memory and the same peripherals from IBM would lease for about $11,000/mo.

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Cary Cites 'Very Bad' Year

Plug-Compatible Peripheral Competition Stiff in '70

TULSA, Okla. – The trend of IBM was "very bad" in 1970, Frank Cary, IBM president, told the court here last week in the $1.2 billion antitrust suit by Telex.

Because of that, he said, IBM had decided to compete against the plug-compatible peripherals makers instead of losing any more business to them.

Because of the competition, Cary claimed IBM had to cut prices on tape and disk equipment or get out of that business.

Unrelated Decisions?

But at the same time he denied allegations that IBM had increased the prices on CPUs in order to make up for the revenue lost by the fixed-term plan and other price-cutting actions in the peripherals area. The two decisions were unrelated, he said.

Cary said IBM had the worst sales record in its history in 1971, even though he claimed the firm's revenues were up slightly that year.

Cary admitted it cost IBM only $8,690 to manufacture a dynamic address translation box and that the unit was built into the 370/158 at an increase in price of only $5,000, but it was being sold to purchase equipment customers for $200,000.

When Judge A. Sherman Christensen questioned why the Telex attorneys were pursuing this line of questioning, they replied the DAT box pricing was another example of IBM monopolistic pricing since it was sold at a 200% profit to owners of IBM machines.

Christensen said, however, the subject was "too peripheral, if I may," to the main part of the case and the subject was dropped.

Cary noted the recession of 1970 had caused major problems for IBM because users were canceling their 30-day leases with IBM. He said the firm had taken major action to overcome the problems including a freeze on hiring, but they had remained at the end of 1971.

IBM's competitors in the systems market, he admitted, had done better than IBM during the 1970 period, even though he did not know exactly what their business plans had been for that time.

He denied that the fixed-term plan price decreases had been made solely to boost the morale in the field so that there would not be a bad marketing reaction when the price increases on CPUs were announced later in the year.

He testified that after the 360 announcement IBM had decided in the future not to announce all systems in a computer family at the same time but to announce the different parts of the systems as they were ready.

Market Definition

Earlier in the case IBM had called economist Frank Fisher of MIT to testify on the issue of how to define the relevant market in such a case.

Basically, Fisher said, the market definition used by Telex was too narrow and the relevant market should include all competition – and not just the competition for plug-compatible equipment.

He said the market should be defined to include time-sharing, service bureaus and other computer systems that compete against the IBM ones.

Bob Evans, president of IBM's Systems Development Division, also testified that IBM had never withheld product technical advances from the market to keep competitors off balance.

He admitted, however, that he was part of a task force in 1970 that had recommended that IBM cut the prices on its peripheral equipment to beat the competition, but he said this idea was rejected and the engineers were ordered to try to develop superior machines instead.

IBM Admits Hiring Practices

(Continued from Page 1)

ecutives who interviewed him that the project couldn't have been completed in that short a time span, but he had discovered ways to improve the 3330 while working for IBM.

The Telex officials, he said, weren't interested in the improvements, only in getting a 3330 into production in the 18-month period.

Wilmer also testified he had worried about taking confidential information away from IBM, especially because IBM was then suing Memorex and an ex-IBMer there for alleged trade secret violations.

Because he felt the time limit was unrealistic and because his conscience bothered him, Wilmer said he rejected the Telex offer.

However, on cross examination, Wilmer admitted the 3330 had already been announced when he was interviewed by Telex and that many of the specifications were in the public domain.

He also related that after the unit was delivered there would have been even less trade secret information that he would have which could not be gathered by others from the units in the field.

He did not have a contract with IBM, he claimed, that would have kept him from leaving the firm and IBM could not prohibit him from using his general knowledge if he went to a new employer.

The next witness for IBM, Forrest Wade, an engineer on the 3830 control unit project at the time he was offered a job by Telex, testified he was offered a 25% pay increase and a stock option if he would go to Telex to develop a similar controller.

He rejected the offer because he felt Telex only wanted him for that one project and it would let him go after it was finished, Wade stated.

In addition, he noted the security at the San Jose plant had become extremely tight after it was discovered that some IBM internal documents had been taken.

In the area of security, Bob Evans, president of IBM's Systems Development Division, said the group was now spending $2 million more yearly than it had in 1969 for security measures in order to protect against the loss of trade secrets.

Evans added this increased security was "throttling" communication between engineers in different parts of the company.

But, he added, "I can't tell you how demoralizing it is for a development team to work three to five years . . . and then to find within a short time that competition has developed a duplicate" for the product.

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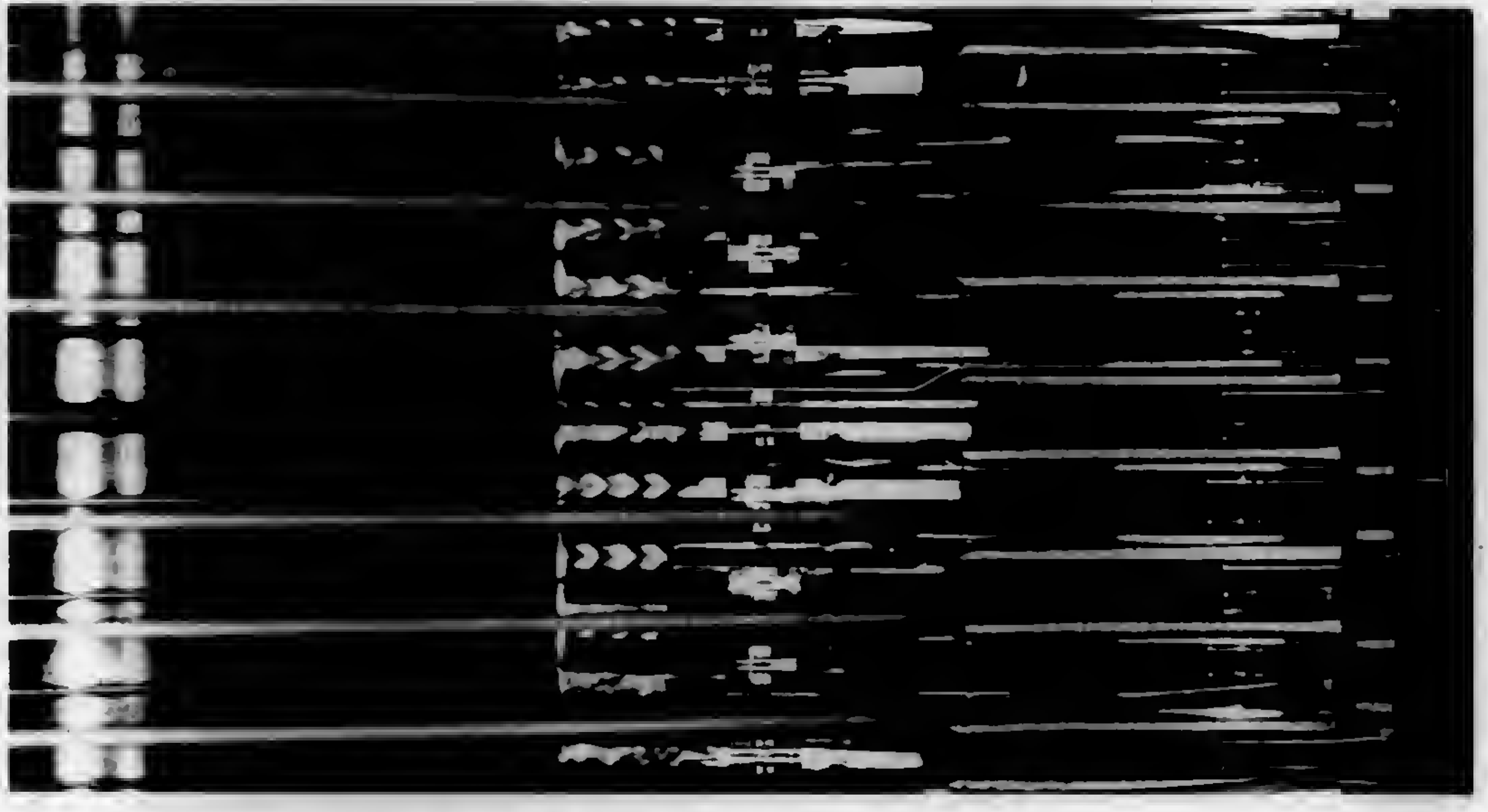

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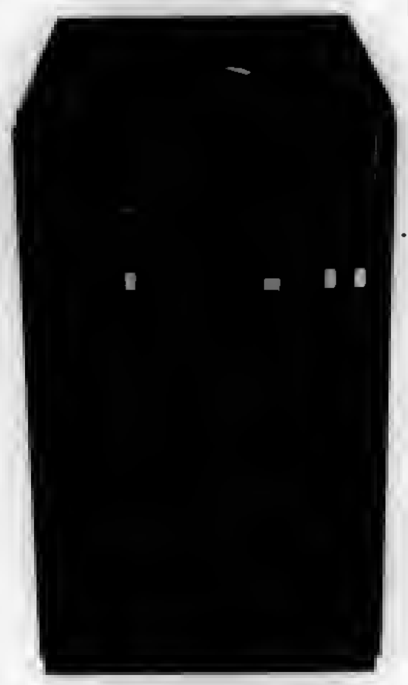

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IBM Papers Reveal

FS Series to Replace 370s

TULSA, Okla. —Several IBM documents revealed here in the Telex vs. IBM antitrust suit indicate three systems on the drawing board as part of the IBM FS series of computer systems.

The smallest system in the line is identified as the FS-0 and is seen as a replacement for the 370/135 and lower. The announcement date is found in some documents as December 1976, but other papers seem to indicate the announcement of the entire FS series has been moved to 1975, with customer deliveries a year later.

The Future Systems

FS-1 will be the next larger system and will apparently be aimed at the upper end of the 135 market and the 145 marketplace, even though details are hard to find in the documents.

Apparently IBM has decided to go ahead with two CPUs in the large systems area, the FS-2 and the Thrush, with the FS-2 being equal to the smaller of the two systems described above.

According to one product plan the FS-2 will have four times the internal performance of a 155 and will carry a cost of 15% above the 155's.

The Thrush is scheduled for announcement in December 1976 and will be the follow-up to the 165 and the 195, according to this source.

It will be a multiprocessing system and will have an internal performance two to eight times the performance of the 195 "and will offer a three to four times price/performance improvement," according to this document.

Some Virtual Considerations by IBM

TULSA, Okla. – If you have a virtual 370 system installed and your IBM sales representative is pushing you to add more applications to the system because it won't cost any more, watch out.

In marketing considerations that were mulled over by IBM when deciding to introduce virtual, it was noted that "once a relocate system has been installed, the salesman will be more able to convince the customer to add new applications because initially little or no new hardware will be required. ("Relocate" hardware apparently is IBM usage for dynamic address translation.)

Among the other marketing considerations given by the firm for going to the virtual storage concept were the following:

- **"The IBM salesman will have a new concept involving new function to sell, as opposed to just a straight price/performance kind of product. This is the environment in which he has performed best in the past. He will have considerable flexibility in putting together a sales story for each particular account.**
- **"Because of the new function, the relocate system will tend to attract the purchase customer who had generally been resistent to simple price/performance offerings."**

System Q to Need Relocate Hardware to Multiprocess

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – "System Q" is the code name for the operating system that IBM is currently developing on a worldwide basis for the FS (Future System) series of computers. And users should be getting some indication of the system as future releases of present IBM operating systems will probably be made with integration into System Q in mind.

According to documents released here, "Q is an architecture of subsystems (comprising hardware and/or software subsystems)...which provide a maximum realization of the marketplace requirements."

The system, the documents noted, "is constructed to rigid interface definitions which allow decentralized worldwide development, multiple implementations with differing price/performance characteristics, and facilitates the integration of dispersed activities.

"To this end, Q requires the existence of relocate hardware as a fundamental characteristic and uses that facility to gurantee the integrity of its interface definitions," the previously secret report showed.

Because of the development effort on Q, the document stated that "all present generation systems... are interim to Q. Their planned extensions are assumed not to violate the general ground rules of compatibility... established between these systems and Q."

On both the NS or 370 line, as well as on the new systems being developed, relocate hardware will be needed to be able to run System Q, the IBM planners noted.

In addition, the System Q, as well as the FS series of computers, will be designed primarily for multiprocessing systems, the documents showed, rather than for simplex systems as are present operating systems.

"The basic design of Q will provide for N-Plex multiprocessing where simplex operation is treated as a subset (or minimum) configuration," the documents said.

"Support will provide for asymmetric configurations but be able to take advantage of any symmetry that exists including fully symmetric systems."

"No assumption or predefinition is made as to the form of interprocessor connection (shared core or cable connected) but recognition is given to the single operational environment that exists so that the configuration can be fully exploited, according to the documents.

Besides requiring relocate hardware and designed largely for multiprocessor configurations, System Q will also have greater capability to support sensor-based applications than the present IBM operating systems.

The Future Software

"The system should provide for full function with viable performance at a given configuration of hardware. Traditionally minimum configurations have been stipulated in terms of core storage size, such as 40K or 256K or 512K bytes of storage.

"This has been true for two reasons. First, core storage has been a significant contributor to the cost of the entire configuration and as such had to be minimized. Second, core storage constraints determined performance levels and the functional content of the system.

"The facilities which the marketplace will demand in this time frame [the introduction of Q] make it impossible to define a system which can reside completely in core storage," the IBM planners admitted.

"The necessity to bring the system to and from auxiliary storage devices as the needs arise adds further complication to the algorithm," they added.

Therefore, they said, "the minimum configuration will be some combination of CPU speed, core storage size, auxiliary devices and channels and some miscellaneous equipment.

"The ultimate concern is really cost in dollars to the prospective installation. Accordingly, the minimum configuration requirement for the system will be expressed in rough dollar terms rather than in some fixed quantity of a constituent component. The actual dollar figure will be derived as the design moves forward and the actual physical requiements of the system become known and the price/performance tradeoffs can be determined."

But even though System Q is apparently designed primarily for what would be considered large-scale users today, the IBM planners plan to extend these features downward with the new system.

"It is a market requirement of the seventies that the facilities stipulated in these requirements be extended to users that are at present considered small-scale users," the report noted.

System Q will be announced for the 370 systems that have a relocate feature during the second quarter of 1974 and will have its first customer shipment a year later, if the firm sticks to its present announcement schedule.

The announcement of Q on the FS series will be made when that series is announced, which is presently expected to be in the first or second quarter of 1975.

Q 360/370 Compatibility Assured

TULSA, Okla. – System Q is still in the development stages, but the IBM software researchers have determined it will be compatible with the present user systems, although the exact approach has not yet been decided.

For second-generation systems, integrated emulation will be used to assure compatibility, the documents released here showed. But for the third generation the solution may be harder.

"For the third generation systems," the documents said, "one or more of the following will be used:

A. "Coexistence via the virtual machine or virtual operation system approach. Coexistence allows a current user to run his entire current generation system under the auspices of the Q system until he is ready to transist [sic] into the new system.

"The user can elect to convert one or more of his applications to operate directly under Q and continue to run other unconverted applications as he does today (say, under OS/360). Both the converted and unconverted applications run at the same time under System Q within the same hardware. This is the emulator concept carried to the extreme case where the entire current generations system, including the software as well, is integrated under the new hardware/software System Q.

"The technique is not restricted to OS/360 or DOS/360. One or more of any programming system which runs on System 360 or 370 hardware will operate at the same time under the auspices of System Q.

"When operating an old program within a new system structure, the cost performance of the new system will be at least the same as executing the same program in its native environment that is, if one calculated the cost of running a job on the current system as, say, $100, then the cost of running the same job in the new system will not be greater than $100. Furthermore, the job, when all other factors are considered equal, will take approximately the same time to execute.

B. "Program, data and operational control compatibility via support of the 'Interchange Environment' that provides:

1. High-level language (Fortran, Cobol, PL/1, etc.) compatibility for source programs.
2. Data interchange (compatibility) via AM/l (Access Method/l) and BSAM data structures.
3. Operational control interchange via the Common Command Language."

C. "Within its implementations on NS [370] and FS, Q will maintain both upward and downward compatibility for programs and data."

However, where conversion of programs is necessary, IBM is already planning to help the users.

"Where conversion of programs and/or data is required to obtain the improved performance or additional functions offered by Q, conversion aids will be provided to make the transition as easy, economical and efficient as possible," the IBM planners promised.

"However," they noted, "by providing the coexistence capability, conversion will become an installation option rather than a mandatory requirement."

National Welfare Index Proposed

By Judy Kramer
Of the CW Staff

NEW ORLEANS – A national computerized welfare recipient index has been proposed by the newly organized National Welfare Fraud Association (NWFA).

The group has suggested that the Department of Health, Education and Welfare set up and administer a national data bank which could be linked to computer systems in all the states. The group is currently having talks with HEW, according to Richard Peterson, president of the NWFA, but the government agency has not indicated whether it would favor such a data bank.

(Soon-to-be published results of the automated personal data banks hearings by HEW could affect this decision.)

The purpose of such an index, Peterson said, would be to stop people from shopping around for welfare and to eliminate costly duplications based on fraudulent misrepresentation.

"Recipients have been prosecuted for receiving aid to which they were not entitled in as many as 22 jurisdictions simultaneously," he added.

Under the proposed system, when a state or county receives an application for welfare, it could check the national index to see whether the person is receiving public aid from another county or state.

Peterson indicated it would also benefit the recipients. If a recipient moves, he would not necessarily have to reapply for aid – his records could simply be transferred.

Input for the system would come from the states but the files would be maintained and paid for by HEW, according to the association's plan.

Target date for the beginning of such a national project is Jan. 1, 1974, Peterson said.

Democrats Set Up Guide to Safeguard Elections in '72

WASHINGTON, D.C. – The parties and party workers "remain the most important deterrent to fraud and the safeguarding of accurate elections," especially computer-based elections, according to a workbook passed out by the Democratic Party last year to help election observers detect possible fraud in the election process.

The document noted "there are consistent errors in the results" from punched-card elections even though there has never been a documented case of fraud or sabotage which has led to criminal conviction.

It also noted that there may have been cases where the election results were changed by either intentional or unintentional errors which have never been caught because they could not be identified at a later date.

Noting that the ballot-counting procedures could sometimes be quite confusing, the document stated that "in this confusion, many errors may occur which are not detected, or there may be extraordinary opportunities for election fraud."

There is also a problem in ballot security, the report showed, and recorded cases where ballots were misplaced.

To help control the possibility of ballot switching, the report recommended that all of the ballots be counted at the precinct and that the precinct then reconcile this total with the number of ballots counted at the election center later.

What Did They Learn?

NEW YORK – James Farmer of Systems Research, Inc. will discuss some of the results of the Democratic Party monitoring activity in the vote-tampering area at a National Computer Conference session on "Computers in the Elective Process" scheduled for June 5.

Also, the ballots on punched cards should be checked carefully to make sure that write-in voters have not voted for too many people in any one category since the computer cannot detect the write-in.

All punched card ballots should have the precinct number on them, the workbook said, because "if this is not done, it is possible to switch the ballots and the count error not be identifiable later."

Furthermore, "the computer programs which count the ballots or which perform a media conversion from the card to an image on magnetic tape or disk offer a high risk of innaccuracy," the workbook stated.

"Furthermore, there is an opportunity to 'rig' the ballot count which would be undetected by most logic and accuracy tests," the workbook stated, noting "these methods are well-known and documented."

To help prevent this, it said the source programs should be made available to computer specialists to check for any possible areas of fraud and for "code which is not used, used under special circumstances or which appears extraneous."

A listing of the object code of the compiled program should also be obtained for later checking with core dumps, it said.

"Frequently, the program used for counting the ballots is not the identical program used for the logic and accuracy tests or filed with the appropriate state agency . . . but it is imperative that the program used be identical to the official program; this is best determined by comparing the election night core dump to the source and object code listing," the workbook stated.

"On election day, observers should see the program initiated, a logic and accuracy test taken, and a core dump taken," for later comparison to make sure that the comptuer program used on election night is the valid one.

Even though "a logic and accuracy test of this size may take almost as much time as the election count itself . . . It is the only way to assure an accurate count," the document continued.

Vote Fraud Feared

(Continued from Page 1)

effective. He indicated that since it occurred late in the campaign (October) there was a fear that the programs that had been developed for vote counting had already been tampered with and that that tampering could not be caught so late in the campaign.

The basic strategy of the last minute effort, according to Max Factor Jr., one of the men who helped coordinate the last minute briefing of state election officials, was to warn the people in the field of the possibilities of fraud and give them some basis with which to detect the possible fraud.

Basically, according to James Farmer, who conducted the briefing sessions for the party, the effort was aimed at deterring possible frauds by having "trained personnel who observe the process and hence indirectly pressure election officials to increase security measures and suggest to potential criminals that the chances of getting caught are markedly increased."

In addition, he said the training program used was aimed at documenting occurrences of vote tampering, so that possible action could be taken after the fact to apprehend and prosecute violators.

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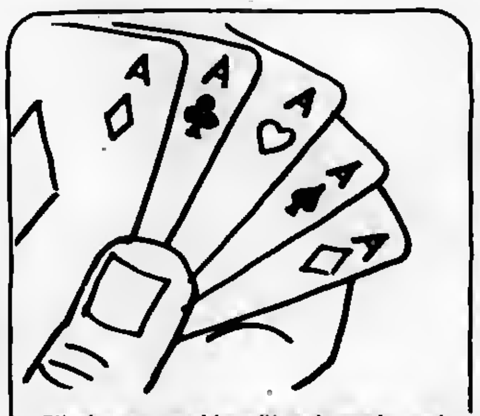

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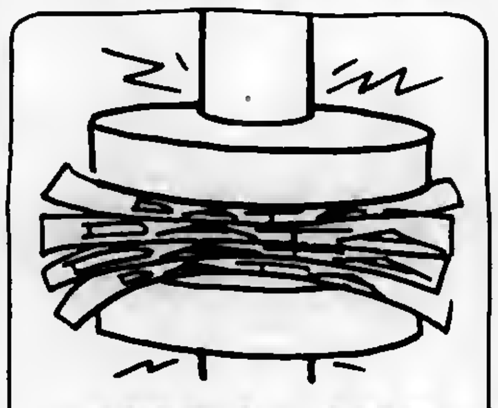

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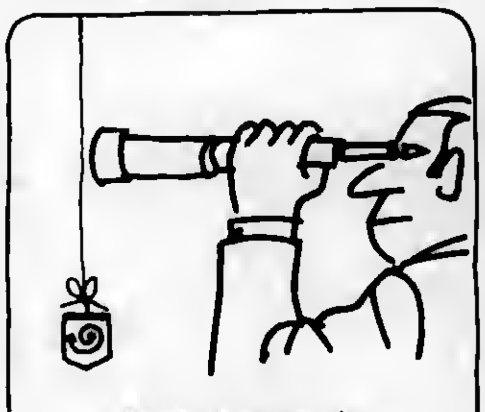

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'Honeymoon Is Over' But Reality Hasn't Materialized

Soviet Diagnoses State of Cybernetics Medicine

Novosti Press Agency

(Interview granted by Professor A. Popov to V. Demidov: "We Are on the Threshold of a New Age in Medicine")

Science in the USSR

About 10 years ago medical cybernetics had its honeymoon. They were talking and writing about diagnostic computers which would take but a split-second to diagnose the most difficult cases!

Years have passed, however, and even children have their encyclopedia of cybernetics – a book with fine pictures, but there does not seem to be much talk about diagnostic computers anymore. What can be the matter?

"Go to Kiev to satisfy your curiosity," my friends said. There is an Institute of Cybernetics there. See the laboratory of Professor Popov. He will tell you all about it."

So I came to Kiev. I saw the professor in a spic-and-span building of the institute on the outskirts of the city.

Q. Why isn't there any talk about diagnostic computers at present?

A. Because there aren't any.

Q. But just a few years ago . . .

A. A few years ago it all seemed much easier than it does now. We knew too little then. Because of that our understanding of the problem was somewhat primitive. Today, however, we have grown if not cleverer, then more experienced so that we are beginning to appreciate the gigantic scope of the problem we are out to solve.

Our research group is called the laboratory of medical information systems – information systems rather than diagnostic computers. The difference is by no means accidental for it comes not out of a desire to put it more scientifically, but the changing of one name for the other is connected with the entire process of getting a clearer understanding of the problems involved.

What did we want before? We wanted the computer to diagnose a case on the basis of the distinguishing features of the disease. This kind of approach contained a gross error. It was like taking an instant picture, i.e., ascertaining the state of the patient at the moment of examination and using that for a final inference.

How could we forget that a disease is not the state of the organism at a given moment, that it does not come all of a sudden. The changes in the organism accumulate slowly, one added to another, and only then do they manifest themselves in some form.

It is an elementary thing. When a patient comes to see his doctor, the latter, above all, asks him about his past. Unless we know the past any treatment becomes absolutely senseless; it is as clear as ABC.

Next comes the examination: collecting information about what is happening to the organism now. It is only following this stage that a diagnosis is made and a certain treatment is prescribed. Later we observe the way the patient responds to the medicines and treatment prescribed, marking the progress of the changes. Accordingly, we make corrections in the diagnosis and the treatment.

It looks very complicated indeed to think that we wanted the computer to take over making a diagnosis which is but a tiny part of the process. What must be done is not merely making a diagnosis but giving a comprehensive treatment.

Q. Do you want the computer to take over the entire process?

A. Not exactly. The computer will not be entrusted with treating the patients, despite what the supporters of an all-round introduction of cybernetics into medicine may claim. To follow this kind of reasoning we may come to a ridiculous assertion that medical men will get replaced by a kind of cash register: a patient comes up to the computer, pushes the button, the computer will give out a check for the drugs – you may go ahead and take whatever treatment is prescribed. To think along these lines will inevitably mean that doctoring as a field of scientific creative activity will come to an end.

What is the situation at present? About two decades ago the press raised the alarm: the doctor takes up too much time writing, whereas he has less and less time at the bedside of the patient. Have there been any changes since then? There is much more paperwork at present.

Our point of view is: the computer is to take over all the paperwork – collecting information, storing it, keeping tabs on the patient's condition, making general-

(Continued on Page 7)

A money-saving idea that IBM doesn't like to talk about.

It was probably someone at IBM who invented the term "mass memory" a decade or so ago to describe their tape drives, disc drives and drums. Maybe they were "mass" storage back then. But in light of today's data storage requirements, they really have to be considered "mini memories."

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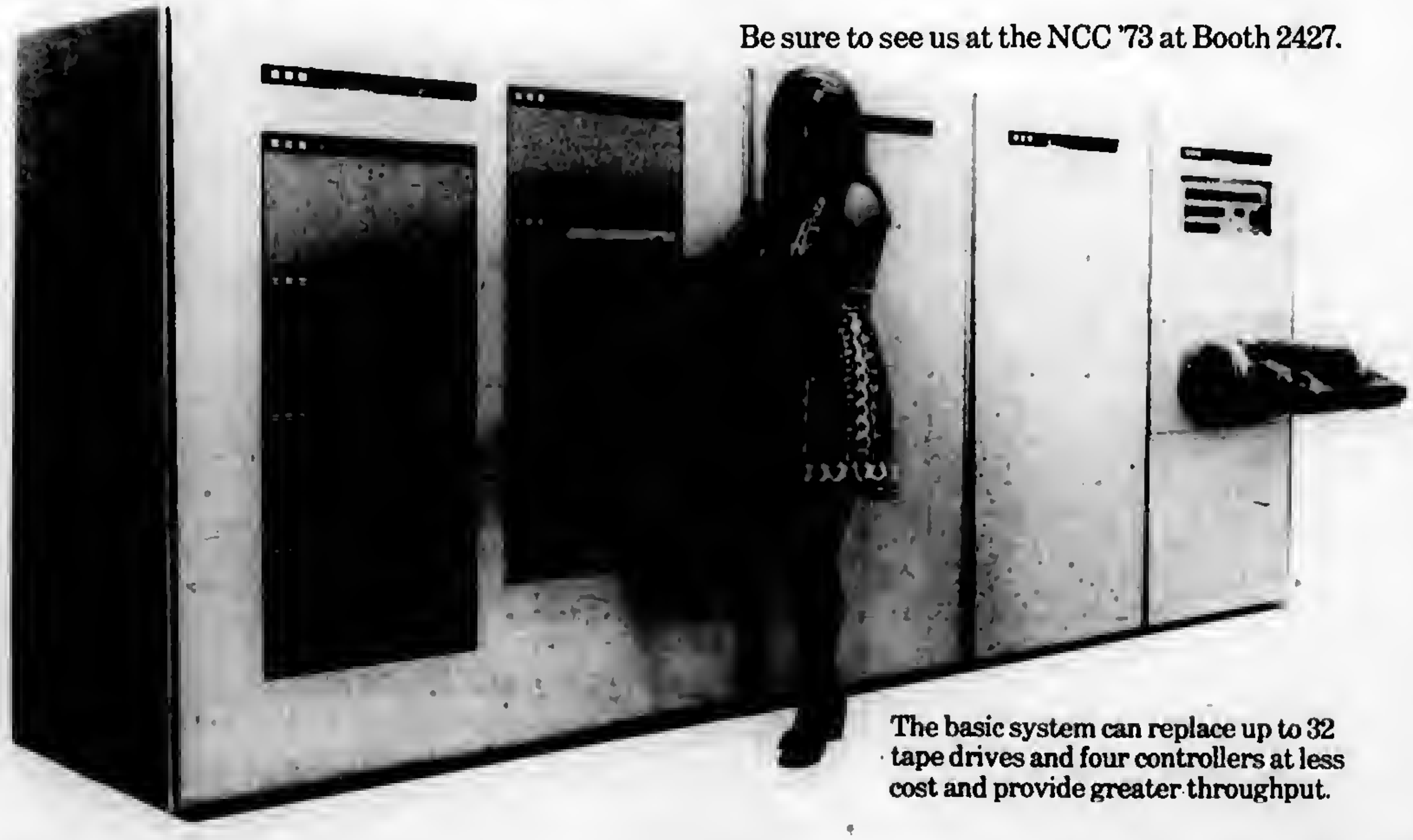

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Day of 'Aesculapian Computer' Still 10 Years Away

(Continued from Page 6)

ized data available at the request of out-patient hospitals, etc. In this way the doctor will get back the time he now spends on paperwork.

We shall give the doctor back his time to think about the information put out by the computer. Decision-making is the prerogative of the human being.

Science in the USSR

Look at the way a doctor today makes the round of wards. He comes into the ward and comes to one patient after another like he did a hundred or three hundred years ago, keeping all relevant information in his head while later he tries to recall it and put it on paper. If, however, this information is collected and stored by the computer at the patient's bedside, there will be no loss of time or information and that alone will make the work of the doctor more efficient.

What is bad is that present-day computers cannot do anything like that. They can do computations involving the design of an aircraft wing, the missile trajectory or machine-tool control, but a human being is a far too sophisticated organism for them. I have in mind the computers of the "second generation" like, for instance, the Minsk-22 computer.

When computers of the third, fourth or, better still, fifth generations come into being – computers with a large memory store, fast action, capable of understanding everyday human words or, better still, speech – then all I've been talking about will become a reality.

Q. When will it be?

A. No sooner than in some 10 to 15 years' time.

Q. In the meantime, are we just to sit and wait?

A. Not at all. Do you think that if computers like that were available at present we would be able to use to the full all their potentialities? That would not be the case. They would simply go to waste as the doctors are not as yet prepared to handle them. The doctors cannot think the way computers are accustomed to "thinking." They cannot communicate with the computers.

What does "communicating with the computer" mean? Above all it means being able to express oneself with precision and in no uncertain terms. However, if doctoring is an art then the terms it uses are most ambiguous, as is the case with any art. Take, for instance, myocardial infarction which has dozens of nuances for which we have no names so far. How can we carry on a dialog with the computer? The most important thing now, therefore, is to do preparatory work.

Q. In other words, you want to get doctors to think in a computer-like fashion before the computers are available.

A. Precisely. We are summarizing all the characteristics of the human condition into a system which can be easily put into the computer. On the other hand, these characteristics are arranged in the case history in a way which makes it more convenient for the doctor to do conventional recording of the information.

Take, for instance, temperature. The case history has a special table complete with figures designating degrees with every other decimal marking. The only thing left to be done is to put a cross in the necessary square.

What are the advantages of this kind of formalized recording? In the first place, it tends to discipline thinking for nothing can be omitted or forgotten. Secondly, the essential recorded data becomes simpler, and assumes, using the cybernetic parlance, the yes-no character.

What is most important, however, is that a "formalized" case history like that can be easily translated into a computer language and put into the memory store. A punch operator will be able to put it on punch cards without any additional instructions from the doctor.

A conventional case history does not lend itself to be punched for it has too many ambiguous and vague things. Talking about computerized diagnostics some 10 years ago, we somehow neglected this side of the problem, though there was talk about a data store which was to accumulate information about diseases and patients.

At present we are only approaching a new age in medicine. Our dreams have become more serious and we do not expect cybernetics to be a miraculous cure-all. What kind of cooperation will evolve between the doctor and the computer and what will it lead to are the problems facing us today.

Boeing Studies Aircraft Noise

SEATTLE – The Boeing Co. will undertake a project for the Federal Aviation Administration to develop data necessary for identifying aircraft noise patterns in the vicinity of the airports.

During a six-month period, Boeing will collect and analyze existing noise and performance data on its four in-service commercial aircraft – the 707, 727, 737 and 747. Final data, to be presented to the FAA in computer program and graphic form, will identify the different aircraft performance and noise source characteristics.

"The computer programs and graphics will be valuable for the development of land use planning tools for areas near airports," FAA administrator Alexander P. Butterfield said. "The data will enable a more accurate delineation of noise patterns on the ground."

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Editorial

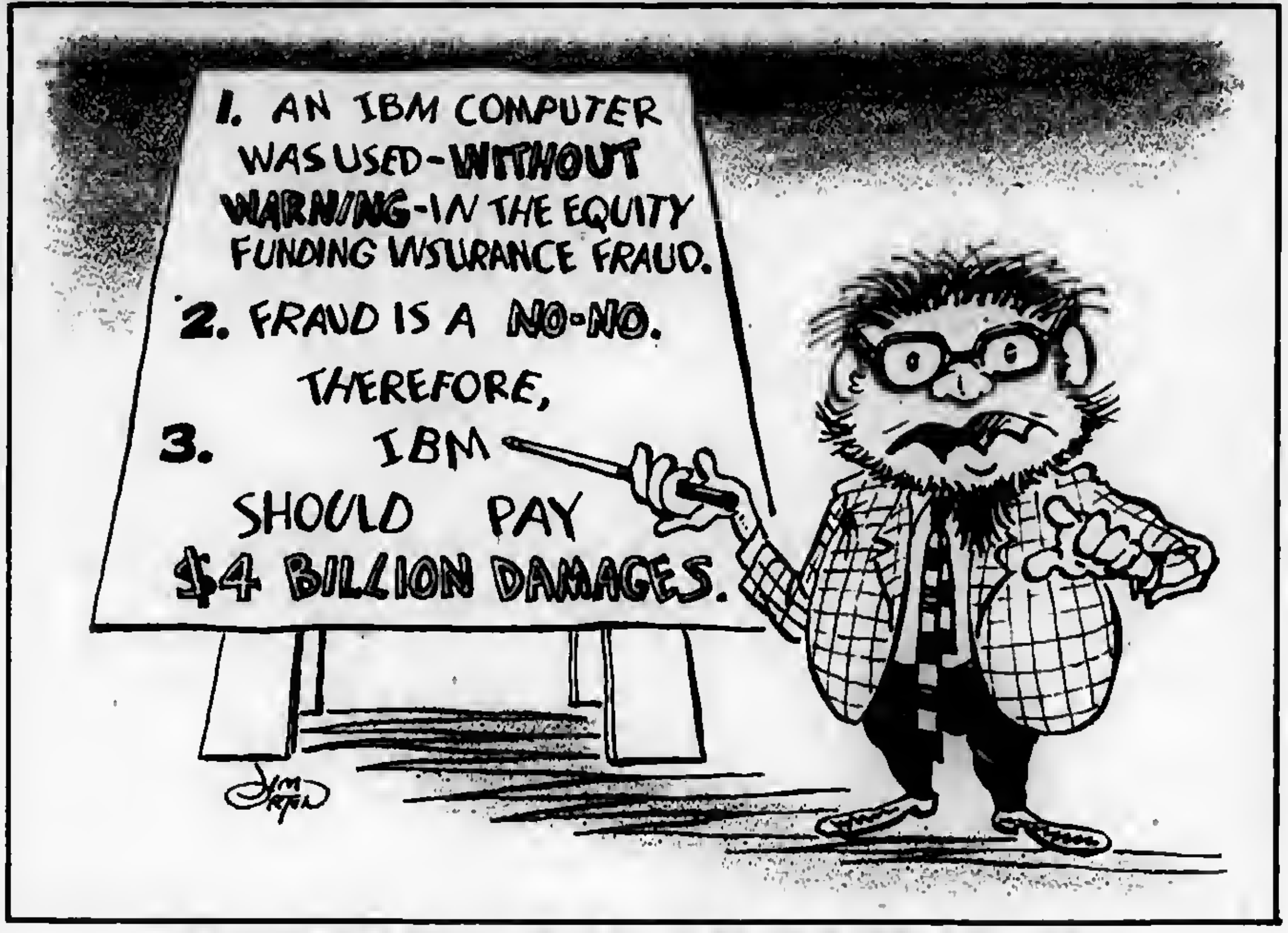
99.9% Secure?

If computer systems cannot be made 100% secure, as suggested by a Navy Department official recently, managers of computer centers must resort to specific means to protect their data.

As suggested by Cmdr. Jan Prokop, users should spend their money where it will do the most good, depending on their individual situations. Such expenditures, it would appear, could be made by implementing effective security-clearance procedures and physical-access control systems, as well as by designing secure computers.

An investment must also be made in time, the time it takes to generate a security "attitude" among DP employees; an identification with corporate or company goals, and not simply the day-to-day operation of the DP center, is also important.

Prokop's comments come at a particularly significent time, in that IBM is expected to give its first annual report on its five-year, $40 million security study, during the National Computer Conference next month.


1. AN IBM COMPUTER WAS USED - WITHOUT WARNING - IN THE EQUITY FUNDING INSURANCE FRAUD.
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'What Do You Mean, You Don't Understand That Last Step?'

Letters to the Editor

Vote System Troubles Show Auditing Need

Re: Peter Rijken's letter of April 11 and the Datavote programming system.

I wish to thank *Computerworld* for its editorial support of the need for computer auditing (April 11). This editorial apparently is the outgrowth of the article in which I discussed the insecure features of the Datavote vote tally system [CW, March 7].

We are pleased that CW had the wisdom to expand the problem to all data processing systems. This is an honest admission that computer systems are fallible and are subject to human mistakes and/or fraud.

Our particular experience with Datavote only confirms the need for computer audits. Rijken's letter correctly stated that Honolulu City and County employees aided state employees during elections, but he neglected to mention that Honolulu computer center employees are the only people in Hawaii who know how to operate the Datavote vote-tally system.

Unfortunately, knowing how to work with a system and understanding the program logic are not the same thing. Even though we have access to the source cards, the program logic is a complete mystery to everybody in Hawaii.

The problem with the Datavote system (and any other vote-tally system that I am aware of) is that there is no provision for feedback to indicate it is operating correctly.

Since feedback is missing, I cannot conceive of any technique except an audit to assure the voters that the program can perform properly. Even an audit cannot guarantee an error-free election process, but at least there is an attempt to determine if program errors or fraud are present.

The "elaborate testing procedures" and "logic card accuracy tests" hardly qualify as feedback. All they prove is the system worked as advertised (not necessarily properly) during the test periods. Appealing to the League of Women Voters, the Bar Association and the press as authorities on the accuracy of a data processing system is ludicrous.

This appeal to authority may be appropriate for a Madison Avenue advertising agency, but Datavote is concerned with the accuracy of a most important part of the democratic process. That is hardly in the same category as selling soap or toothpaste.

I do not understand why Rijken believes unqualified acceptance of his system is so important. The editorial summarizes the whole situation:

"Data processing system vendors . . . should welcome those who are prepared to assist in auditing and even in financing the audit."

If Datavote is accurate, Rijken has nothing to fear from an audit and Datavote would become more marketable. He should be lending support to what appears to me to be a common cause.

Gerald L. Mann Jr.
Director of Data Systems
City and County of Honolulu
Honolulu, Hawaii

RPG Affair Centers On Documentation

I would like to discuss what I believe is the key issue in the RPG vs. Cobol controversy. This is the question of documentation.

There are three main kinds of program documentation: system, operator and program logic documentation, each with a specific purpose. System documentation describes the objectives of the system and the flow of files and programs. Clearly, this is fairly language-independent.

Operator documentation tells how to run the programs. Except for mounting instructions, all RPG programs have consistent operating procedures and halts which are written up by professional technical writers in the manufacturers' manuals.

In comparison, few Cobol programmers do more than program and describe dead-end halts. They can hardly devote the time to thinking through and documenting the detailed recovery procedures that we expect. Furthermore, few operators will spend much time trying out the generalty untested bypasses an individual Cobol programmer might provide.

Finally, we come to program logic documentation. The main use of this material is the modification of existing programs, particularly by different programmers.

Here I feel that a programmer experienced in either language will find the actual code, which describes what the program actually does now, is more useful than English Language comments, which describe what someone thought the program did when the comments were written.

Both languages provide a comment facility using an asterisk in a certain column. But the Cobol programmer must document Mickey-Mouse functions such as file merging, end-of-file correlation and sequence checking which the RPG programmer can find fully, professionally and consistently documented in the standard manuals.

Similarly, the RPG maintenance programmer can take these functions for granted, and concentrate on the unique functions of each individual program.

To the extent that professionalism, in program documentation consists of meeting the present and future needs of one's organization in an efficient and expeditious manner, RPG is as professional a language as any, and perhaps more so than some.

Michael Gershman
The Singer Co.
Ozone Park, N.Y.

Consumer Protection

Re: "No Credit Here" [CW, April 25].

As the owner-manager of both a credit bureau and a DP service bureau, I feel the editorial indicates a complete lack of knowledge of consumers, credit bureaus, creditors and their mutual relationships.

In the guise of consumer protection *Computerworld* has gone off "half cocked," armed with little knowledge and few facts, endorsing, nay, pushing for a stronger "Fair Credit Reporting Act."

Credit is not yet a right guaranteed by the Constitution. It is a privilege. To link consumer rights and credit shows a lack of understanding.

Credit bureaus do not issue "credit ratings." They do record facts, public records, creditor ledger information and assemble these in a factual credit report. The consumer makes the credit record, not the credit bureau.

The cost of credit is borne by the consumer. Therefore, to issue credit wisely and keep the costs of credit at a minimum is fundamentally the finest form of consumer protection.

Richard L. Vennell
Park Ridge, Ill.

The Buffered Way...

In reply to the article on the advantages of a key-disk system over keypunches [CW, April 11], there are some common misconceptions concerning cost reductions which will result by replacing keypunches with a key-disk system. I cannot agree that key-disk will result in greater keystroke/hr. I cannot agree, in fact, that any increase in keystroke/hr will be the result if you replace buffered keypunches with a key-disk system.

Inasmuch as the elemental times required to keypunch are the same on both types of equipment, the keystroke/hr will not be affected.

The major difficulty, as I see it, is that these articles generally fail to stress the difference between the purely mechanical keypunches of the past and the new buffered keypunches widely in use today. The use of electronic memories in the buffered keypunches (as in the key-disk systems) increases productivity rates equally.

Reformatting as a source of savings is also mentioned in the article. In my opinion, reformatting for the reduction of duplication of data in multi-card records has ceased to be considered a real savings with the advent of electronic memories and their nearly immeasurable processing speeds.

When discussing increased keystroke/hr, it might be well to remember that the real dynamic advance in productivity came about with the introduction of the electronic memories which generally increased throughput by some 20%.

Increased productivity today is the result of a systems approach to data preparation and the selection of reliable equipment to best implement that system.

John F. McCarry
Vice-President, Marketing
Peripheral Sciences, Inc.
Norristown, Pa.

Keep 'Safe Approach'

The April 25 editorial discussed the use of formats other than 80 columns. As a manufacturer of CRT terminals, we have made extensive studies of the normal applications of operator to computer interfaces.

For reference data, the computer user would like all of the information in the system available to him at the rate he can move his eyes. For new information being presented, reading is most rapid with relatively narrow columns (witness newspapers of 30 to 40 characters in t-1/2 inch to 2-t/2 inch widths).

For hardware efficiency, binary numbers are decidely better, so the most desirable character count would be 32, 64 or 128. We have followed the newspaper lead and gone to 32 characters, reducing the tube size and the overall weight and size of the system at the same time.

Interestingly, almost every CRT display manufacturer started with less than 80 characters on a line (typically 40) and was forced to go to 80 "because that's what we're used to."

Don't "discard the safe approach"; simply decide what is needed for the application!

Byron M. Cole
Vice-President
Car-Mel Electronics, Inc.
Los Angeles

(other letters and viewpoints on Pages 9 – 11)

Data Collection Systems Are Not Always Proper Tool for Control

The Taylor Report

By

Alan Taylor, CDP

A few years ago, the State of Ohio put in a series of Wide Area Telephone lines (Wats). The lines concerned have been greatly overused, and, owing to design of the telephone system, this overuse has resulted in large parts of a complete telephone company station being dedicated to handling these calls.

A solution to this, scheduled to go into effect in September, will probably reduce the number of calls attempted through the network by 40%.

Howver, this solution does involve the collection of a considerable amount of data, and therefore relies to some extent upon the known human objection to being crossexamined unnecessarily. (The data mainly comes from those who are now using the system correctly.)

The data processing professional's questions then are:

- Is the State of Ohio's solution to its telephone load problem a professionally acceptable piece of data processing?
- Is it the best solution available?

Reduced Collection Alternatives

Taking the second question first, there are a number of alternative methods available. The amount of data to be collected is unnecessarily high. There is, for instance, no real reason for Ohio to collect from-and-to data on any calls made while a system is not being overloaded.

There is some reason to collect identification data on calls being made while the system is overloaded. Even so, it is unnecessary to take a 100% from-and-to census; an adequate sample which will allow the identification of those people who are abusing the privilege is all that's needed.

Another alternative to the proposed Ohio data collection system is for the phone company to work for the proper timing of calls.

For instance, assume there were three types of dial tone. Let us say that one meant there was a line available and you could expect to get your call through. A slightly higher dial tone could be used when the loading on the system was such that a user would have to dial at least three times before getting through. That would move some demand from the overload period. After all, people do not like to waste time unnecessarily, and will tend to make calls at a time when they can get straight through.

Then suppose there was a third level that indicated that on an average you could expect to dial eight times before you got your line.

Even without *any* collection of data, the prospect of having to dial eight times would deter many callers, even diverting urgent calls to other available communication methods. It would assist in the smoothing of the loads.

Improved Information Exchange

Another way of reducing loads without involving data collection is to start shortening telephone calls.

Many firms shorten telephone calls. This pursuades people to increase the density of information transmitted per minute.

The situation now is that all these alternatives – reduced data collection, reduced load systems and reduced call duration – have been passed up by Ohio in favor of a "Big Brother" data collection system, apparently without even trying the other methods.

Big Brother data collection, where data is collected for either unknown reasons or reasons which are basically inadequate and distributed to unknown people, makes this system a form of a threat. It acts in the same way a random police searching system works and I do not believe thinking DP people want to get into it until it has been shown to be unavoidable.

Under these circumstances I feel the State of Ohio should, even now, change its plans. As long as a person making a telephone call does not know that the system is overloaded and is not even given the opportunity to know this, I do not see how any case can be made for any data collection operation – and certainly not the one currently planned.

This is not to say I am blaming the people who have designed the system. I do not expect anyone has ever asked them to consider the alternative methods. I do not expect them to realize that data collection is not the only way of information control I do not expect computer people have even considered the possibility of reducing the loop-time involved between the commissioning of a piece of unfortunate behavior (such as calling over an overloaded system) as being any part of a data processing situation or evaluation.

And I do not really blame the people who have failed to teach them these elements of professional data processing. They have given the courses on "how to," not on "when to."

But I do expect that now the data processing profession is growing up and is able to use data processing selectively so that the professional disadvantages of data collection, as well as its advantages, will be included both in data processing courses and in data processing decisions.

At least they will any time that they want to call themselves professionals.

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Questionnaire on Data Collection Systems

1. Do you believe unnecessary data collection should be avoided?

( ) Yes ( ) No

Comment ____________________

____

2. Do you believe the institution of a data collection system as a control device, without testing available non-data collection control systems, is unprofessional?

( ) Yes ( ) No

Comment ____________________

____

3. Do you believe professional data processing education should teach alternatives to data collection and the disadvantages of using data collection as a control system?

( ) Yes ( ) No

Comment ____________________

____

4. Do you believe professional data collection education should do likewise?

( ) Yes ( ) No

Comment ____________________

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After completion, please return to Alan Taylor, c/o The Taylor Reports, Computerworld, 797 Washington St., Newton, Mass. 02160.

Letters to the Editor

Which Language Is Best For Your Environment?

Although I do not completely disagree with Marvin S. Ruth's letter concerning RPG or RPG-II [CW, March 28], I believe the language deserves some positive support. Perhaps in a large shop where a staff of three or more programmers is required and on-line systems are installed or in a sophisticated multiprogramming environment, RPG or RPG II may not provide the flexibility or power required.

One must be reminded that RPG is the acronym for "Report Program Generator." When one tries to use the language in such a way as to require additional program runs to perform a given task, perhaps the job should be written in another language.

We have found through proper system design, using a mix of Cobol programs and RPG II programs (creating simple sequential input to a series of RPG programs to process reports), the language has been quite adequate.

It's tremendous to have an extremely efficient program, but ask yourself, How efficient is the average Cobol program? How much time was spent compiling and debugging?

If a person is proficient in the language, an RPG program to process a fairly complex report can be written, keypunched and operational in one day. As far as documentation is concerned, lack of adequate documentation is a management problem more than a language problem.

The question is what languages are best for your shop or environment. When management needs a report, it really doesn't care what language it's written in. It needs the data to run the company and make decisions based upon the data.

Anthony B. Buscaglia
Director of DP
Niagara Frontier Services
Buffalo, N.Y.

Both Have Advantages Based on User Applications

Both RPG and Cobol have their distinct advantages and disadvantages, based upon the user applications and systems hardware involved. For those who feel RPG II is a limited language, merely a step beyond sort and tab, I suggest they read recent texts and manuals, and objectively evaluate the capabilities of RPG. They will discover a versatile language, capable of solving all commercial applications and limited only to the imagination and ability of the programmer.

With few exceptions, all the elements of Cobol are available to the RPG II user through tables, arrays, exits to subroutines, etc.

To those who tout RPG as the panacea of the data processing industry, I also suggest they read and objectively evaluate current texts and manuals concerning Cobol. Cobol is truly at home on the large system with high volume files, an area where RPG can provide little competition.

Each language has advantages within the operating environment in which it is utilized. Perhaps one day, in the not too distant future, the unique advantages of both Cobol and RPG can be combined to create a new language which will completely fulfill our needs as programmers and end this debate of RPG vs. Cobol.

Frederick W. VonKutzleben
Arthur J. Gallagher & Co.
Chicago, Ill.

Give Programmer the Option

As the Cobol-RPG controversy goes on, the RPG enthusiasts claim great labor savings in programming with minimal sacrifice of efficiency, and intimate that Cobol programmers are so enamored with their bits and bytes that they are expending more labor than necessary to obtain reasonably efficient programs.

The Cobol supporters, on the other hand, claim Cobol offers more flexibility in systems design as well as more efficiency in program execution and suggest that those who program in RPG are perhaps not competent enough to use Cobol.

In our shop, where most of those programming have the option to use either language, we find that both sides have their merits. RPG is usually used where speed of programming is critical and efficiency of operation is only of secondary importance. Special requests and annual reports fall into this category. Cobol is used for heavily used programs and in critical systems.

Joe Scanlan
Providence, R.I.

Use One With Fast Results

Re: Marvin S. Ruth's [CW, March 28] and Norman F. Allen's [CW, April 25] letters complaining of the horrors of RPG and RPG II.

Ruth has completely overlooked what RPG was designed for – report generation! I am really sorry that he cannot do on-line systems work with RPG II, but you can't haul concrete in a Cadillac either.

Allen states in his 11-year career, he has never seen an installation that uses these quickie languages that wasn't an operational nightmare.

My experience covers 23 years, doing everything from running a sorter to directing the DP function. Once IBM dropped the 1401 RPG and came out with 360 RPG, the programming area started changing. Programs needed today were ready today. I speak not only of quickie print jobs, but also complex data manipulation.

When a crisis arises, I want results now, not next week or a month from now. When management wants an answer, it wants it now, and we deliver, but we keep an open mind. If we can get the answer in a hurry with Cobol, we use it. But in most cases we have to rely on RPG or RPG II. My shop is approximately 90% RPG/RPG II and it runs very smoothly.

P. Robbins
Director of Operations
NMU Pension & Welfare Plan
New York, N.Y.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Blame Weak RPG Shop on People, Not the Language

By Charles T. Pritchard
Special to Computerworld

Viewpoint

I have remained silent just as long as I can concerning the series of RPG vs. Cobol letters that have been running in *Computerworld.* In their haste to make their ideas known, previous writers have displayed the three characteristics which so often cause the data processing staff of an organization to be thought of as not very professional:

- They like to call names and make cute but degrading statements.
- They are grossly ignorant of instruction sets, compiler features, coding techniques, etc. of any language other than the one they prefer.
- They miss the point.

One person said, "Add that company to my list of places not to send my resume." May I respectfully ask to have my company put on his list. Regardless of what his skills are, I don't need an employee with his attitude.

Remember When?

It is obvious to a good RPG programmer that the Cobol enthusiasts have not seen an RPG manual since the days of the 1401. (Yes, Virginia, there was RPG for the 1401. It wasn't very good, but it was there.)

Any resemblances between 1401 RPG and RPG II are purely coincidental. The RPG man, in turn, defends his language by offering coding tips and debugging aids. Those things belong in classrooms – not in Letters to the Editor.

Another writer saw a relationship between coding in RPG and poor run books. Poor run books are caused by poor management. Definition of programming, documentation and operations standards is a management function. I fail to see how weak management can be blamed on RPG.

Cobol programmers throw a few crumbs to RPG programmers by conceding there are probably a few applications somewhere that might be better written in RPG. I suggest the reverse.

RPG for All

Virtually all commercial applications could be better written in RPG if only there were enough good RPG programmers available. Unfortunately, good programmers move upward in management. Most firms, however, would rather have an application (even an RPG application) written by a good Cobol programmer rather than by a weak PRG programmer.

Management wants a certain job done by its data processing (or any other) staff in the most professional manner at the lowest cost and in the quickest time possible. Failure to meet these requirements is a people problem, not a language problem.

If you have seen a weak RPG shop, blame the people, not the language. If you have seen (or have) a strong Cobol shop, credit the people, not the language.

Pritchard is data processing manager with Baker-Crow Co., Dallas.

Letters to the Editor

'Damn the Name... But Give Me the Shirts!'

Having read the many letters to the editor as well as Alan Taylor's article [CW, May 2] regarding what to do with Robert D'Unger's name, I have concluded that this issue has been whipped to death – or nearly so.

For most of my life I have experienced a similar problem, although I must admit it has become more prominent since the advent of data processing. In all fairness, however, the problem is not solely related to data processing.

Many clerks and a great many typists over the years have had difficulty with my name. The apostrophe is omitted, "B" is not capitalized, and I am sure you can imagine the variations in spelling.

Since data processing came into being, I have not had a single paycheck or computerized bill with my name correctly shown. Even stock certificates are wrong! However, none of this really disturbs me.

Nor am I disturbed when I call for my laundry and the clerk finally locates it in the "B's" instead of the "O's."

What this all amounts to is that I am not at all touchy about the spelling of my name. I have never had any trouble cashing a paycheck or stock certificate. I couldn't care less about where a data processing system files my name.

All I really want is for them to be able to locate my account when the need arises, and I want the laundry to "locate the damn shirts" when I call for them! Nothing else really matters.

Joe O'Bryant
Hartsdale, N.Y.

Sound Auditing Need Shown

Re: Equity Funding: the computer side of what happened appears to be emerging. Lacking was the independent ability to access, verify and confirm the validity of all records.

Hundreds of users of computer auditing systems that equip the auditor with an independent "telescope" into computer files will disagree with the auditors . . . "professing that it is virtually impossible . . . to detect the kind of fraud that appears . . . "

I believe the ratio of fraud to innocent mistakes will inherently be tiny. The deterrent effect of good computer auditing through the computer makes it even smaller.

General information to date indicates the Equity Funding situation, while perhaps ingenious in application, involved the computer in a fairly simple manner. If the computer people sensed something wrong, users of a sound auditing system should havc and would have verified the computer files even earlier.

Jerome Pricst
President
Computer Resources Corp.
Wilton, Conn.

Individual Determines

The dialogue on RPG reminds me of the Block/Head debates on the checkless cashless society (1966, 1967).

What is shown by this is that data processing is fat from a science and that successful use of computers is an individual thing.

To this I add, management take note.

K.A. Kleinman
Systems Manager
Edison, N.J.

During
The June 6th **Show Issue** (B & W close May 25th.)
After
Our June 13th **Wrap-up Issue** (B & W close June 1st. Color Close May 25th)

Whether or not you're going to The National Computer Conference, *Computerworld's* last-minute, complete coverage of the new, consolidated show is must reading-including the latest information on the wide variety of new products which will be displayed. Only a weekly newspaper can give you such complete and up-to-date coverage. And *Computerworld* is the only newsweekly for the computer community.

NCC is not a protest group.

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Read Journal of Development

Involve Users in Cobol Process? Educate Them First

By Fred L. Forman

Special to Computerworld

Christopher Coddington's "Viewpoint" ["Contact Between PLC, User Lacking," CW, May 2] strikes me as a curious attempt to refute points in my previous "Viewpoint" ["Make Suggestions Direct to PLC," CW, April 11].

First, my motive was not to discredit Alan Taylor, but to discredit his "solution" to a problem.

I agree with Coddington that the problem is user involvement in Cobol development, and I do not believe that Taylor has proposed an acceptable solution. What is curious about Coddington's article is that he also fails to suggest a solution.

Taylor's solution to the problem of user involement is that users send proposals to the Cobol Coordinating Committee which will review, recommend, wait for response, then "take action" (whatever that means). Coddington seems to agree with me that such a committee could only delay the user from getting his requests acted upon by the Programming Language Committee (PLC).

Is 3C an effective mechanism for providing users with timely information about Cobol development? I think not.

I said in my article, and still believe, that Taylor's solution will only give users the opinion of a very narrow segment of the user society (the 3C Research Department).

Educate Users

To involve users in Cobot development, we must educate users to the development process, provide a mechanism for suggested development and report what development has taken place. PLC accomplishes the last two items, but has failed in the first – educating the user community.

My previous "Viewpoint" provided information to the user so he would know *how* to become involved. Alan Taylor is not serving the useful involvement of the user by setting up new committees and journals.

Neither has Coddington in any way contributed to the solution of user involvement with his article.

Viewpoint

The best way for the user to become involved is to get a copy of the Codasyl *Cobol Journal of Development* (Publication 110-GP-1c) by sending $3.50 (payable to "Receiver General of Canada") to: Technical Services Branch, Department of Supply and Services, Fifth Floor, 88 Metcalfe St., Ottawa, Ontario, Canada, (K1A 0S5).

Suggested proposals, ideas and thoughts may then be made directly to PLC by sending them to: Chairman, PLC, Box 124, Monroeville, Pa. 15146.

On Representation

As a final observation, Coddington fails to note the concept of representation. PLC, Ansi and the other committees to which he refers are representative of the user. There is no practical way to have all the users participate in every decision.

Applied to government, industry, unions and nearly every other segment of our lives, the concept of representation works well, so long as the people who are represented are properly informed about decisions that have been made on their behalf and a mechanism for change exists.

PLC informs the users it represents by making the JOD available to the public. PLC also provides a mechanism for change to the extent possible (yet still be able to accomplish useful .work). The user is solicited when practical – for example, the public availability of the Data Base Language Task Group proposal, and inviting proposers to the meetings at which its proposal is considered.

Ansi and Ecma are also representations of the users but are non-PLC organizations. I'm not sure why Coddington calls them "affiliated." They are affiliated only in the sense that they also are interested in the Cobol language. They use the same channels which are available to anybody for submitting proposed changes to the language.

Neither Alan Taylor nor Christopher Coddington has solved the problem of user involvement in Cobol development. Nor have I fully solved the problem. I have, however, tried to provide the information which the user needs to become involved in Cobol development.

Forman currently represents American Management Systems, Inc. on the Programming Language Committee.

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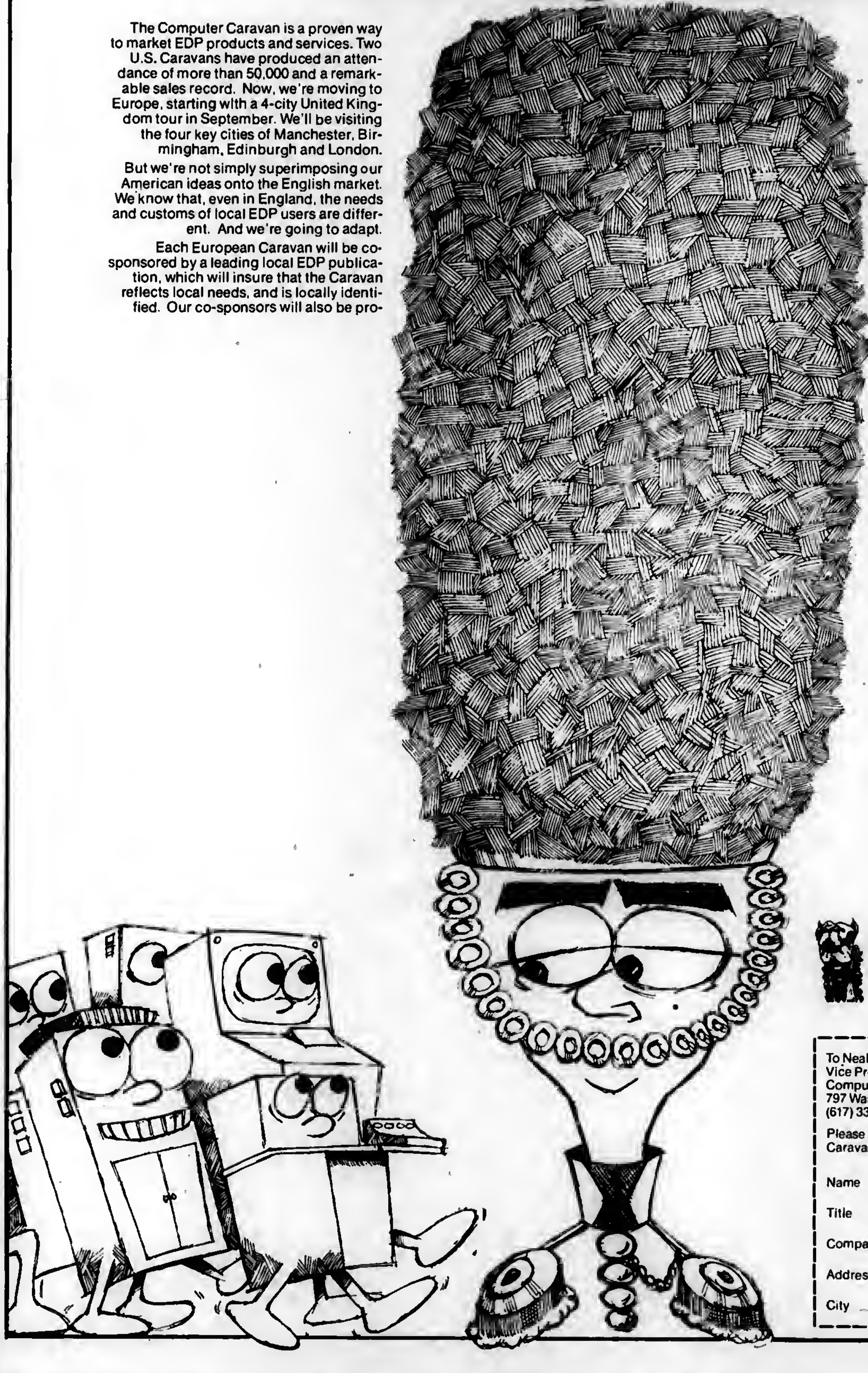

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Random Notes

IMSL Releases Third Edition Of Mathematical Subroutines

HOUSTON – International Mathematical and Statistical Libraries, Inc. (IMSL) has announced the release of Edition 3 of its mathematical and statistical program library. This release, for IBM users, will be delivered to subscribers in July. Releases for other CPUs will be delivered later in the year.

The library includes subroutines and complete application programs written in Fortran and distributed in source code. A subscription price of $840/yr includes updates, a facility for requesting additional subroutines and telephone consultation on the use of the library. IMSL is at Suite 510, 6200 Hillcroft, 77036.

Andco 'Optima-Maxima' Service Provides Project Plan, Control

BUFFALO, N.Y. – Project managers can plan, control and later review operations through the Optima-Maxima service now available on a mail-in/carry-in basis from Andco, Inc.

The system generates a report on the various ways in which manpower and materials can be allocated to the project.

During construction, the service provides progress reports, showing actual vs. expected completion of the various tasks within the project. Finally, a summary of the project elements is generated to aid in future planning.

Andco declined to estimate the cost of using Optima-Maxima, since every project is made up of many variables. The company is at 51 Anderson Road, 14225.

Sisco Opens Remote Office

SAN FRANCISCO – A remote terminal facility at 215 Market St., opened recently by Singer Information Services Co. (Sisco), allows users to communicate directly with an IBM 370/155 in Sunnyvale, through Singer System Ten CPUs. Wylbur interactive terminals are also available, a Sisco source added.

A full range of applications has already been installed on the IBM mainframe but the system also allows users to develop their own programs in any of the languages supported by the 370. Sisco expects to open other remote facilities, in Los Angeles and other cities, the spokesman said from 1105 Kern Ave., in Sunnyvale, Calif., 94086.

Correction

The Naval Air Development Center at Warminister, Pa., is refusing all requests for copies of a CDC-6600-oriented General Purpose Simulation Program (GPSS) [CW, March 7]. The program was created for the center's use, a spokesman explained, and there are no current plans for public distribution of the software.

Saves Time, Forms Costs

'Recoop' Lists Reports and Recipients

By Don Leavitt
Of the CW Staff

BEVERLY HILLS, Calif. – The Report Control Optimizer (Recoop) program, just introduced by International Management Systems, provides management with a means of identifying obsolete, unnecessary and unwanted reports. From 5% to 20% of all reports may fall in one or more of those categories, the company said.

Though intended as a tool to review existing practices, Recoop may also prove useful in answering requests for apparently new reports that may already be in production, but not being delivered to the current requestor, perhaps through an oversight. Or it could be used to identify a current report that needs only slight modification to fit a new and broader requirement.

Hidden Benefits

Controlling report distribution may save computer and staff time, but its most important benefit might well be in the area of eliminating high cost multiple-ply or specially printed forms. More abstractly, the Recoop lists may provide the end-user departments with a clear indication of the DP staff's continuing interest in their problems.

Operated in batch mode on any 360/370 with a 55K-byte partition, two tape drives and a 2314 or better disk, Recoop includes two basic data files. One carries complete narrative and statistical descriptions (including identifying code numbers) of all reports to be controlled by the system. The other file contains detailed information about the recipients of the reports.

The distribution definition file shows who gets each report, how many copies and both where and how they are sent to the recipient. Summary information includes the total number of copies of each report and the total or average number of pages produced. This data allows analysis, at the management level, of who is using each report and why, and whether the distribution pattern is as effective as it might be.

Report Checklist

Another Recoop printout provides the DP operations staff with a hard-copy checklist of what reports should be generated by the various applications and to whom they should be sent.

Alternatively, each apparent recipient can receive a list of the reports he should be getting, together with a description of what each is supposed to cover.

Up-to-date maintenance of the Recoop files is critical to the effectiveness of the system, and probably should be an assigned duty of a specific member of the DP operations staff, one who has to coordinate his efforts with the systems group and the end users, the vendor suggested.

Recoop is written in ANS Cobol, but only object code is distributed. The program runs under either DOS or OS environments, and is available for a one-time charge of $5,200.

International Management Systems is at 9665 Wilshire Blvd., 90212.

'Bars' Puts Boolean Retrievals On HP 2000 Systems, Leasco Net

HONOLULU – Users of Hewlett-Packard 2000 Series time-sharing systems and subscribers to Leasco Response I service can perform on-line retrievals of items from data bases through the Boolean Attribute Based Retrieval System (Bars) from Real-Share, Inc.

Search key parameters under Bars are built under desired field descriptors and Boolean connections (AND, OR) and negative variants of those connectors. The descriptive terms are stored in a keyword dictionary with a potential capacity, according to Real-Share, of "several hundred thousand terms."

Through ANDing and ORing of the terms, Bars searches are tailored to provide very precise retrievals. But the system recognizes that initial search definitions may be too general to be effective, so it reacts first by searching the file for matching items, reporting the number of "hits" to the user, and asking if the request is to be modified.

Once the user is satisfied with the form of his request, he may ask for a display of the items retrieved. These displays may be formatted in various user-defined reports, from brief listings of relevant information from each of the items, to complete printouts of specific records.

Once the items to be retrieved have been identified, the user may invoke a sort routine to display all or a selected subset of the pertinent items in a particular sequence, perhaps based on a keyword that is irrelevant to the normal file sequence in which the record is stored.

Items can be stored under Bars in a variety of forms ranging from seven to 1,750 characters each. Items can be added, changed or deleted through file maintenance transactions. New items are associated with keyword dictionary terms either by the user, or by the system itself when context indicates the relationship.

Bars is written in Basic and programs range from 10K to 11K words of memory depending on the computer being used.

The package can be purchased for $19,000 or leased for $790/mo (for two years) or $645/mo (for three years). The Leasco Response I version is available through arrangements with vendors of that service.

Real-Share is at P.O. Box 275, 96809.

Time-for-Sale Now Includes 370s

ELMSFORD, N.Y. – Computer time-for-sale now includes a growing number of 370 installations throughout the country. This in turn has made many 360 time sellers more competitive, but by providing improved service rather than through price cutting, according to Time Brokers, Inc. (TBI).

Time on 370/135 has become "much more plentiful" during the past several months, the firm said, and 145 time has been available for over a year in good quantity in all sections of the country. Outside 155 and 165 time is utilized on a regular basis by many large shops, TBI's latest report noted.

Demand for 360/30 65K time remains good in most areas, and this configuration "far outsells" 32K offerings. Requests for Model 40 time are also holding steady, but demand for time on 50s and 65s fluctuates, based both on competing 370 time available and the spasmodic usage requirements of some big system customers, the firm continued.

Traditionally, outside time-for-sale has been used by installations that are unable, for several reasons, to use their own equipment. Program development before in-house equipment is installed is one classic reason; periodic special jobs too large for the user's own gear or reporting period workloads too large for the equipment has tended to be the other major "excuse" for going "outside."

But TBI reported that a great deal of emphasis is being placed on long-term production contracts. Testing for new projects "always continues," the firm noted, but many users now prefer to purchase computer time for production, while utilizing their own computer to test new work.

Peripherals and add-ons from both mainframes vendors and independents has made the time-for-sale market complicated for both the buyer and seller of time.

TBI has prepared a free *Uniform Code for Computer Time Marketing* which is available from 500 Executive Blvd., 10523.

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'How Much Should I Buy?'

BLUE BELL, Pa. – Developed originally for the distribution industry, the Optimum software package, just introduced by Univac, enables purchasing agents to determine the "correct" quantity of an item to buy ahead of announced or anticipated price increases. It can be used on-line or in batch mode.

The system logic considers all factors, including cost of capital and storage as well as the actual cost of the items being bought. It calculates and then displays, on a CRT terminal or printer, the "buy-in" quantity that would maximize savings compared with paying a higher price later.

Savings to be realized from the proposed purchase are expressed in dollars and cents and as a percent of annual costs or other expenses. If the purchasing agent rejects the original recommendation, Optimum provides alternate analyses of other quantities with corresponding changes in the savings to be realized.

With this ability to check out different solutions to a given problem, Optimum gives the purchasing agent working on-line the same sort of "what if" options that modeling systems provide the financial analyst.

The system can be used, for example, to try to anticipate what should be done in case a critical item goes up in cost, even though no specific increase has been announced.

Optimum can be installed on "any" Univac system that supports a Fortran IV compiler, including the upper end of the 9000 Series as well as the 1100s. The software is free to Univac users.

'Regular' RPG Programs With BAL Help Keep 370 Moving at Stackpole Carbon

ST. MARYS, Pa. – Stackpole Carbon Co. has replaced its 360/30 with a 370/135 and is beginning to get into telecommunications to tie its six plants together, but DP director Dave Doyle has no plans to replace RPG with RPG II or any other language as his principal programming tool.

The company has a wide range of conventional, accounting-oriented applications all originally coded in RPG, but it utilizes BAL, Fortran or Cobol subroutines when they seem necessary. Sometimes regular RPG just isn't powerful enough, Doyle admitted.

No Need to Switch

"We've looked at RPG II and are convinced it is much better [than RPG], but we really don't see any justification in it for us," he added. His installation is running 18 hours a day, five days a week, but the company owns the hardware so there is no real dollar saving to be gained by cutting computer time through RPG II, according to Doyle.

Run-time savings would be absorbed by staff time spent in whatever modifications are needed to go to RPG II, and by the ongoing cost of the more modern language system, which is an IBM program product. "Regular" RPG was released prior to IBM's unbundling of software in 1969 and therefore is free.

'Heaven on Earth'

Doyle's staff backs his continued use of RPG.

"If one has a good command of the RPG language and realizes the extra power it can have by combining it with BAL when needed, he can have the best of both worlds – [programs] that are easy to write and . . . capable of almost any application," according to John Mastrogiacomo, one of eight systems/programmers at Stackpole.

The staff has developed its own "package" of BAL subroutines to handle programming chores such as console input control, bit checking and physical disk reading, which can't be easily done directly in RPG, he added.

He feels sure that writing and debugging a program are quicker, and execution is slower with RPG than with Cobol or BAL, but neither he nor Doyle has run benchmarks to prove these points.

As satisfied as the staff may be with the RPG capabilities, however, it is willing to consider commercial packages when they seem worthwhile.

In planning for telecommunications within its local complex and with its outside plants, Stackpole looked first at IBM's Customer Information Control System (CICS) but rejected it in favor of a TP monitor system from Westinghouse Tele-Computer Systems Corp.

The local version of the monitor is currently being tested and installed. The remote version, expected to tie into plants in Virginia and North Carolina first, is still under development, a Westinghouse source indicated. Stackpole will be using IBM 2780 and 3735 terminals, Doyle noted.

'In-Form Gives 804 Remote Capabilities

NASHUA, N.H. – Sanders 804 terminal users can capture data locally, perform extensive editing of the data and support remote communications to an IBM 360/370 mainframe by utilizing the In-Form software from Sanders Data Systems, Inc.

In-Form's logic permits setting up record formats, including both fixed and variable data, and storing these formats on one of the tape units within a cassette that is part of the terminal. The formats are described in English-like terms, including names for the fields, acceptable lengths and appropriate data types.

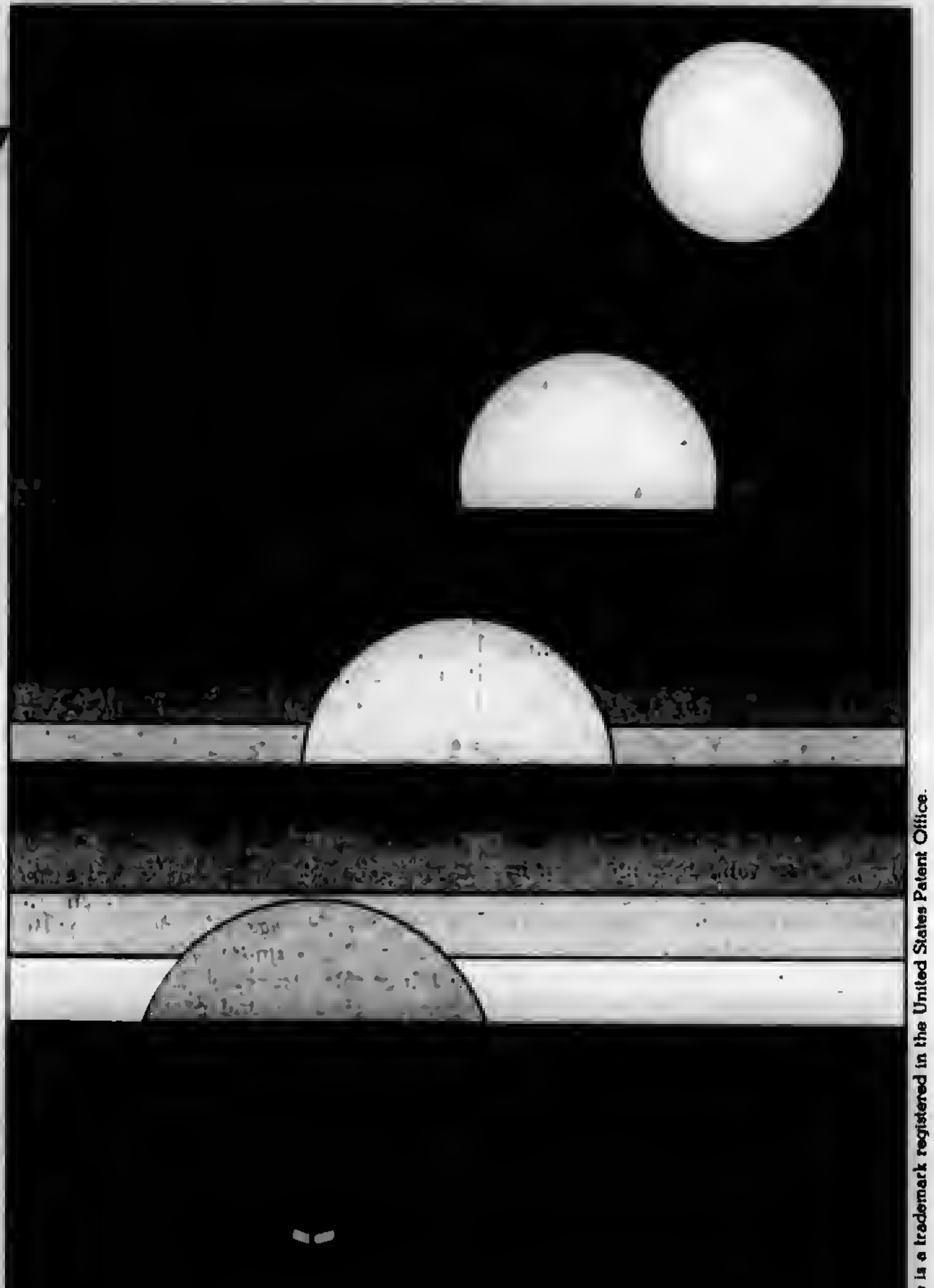
Editing on the 804 under In-Form checks input data against the specified stored formats before putting the record on the second tape unit on the cassette drive. In-Form includes the ability to store a partially completed record, then recall it to fill in data that had been unavailable when the original entry was made.

Remote batch communications support under In-Form transmits the collected data to a remote 360 or 370 and receives data and reports from the mainframe, storing the new input on cassette or putting it out on the terminal's printer. Both transmission and receipt of data, including the printing, can be done in unattended mode, Sanders noted.

In-Form uses the same line discipline as the IBM 2780 Remote Job Entry terminal, which makes it compatible with Btam-, Qtam- or Tcam-based applications programs within the 360 or 370.

In-Form software is distributed free to users of the Sanders 804, which can be leased for $401- to $478/mo (depending on the lease agreement), or purchased for $12,780.

Sanders Data Systems is on Daniel Webster Hwy. South, 03060.



The 4210. We call it our "moonlighter."

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Not only does the 4210 send out previously prepared tapes while everyone is at home relaxing, the unit also receives new data. And if time is critical, the automatic rewind and local print-out option allows data to be recorded and printed out.

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It takes more than manufacturing facilities to build this kind of versatility into the machines Teletype Corporation offers. It also takes commitment. From people who think service is as important as sales. In terminals for message communications and computers.

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Data Briefs

RCA Teleprinters, Modems Connect to WU TWX Net

CHERRY HILL, N.J. – RCA has a variety of leased Teletype teleprinters and modems for connection into the Western Union TWX network.

Under Western Union's interconnection policy, users of the company's teleprinter, Telex and TWX exchange services may own, rent or lease their own terminal equipment.

RCA will be leasing Models 3 and 35 ASR or KSR equipment.

Prices for the ASR Teletype equipment will start at $77/mo, the KSR at $63/mo. Delivery is within three weeks after receipt of an order. The lease/service contracts are offered on a 30-day cancellation basis.

RCA will also lease Model 32 ASR and Model 28 ASR or KSR terminal equipment to Telex subscribers starting early this summer.

RCA Service Co. is at Bldg. 204-2, 08101.

Terminal Replaces IBM 2741

SUNNYVALE, Calif. – Trendata is offering its Model 900 desk-top conversational terminal to work as a replacement for the IBM 2741 terminal and as a standard Selectric typewriter when not in the terminal mode.

The Model 900 consists of a heavy-duty IBM Selectric connected by cable to a small electronics/modem package that the manufacturer said can be located adjacent to the desk area.

Leased price of the Model 900 will be $90/mo on a one-year lease, including maintenance. Purchase price is $3,750.

Delivery will be in 30 to 60 days from 610 Palomar, 94086.

Bendix Shows Portable CRT

SOUTHFIELD, Mich. – Bendix Interactive Terminals Corp. has introduced a portable CRT computer terminal.

The Logiport 2 terminal has a 16-line display with 80 char./line and a non-glare, 5 in. by 7 in. screen.

Standard features include teletypewriter compatibility, roll or page mode, full- and half-duplex operation and automatic key repeat.

The Logiport 2 costs $2,450 from Bendix Center, 48076.

Terminal Contains Card Reader

NEW YORK – Panasonic has a data entry terminal that contains an optical card reader to read punched cards or badges.

The unit reads the data on the card or badge when it is inserted into the terminal and transmits the data serially along with variable data and simi-fixed data entered through optional numeric keyboard and thumbwheel switches.

Price starts at $1,800. Delivery begins at the end of June from Matsushita Electric Corp. of America, 200 Park Ave., 10017.

Reservation Data Base

370 Net Handles Hilton Room Status

By Ronald A. Frank
Of the CW Staff

DALLAS – If you wanted to keep track of all Hilton Hotel room reservations, you would probably have two 370/145s handling a national communications net.

And that is exactly how Compass Computer Services handles the Hilton reservation system. The company uses the dual 145s to house a data base containing the room status for both U.S. and domestic hotels in the Hilton organization.

The 370s are interfaced with two CDC 1700 CPUs. The 1700s poll a network of 300 CRTs operating on private lines with another 70 displays connected to the Dallas DP center through dial-up facilities.

Built-In Modems

The terminals, supplied by Terminal Communications, Inc., have built-in Bell 202-type modems, according to Norman Crane, communications manager at Compass, and transmit at 1,800 bit/sec on the private-line facilities and 1,200 bit/sec on dial-up lines.

In addition to the modems there is a printer to allow each remote site to get the latest room reservation information from the Dallas center. The private-line system uses 11 C-2 conditioned 3002-type lines from Bell.

Each remote terminal is polled for 18 hr/day, at 10-second intervals, by one of the 1700 front ends. The data is transmitted to the 1700 in Ascii, and transferred to the on-line 145 through a special CDC data communications channel interface.

The interface box is connected directly to the selector channel on the 145. The special CDC software makes the 1700s simulate a tape subsystem to the mainframes. There are two complete systems for redundancy, and each 1700 can interface with both 145s.

The data transferred by the CDC channel interface is converted from Ascii to Ebcdic inside the mainframe, processed and then reconverted into Ascii before it is sent back to the 1700, according to Al Gallardo, senior programmer/analyst at Compass.

Each Hilton Hotel and reservation center has a terminal and the system continues to expand, according to Crane. For the future he is considering the addition of remote multiplexer/concentrators to batch the inputs from several remote sites. But the concentrators will not be added until an extensive equipment evaluation is done.

At present, the nationwide network uses telephone company lines but Crane will consider the specialized carriers when their services become available.

The room reservation data base uses independent applications software from Unicorn Systems Co. The software is housed in the 384K of storage included with each of the 145s.

Although the exact traffic on the system varies according to the time of day in each time zone, the daily rate is high. On a typical West Coast private line with 25 CRTs, about 7,000 transaction/day are handled, Crane said.

In addition to booking new reservations, the network supplies a list of expected guests to each hotel when the terminals come on-line in the early morning.

In addition to the domestic communications system, Compass handles telegraph traffic from international hotels in the Hilton chain. These messages are transmitted through the TWA telegraph network and Compass maintains a link to the TWA system in Kansas City.

The international room information is handled manually and converted for entry into the 370 data base.

Store Checkout Systems Perform At Supermarket Institute Show

DALLAS – Several store checkout terminal systems were introduced here recently as part of the Supermarket Institute convention. Litton Industries, Bunker Ramo and Electronic Laboratories announced systems designed to interface with a CPU in the store environment.

Litton, New York City, showed its Superegister which can be adapted into a minicomputer-based system using scanners for the Universal Product Code (UPC). The terminal can accumulate totals for 12 store departments, separate taxable from non-taxable items, calculate taxes and perform other checkout functions.

Each terminal includes a read only and random access LSI memory. About 10K bytes of ROM and 512 bytes of read/write storage are included in each checkout unit to perform all required calculations.

The terminals can be interfaced with minicomputers for "back room analysis," a spokesman said.

The terminal will cost about $3,000 to $3,500.

Bunker Ramo, Oak Brook, Ill., introduced an enhanced version of the store terminal system developed by Nuclear Data for Star Markets. The expanded electronic store information system (Esis) includes a dot matrix printer with larger type and an electronic scale interface. The terminals also can operate off-line if the Esis CPU malfunctions. A 10-terminal Esis system will cost about $42,000, a spokesman said.

A portable system was shown by Electronic Laboratories, Inc. for "business information collection." The System 900 includes a hand-held calculator-type key entry unit which records data onto a battery-powered cassette. The complete system including a transmitter console to send the batched data to a remote site costs about $1,800.

The cassette information can be transmitted directly to an IBM 2701 line controller or the system can operate on-line with an IBM 360/370 multiplexer channel. Input can also be sent to a System/3 or System/7 processor.

A receiver converter unit can poll remote sites with batched data onto the cassette storage. The full polling system will cost about $15,000, a spokesman said. The company is at 3661 Yellow Creek Road, Akron, Ohio 44313.

Terminal Takes Charge Over Card

CLEVELAND – A point-of-transaction terminal that can validate credit cards by reading either embossed character or magnetic stripe coded information is available from Addressograph Multigraph Corp.

The Amcat-1 terminal can accept data from a credit card or keyboard. The key-entered data detailing the current transaction is displayed for verification by the operator.

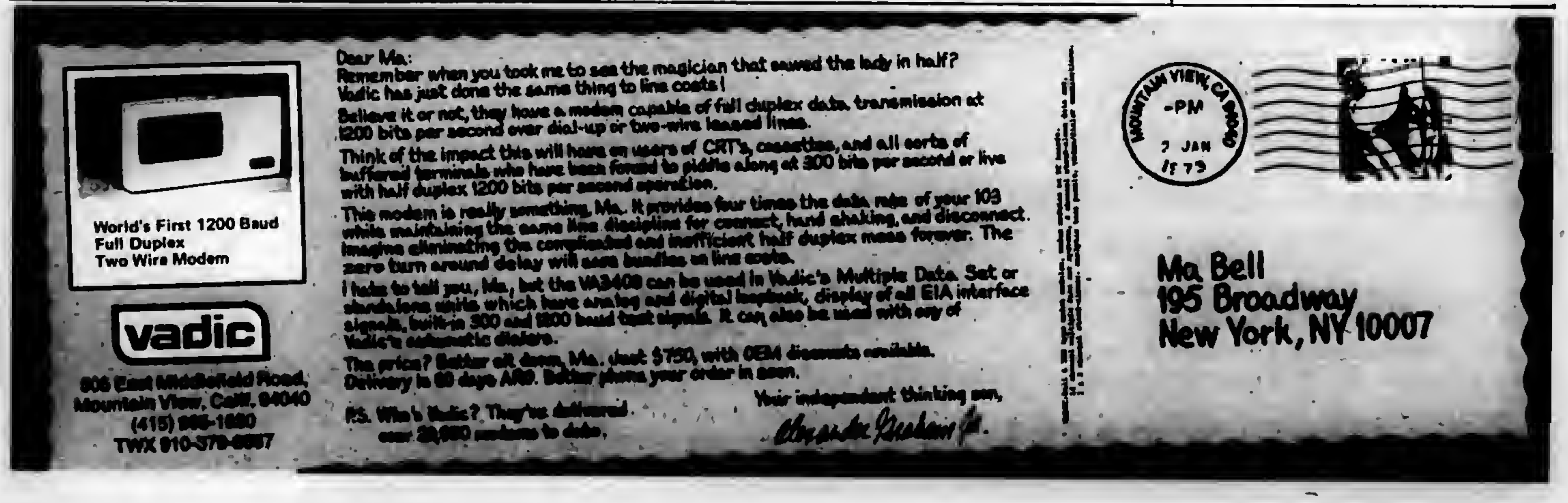
The Amcat-1 includes a 128-character message buffer which stores all pertinent transaction information. The data can be transmitted over lines operating in private-line polled networks.

The terminal includes an imprinting option that can print and scan OCR 7B font characters. The terminal can transmit data at 300 bit/sec in Ascii format, using a communications module.

The Amcat-1 can be configured as part of a terminal management system that includes a message concentrator with a built-in minicomputer. This configuration includes the necessary software to poll remote terminals and performs line control functions.

The concentrator with modems, cassette storage unit, TTY and software costs about $90,000 without terminals, a spokesman estimated.

The mag stripe reading conforms to American Bankers Association standards while the embossed reading follows the current Ansi numeric standards. The basic system cost $1,250 from 20600 Chagrin Boulevard, 44122.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Remember when you took me to see the magician that sawed the lady in half?
Vadic has just done the same thing to line costs!
Believe it or not, they have a modem capable of full duplex data transmission at 1200 bits per second over dial-up or two-wire leased lines.
Think of the impact this will have on users of CRT's, cassettes, and all sorts of buffered terminals who have been forced to piddle along at 300 bits per second or live with half duplex 1200 bits per second operation.
This modem is really something, Ma. It provides four times the data rate of your 103 while maintaining the same line discipline for connect, hand shaking, and disconnect. Imagine eliminating the complicated and inefficient half duplex mess forever. The zero turn around delay will save bundles on line costs.
I hate to tell you, Ma, but the VA3400 can be used in Vadic's Multiple Data Set or standalone units which have analog and digital loopback, display of all EIA interface signals, built-in 300 and 1200 baud test signals. It can also be used with any of Vadic's automatic dialers.
The price? Better sit down, Ma. Just $750, with OEM discounts available. Delivery is 60 days ARO. Better phone your order in soon.

Your independent thinking son,
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P.S. Who's Vadic? They've delivered over 20,000 modems to date.

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Remote Batch Terminal Configurations Interact With 360/370 Mainframe Sites

Two remote batch terminal configurations that can interact with IBM 360/370 mainframe systems have been introduced recently by Keane Associates and Digital Equipment Corp.

Keane Associates, Wellesley Hills, Mass., has a remote batch terminal that emulates IBM 2780-type terminals.

Called the System/4 RBT, the unit can handle binary synchronous transmissions up to 9,600 bit/sec between remote locations and sites with 360/370 CPUs. The terminal is also compatible with the firm's System/4 processor.

A typical remote batch configuration using a 4K System/4 CPU, with dual tape cartridges, CRT display, card reader and line printer costs $15,420 or $335/mo.

The terminal can support BTAM, TCAM, CICS, Hasp and other IBM software. In an on-line mode, the input from magnetic tape or the card reader is transmitted at 2,000 bit/sec using Bell 201-type data sets. In the receive mode, the terminal formats records for on-line printing or translation to tape.

Off-Line Use

As an off-line system, the terminal can be used for data entry, tape editing and other functions which batch input data for later transmission.

Options include automatic line turnaround, auto answerback and vertical format control on the printer. First deliveries are scheduled in May 1973 from 39 Washington St., 02181.

DEC, Maynard, Mass., has introduced a remote job entry system using a PDP-8/E designed for educational applications.

Called the Edu-Batch terminal system, it includes a binary software emulator modem interface, teletypewriter and card reader. The system can access 360/370 mainframes and can be used in such applications as the instruction of business data processing administrative jobs at schools and colleges.

The terminal system can operate over private and dial-up lines at speeds up to 4,800 bit/sec. Peripheral devices supported by the mini-based terminal include a card reader, paper tape reader/punch and either a dot matrix or line printer. The basic system costs about $15,020.

Intertel Modems 202C-Compatible

BURLINGTON, Mass. – Intertel, Inc. has introduced two integral modems which are Bell 202C-compatible and capable of up to 1,200 baud over dial-up telephone lines.

The Model 2020 is Bell 202C5-compatible, while the Model 2021, which includes a 5 baud reverse channel, is Bell 202C6-compatible.

Both models include answer-back tone generation, automatic answering, Mark hold on forward channel receive data when carrier is lost, receiver squelch and soft carrier turn off.

The two models operate via a CBS Data Access Arrangement following typical Bell 202C call establishment procedures.

The Model 2020 is priced et $330 in small quantities, the Model 2021 at $440. Volume deliveries are now being made from 6 Vine Brook Park, 01803.

Documation Has Interface

MELBOURNE, Fla. – Documation Inc. has introduced its CC-2400 communications interface for serial transmissions.

The unit provides six switch-selectable data rates from 110 to 2,400 bit/sec.

The CC-2400 costs $1,050. First deliveries will be in July from P.O. Box 1240, 32901.

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Time was when the only source for Remote [illegible] giant companies…who offered fantastic [illegible] prices. Whether you needed it or not. Then [illegible] with the first and only equipment designed [illegible] Compatible with all kinds of computing [illegible] auxillary equipment. Installed and working for [illegible] including maintenance.

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The Other Computer Company:

Honeywell

A Forum and a Means to 'Integrate'

Group Offers Seminars, 'Equal Rights' for Users

By Michael Weinstein
Of the CW Staff

NEW YORK – When President Nixon speaks of the forgotten Middle American, what he is really referring to is the System/3 user, Al Del Gardo, DP director of Excell Plastics, believes.

To correct this situation and bring S/3 users into the mainstream of the computer community, Del Gardo and other New York area S/3 users believe their organization, Guidance International, will fill the bill.

Presently, Guidance has about 150 members who participate in monthly meetings and periodic seminars.

The purpose of the meetings is to provide a forum for the users to communicate their experience and listen to guest speakers, Del Gardo noted.

For example, at a recent meeting Walter Cartson, president of the Association for Computing Machinery, spoke about profitability of the S/3. At another meeting Dr. Herman Limberg of the New York City Department of Administration spoke on handling data base applications.

A seminar last year featured an IBMer who over six sessions helped educate Guidance members on RPG II. Specifically, he addressed how to make changes in the programs from the console.

The Small Systems User

"A similar course might cost attendees about $300 if they attended an IBM school," Del Gardo estimated, "but for our members the cost was only $5 a session or a total of $30 for the entire course."

Guidance International was formed in 1966 and originally was designed for IBM 360 users. In 1968 it was incorporated in the State of New York as a non-profit organization and started directing efforts partially toward the S/3 user.

Indifference Noted

"A problem we found in our initial attempt was the indifference of the large association such as the DPMA to give the small user equal representation.

"Sure, they were willing to accept our dues, but there was not a great deal of effort by the larger societies to offer us any services," Del Gardo said.

"To some extent, the individual S/3 user was responsible for this as he seemed afraid and in awe of the large and sophisticated users at shows and national seminars.

"Somehow the S/3 user came to the notion that he did not belong, and partly for this reason very little effort has been made to integrate him."

But this is changing, according to Del Gardo. Just recently Guidance received a promise from the Data Processing Management Association for proportional representation on panels for the S/3 user.

At the same time American Management Research is starting to formulate seminar programs that will specifically be directed to the S/3 user.

Guidance is planning to go national, but "right now, we are talking to a group of users in North Carolina who are setting up a chapter. Further, we have had inquiries from the San Francisco area and St. Louis area," he added.

The problem and danger in going to a national organization, according to Del Gardo, is the temptation to move too fast and forget the original goals. "To avoid this problem, we are going to make sure that each branch is fully functional and integrated into Guidance before we move on to the next chapter," he noted.

Other S/3 users interested in the concept or wanting to learn more about the Guidance International Organization can write Del Gardo at 261 5th Avenue, 10016.

Tight Control Cuts Film Loss

MEMPHIS – Officials of Motion Picture Laboratories, Inc. here are attacking the problem of film loss and controlling a raw film inventory with a small computer.

"We are recovering in a few months the total cost of our computer," said Frank McGeary, MPL president, "in closer control of the tens of thousands of dollars worth of film losses we've experienced in recent years."

MPL is a motion picture processing lab handling feature films, industrial and training films, documentaries, etc.

The computer monitors the printing of 25 kinds of raw film on each of the automated, high-speed film printers, he said. This monitoring gives management moment-by-moment control of its raw film inventory and provides a countercheck on MPL's billing system.

How Much Each Day

"Before we automated the control function," McGeary said, "we only knew at the end of each month how much footage had been lost through oversight, rework or carelessness. Now we know on a job-by-job basis exactly how much raw material we consume each day."

Key to increased control is a small computer to handle all data associated with film printers working two shifts, five days a week, he said.

Each of the Bell & Howell Model C printers is tied to an IBM System/7. The computer prohibits use of any film printer until appropriate data is typed into the system.

An operator keys in his identification number, work order of the job to be printed, machine number, type of film to be used and the number of prints to be made.

Then the computer turns on the printer and counts the actual footage consumed in the job, logging all appropriate information for later recovery.

At the end of the printing run, the operator signs off and the computer turns the printer off, signalling the end of job.

At the end of the day, the computer prepares a punched paper tape which contains summary information and data about each job.

This information is used to maintain a perpetual inventory on each of the 15 types of film MPL uses. Job costing information is used to double-check billing processes and tabulate average footage factors per print in each job.

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Relating Cost to Need

Backup Power: Who Needs It and at What Price?

By Michael Weinstein
Of the CW Staff

Users contemplating installing an uninterruptible power supply (UPS) system can estimate the initial cost with the formula of $1 for every watt of power required.

For example, a UPS system for a medium-sized computer requiring 45 kVA would cost about $45,000.

Such a system would be able to drive two typical IBM System 360 or System 370 processors and related peripherals.

As power requirements increase, the $1/W relationship decreases so that a system needing 150 kVA would cost less than $150,000.

For smaller systems – less than 45 kVA – the price per watt will increase, thus, a system needing 25 kVA continuous power would cost more than $25,000.

But for initial estimates, the $1/W formula gives users a benchmark for future investigation.

Two Functions

UPS systems perform two major functions: while the outside power is flowing, they act to smooth out spikes and drops in the line voltage and when the power fails they provide an alternative power source.

Analysis

Because of the types of problems that can be caused by a total power blackout a major consideration in investigating UPS systems is the time and efficiency with which they can keep the computer up and running during power failure.

Most battery-based systems are designed to keep the computer operating for one to 60 minutes.

The rationale behind the average 15 minute power backup is that after this time the computer will begin to feel the effects of lost air conditioning and users may feel the effects of lost lighting.

To build a system that would also drive the lighting and the air conditioning would require a much greater power potential and the cost would rise through the $1/W relationship accordingly.

In the limited time backup system the normal operating procedure is that if the power has not returned in about five minutes, the user has time to orderly shut down his operations.

For long periods of time, users must turn to some sort of generator system – such as an internal combustion engine.

Teamwork

Normally, such a system is used in conjunction with the shorter-term system so the user has one system for the first few minutes of a power blackout and another to take charge for longer periods.

One reason for the two systems is that at the time of the power blackout the backup system must immediately kick in. There is no time to start an engine-driven generator.

Any interruption can result in either equipment damage such as head crashes or in lost or incorrect data being read or written.

The power companies are neither prepared nor willing to design power distribution networks that offer power levels to insure that these problems do not occur.

For the majority of users, a drop in voltage means an electric motor winds down or the lights flicker.

The utilities argue that providing fail-safe power to computer users would mean large added costs to all electricity users. So far this argument has been strong enough to deter any major effort to improve power quality.

Printer/Plotters Make an Entry

•Electrostatic Device Gives Alphanumeric And Plotted Output

CUPERTINO, Calif. – Two large electrostatic raster scan plotting devices, one of which allows users to mix alphanumeric and graphic output, have been announced by Versatec, Inc.

The two units – Matrix Model 2000 Plotter and Matrix Model 2000A Printer/Plotter – use 20-inch wide paper in rolls 500 feet long.

Plotting can be done in an area 18.56 inches wide by any length up to 500 feet. Principal applications for a plotting capability this large are expected to be in the areas of architectural drawings, IC and PC board layout, weather mapping and plotting geophysical data.

The Model 2000 has 100 nib/in. resolution and a total of 1,856 nibs for plotting across the 18.56-inch plotting line.

Two hundred and thirty-two 8-bit bytes compromise one scan of plotting data with each data bit relating to one nib in the writing head.

An incremental paper drive stepper motor moves the paper at 0.8 in./sec.

The Model 2000A operates in three separate modes: printing, plotting and simultaneous print/plot.

It has the same plotting characteristics as the Model 2000 and, in addition, can print 232 7 x 9 dot matrix characters across the page from Ascii input data.

The Ascii input is decoded and converted to characters by means of a read-only memory included as standard hardware.

Simultaneous print/plot operation permits 80- or 132-column character printing on one side of the paper and simultaneous raster scan plotting on the remainder of the paper width, or print and plot may be intermixed as desired.

Unit price of the Model 2000 is $8,900 with the price of the expanded Model 2000A set at $10,900 from 10100 Bubb Road, 95014.

•1,200 Line/Min, 132 Char./Line Unit Offered Mini Users

NEWTON, Mass. – An electrostatic printer/plotter designed to interface with most minicomputers is available from Gould Data Systems.

The Gould 5000 prints alphanumeric data at 1,200 line/min and plots graphic material at 3 in./sec.

It has an eight-bit data path for input from the host minicomputer, and includes a 64-Ascii character, 7 x 9 dot matrix font. A 96-Ascii character, 7 x 9 dot matrix font with upper and lower cases and a 128-character, 7 x 9 dot matrix (custom mode) font are optional.

When used in the print mode, the Gould 5000 generates 132 char./line. When used in graphic mode, resolution is 100 dot/in. vertically and horizontally.

Computer printout is on 11-inch wide paper. The unit has a 1000-sheet fanfold paper-handling capacity and accepts 400 feet of paper rolled on a three-inch internal diameter core.

Base price of the Gould 5000 is $7,600 with printing and plotting software packages and interface hardware packages available for most minicomputer systems from 20 Ossipee Road, 02164.

Gould printer/plotter prints alphanumeric data at 1,200 line/min and plots graphic material at a rate of 3 in./sec.

Fixed-Head Disk Promises Double Access Speed for PDP-11 Users

SAN DIEGO – For about one fourth the cost, PDP-11 users can receive a fixed-head disk subsystem with twice the access speed of standard Digital Equipment offerings, according to a spokesman for Pacific Micronetics.

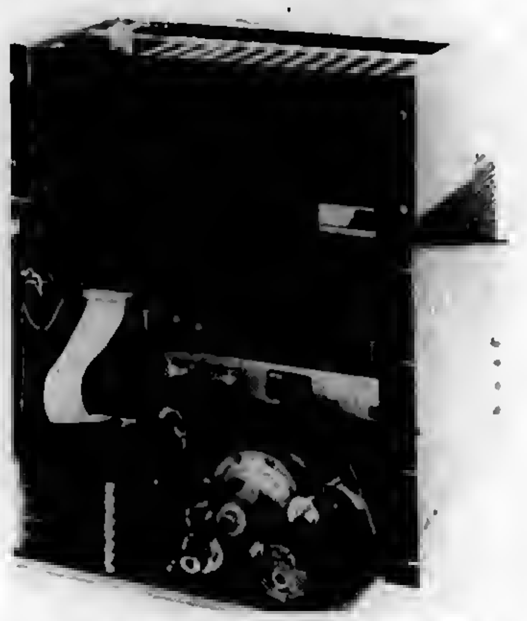
Capacities for the new line of disk memories range from 256K to 8.3M words per device. All units are hardware-compatible and sizes up to 2M words are fully compatible with DEC's Disk Operating Software Program.

Each of eight intermediate capacities is available in a single disk module or may be field-expanded from smaller modules.

Four Times as Fast

Pacific's disk subsystem is offered in either 8.4 msec or 16.8 msec access times with all units designed for 4.1 µsec/word transfer rate. This is about four times the speed offered by DEC, the spokesman asserted.

Prices range from $10,000 for a 256K-word subsystem with a 16.8-msec access time to $36,000 for a 2M-word subsystem with the faster 8.4-msec access time.



Fixed-head disk subsystem can build up to 8.3M words of on-line storage.

Comparably sized DEC subsystems would run about $14,000 and over $70,000 respectively and are only offered at the slower 16.8 msec access time, the spokesman concluded.

Deliveries run about 60 to 90 days from 5037 Ruffner St.

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Can Be Cheaper, Faster

Some Plotter Users 'Could Do Better With Printers'

By Michael Weinstein
Of the CW Staff

BOSTON – Many users presently using plotters to produce blueprints or for other large drafting applications could perform the same functions at about one-fifth the cost with electrostatic raster printers, according to John Nilsson, director of Decision Graphics Inc. (DGI).

In his own architectural operation, Nilsson uses a Gould 4800 electrostatic printer driven by a PDP-15/20 with 32K words of core memory and two fixed-head disk subsystems with a total of 500K words of on-line storage.

One function of this system is to produce architectural drawings for DGI's parent firm, Perry Dean & Stewart.

Drawings are produced by taking output from the electrostatic printer, which comes in strips 7-1/2 in. wide, and taping these strips together to form larger drawings, Nilsson explained.

For example, a final drawing 48 in. by 45 in. is made by aligning and carefully taping six strips of printer output, each 48 in. long, he said.

The taped composite drawing is then taken to a photographer who provides Nilsson with a positive for use in producing additional drawings with a blueprint machine.

'One-Fifth as Costly'

"When we compared our method with the conventional method of producing computerized drawings – using a flatbed plotter – we found the electrostatic approach is about one-fifth as costly in equipment alone," Nilsson said.

"In plotter applications for large drawings users must take the equipment off-line, and thus must buy a tape unit or some other storage device to drive the plotter. A typical system might cost about $50,000," he said.

"And electrostatic printing can also be used for alphanumeric printing while the plotter user generally needs a separate printer which must be added to equipment costs," he said.

Added to the cost advantages, Nilsson also stated there is a marked speed advantage when using electrostatic printers.

"For large drawings, a plotter might take well over an hour to produce the final drawing. The same drawing can be produced in strips by our printer in about three minutes. Even if it takes someone 10 more minutes to tape the strips we are still over an hour ahead of the plotter," Nilsson said.

Another problem inherent with plotters, according to Nilsson, is that they depend on the mechanical use of pens which can dry up and skip in the middle of a drawing.

"If this happens, the entire drawing is lost and the user must start again," he said.

As to the quality of final drawings – plotter vs. electrostatic printer – Nilsson stated there was not a crucial difference in his application.

"While it is true that the plotter approach produces sharper lines," he said, "the photographic process and the blueprint machine tend to close the dots printed by the electrostatic printer so that the final drawing looks like it was drawn with continuous lines.

"Presently, we are using this process to design buildings for the U.S. Army and all final drawings have been up to military and government standards," he added.

For users contemplating this approach, Nilsson said, the software needed to produce the strips from which drawings are made is generally available from the printer supplier.

Machine Language Used

"Initially we tried to write our own code in a higher level language (Fortran) but it became too complex and required too much time for execution. The only practical approach is to have the software written in machine language," he said.

"Concurrent with our activities, Gould was working on providing a similar software capability written in machine language for the PDP-15. When we learned of their efforts we cancelled our project and adopted their software. This has been used quite successfully with some modification," Nilsson concluded.

"Thus, I am sure that software exists for PDP-15 users but I also think that the vendors – primarily Gould and Versatec – have written similar programs for other mainframes."

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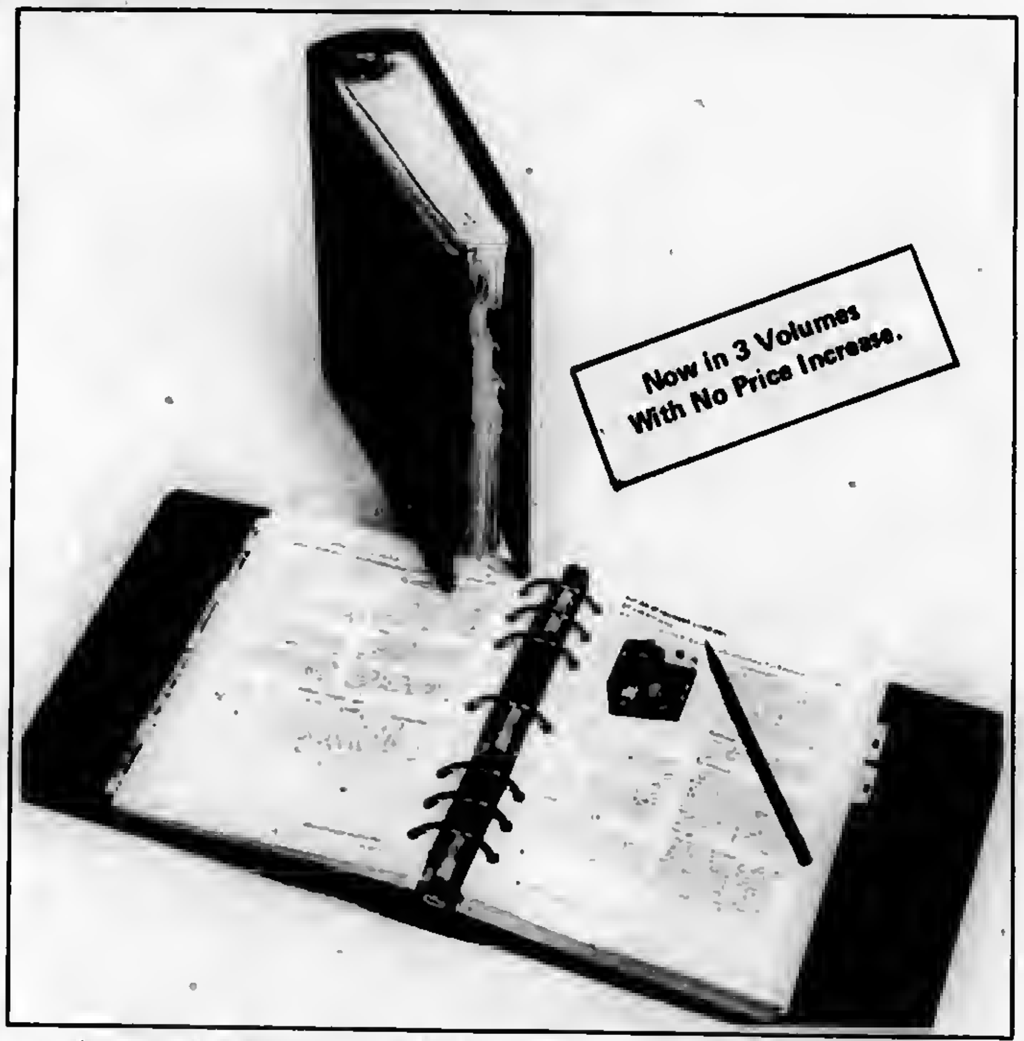

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NCR Cuts Rental On 50, Reduces 50, 100 Purchase

DAYTON, Ohio – NCR 50 users can reduce rental charges on their systems through a new extended-term rental policy. NCR has reduced the purchase price on both the 50s and Century 100s.

The company is offering three- and five-year rental contracts on Century 50 systems based on less than 100 hr/mo system usage.

The three-year plan, covering a basic 16K-byte system with an 8.4M-byte disk storage subsystem and a 200 line/min printer, will rent for $1,450/mo.

For a five-year contract on the same system, the rental will be $1,350/mo. Usage above the 100-hr contract limit is billed at $3.50/hr.

No Change Here

NCR's previous one-year rental contract based on a 200 hr/mo usage at $1,575/mo remains unchanged. Further, rental contracts based on the 100 hr/mo usage are not available on a one-year lease.

But users who currently have one-year lease plans can convert to extended-term contracts.

Concurrent with the release of extended-term plans, NCR has reduced the purchase price of the Century 50 from $88,000 to $71,500.

NCR Century 100s have also been reduced from $105,000 to $89,000, a 15% savings.

Tape Winder a 'Sidewinder'

ANDOVER, Mass. – Paper tape users can obtain an electrically driven tape winder for spooling long tapes from Peripheral Graphics, Inc.

The Sidewinder has a 7-in. tape reel which allows users to wind up to 800 feet of tape in one operation.

Price of the winder is $49.95 from Shetland Properties, York St., 01810.

Special Interest Groups Plan Meetings During NCC

Societies/ User Groups

NEW YORK – With only one national industry-wide show this year, several special interest groups will be capitalizing on the opportunity to hold meetings before, during and after the regularly scheduled National Computer Conference (NCC) sessions.

The ACM has scheduled a member/officer forum on Wednesday, June 6, from 5:30 – 7 p.m. The main emphasis will be on questions and comments from the members, although the officers will also be prepared to present specific items for information and feedback. Jean Sammet, vice-president, will chair the meeting.

Also on Wednesday, from 9 – 12 noon, the Community/Junior College Committee will hold an open meeting to discuss educational problems.

The ACM Standards Committee is scheduled to meet Tuesday afternoon, June 5; the IEE Computer Society's Standards Committee will convene at the same time.

The special interest groups of the Association for Computing Machinery have scheduled meetings beginning Monday, June 4 through Thursday.

These include meetings on Monday of the Joint Users Group, 1-5 p.m.; SigCosim (Computer Systems Installations Management), 6-7 p.m.; SigUCC (University Computing Centers), 7-10 p.m.; SigOps/IEEE Technical Committee on Operating Systems, 8-9:30 p.m.; and SigCue (Computer Uses in Education), 8-10 p.m.

On Tuesday, 8-9 a.m., the SigOps will have a business meeting. At 4:30-5:30 p.m. Student Chapter Representatives will meet, and from 6-7 p.m. SigLash (Language Analysis and Studies in the Humanities) will assemble for a business/technical meeting.

Wednesday's meetings include SigSim (Simulation), 7:30-9:30 a.m.; SigBDP (Business Data Processing), 7:30-9 a.m.; SigCas (Computer and Society), 7:30-9 a.m.; and Chapter Chairmen, 8:30-12 noon.

From 9-12 noon SigArch (Architecture of Computer Systems) will meet. Other Wednesday meetings include SigSoc technical meeting (Social and Behavioral Science Computing), 1:30-5:30; SigArt (Artificial Intelligence), SigBio (Biomedical Computing), SigComm (Data Communications), and SigMe (Measurement and Evaluation), all from 8-10 p.m.

On Thursday, SigPlan (Programming Languages) convenes from 8-10:30 p.m. The ACM Council meeting begins in the evening, 8-11 p.m. and reconvenes Friday at 9 a.m.

ACM's Sigplan/Sigmicro Set Languages Meeting

NEW YORK – Topics to be covered at ACM's Sigplan/Sigmicro Interface Meeting, scheduled for May 30 – June 1 at the Arden House in Harriman, N.Y., include "functional memory-based dynamic microprocessor for higher-level languages;" "language-oriented instruction sets;" "a general-purpose high-level language machine for minicomputers;" and "Basic semantics: microprogramming as a tool for teaching programming languages."

Fee is $30 for ACM members; $35 for (non-ACM) Sigplan or Sigmicro members; and $40 for others. Vice-chairman for the meeting is Dr. Stanley Habib, Polytechnic Institute of Brooklyn, 333 Jay St., Brooklyn, N.Y. 11201.

Virginia DPers Join Forces

RICHMOND, Va. – This city's DPers, in conjunction with all other municipalities throughout Virginia, have formed an association titled the Commonwealth of Virginia Information Sciences (Covis).

The association will provide a means for its members to exchange information, experiences and concepts. Covis will also participate in the development of government information systems.

CSMA Conference To Visit 5 Cities

WILMINGTON, Del. – The second annual National Communications Week sponsored by the Communications Systems Management Association (CSMA) will cover five cities in as many days, June 25-29, starting in New York City and moving through Philadelphia, Washington, D.C., Chicago and San Francisco.

The theme of the conference is "data and voice communications, user selection techniques" and includes programs on the total systems approach to planning, evaluating and selecting a communications systems.

The tutorial part of the program features such topics as "identifying systems objectives," "selection criteria," "systems synthesis," "effectiveness vs. efficiency" and "cost vs. performance."

CSMA is at 1102 West St., Suite 1003, 19801.

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Training Available?

Demand for Beginning Programmers Continues to Grow

J. Daniel Couger On Education

Despite the present market conditions, the demand for computer programmers is expected to continue to grow. The American Federation of Information Processing Societies conducted an exhaustive study last year to determine just how many people were in the data processing field. The study, by Bruce Gilchrist and R.E. Weber, showed 1 million people employed in the field, including 150,000 systems analysts; 210,000 programmers; 200,000 computer operators; and 440,000 keypunch operators.

The Gilchrist/Weber study produced results remarkably close to those made by the Bureau of Labor Statistics in the Occupational Outlook Handbook. The BLS study was based on average staffing size per particular size of CPU, the numbers of the various size CPUs in use and correction factors for productivity changes. The Gilchrist/Weber study analyzed a variety of sources, from both government and industry.

The BLS study indicates a strong demand for programmers through 1980: an average of 23,000 will be needed each year. This demand is comparable with that of other professional occupations for the same period.

The key question, of course, is whether the present educational programs are producing above or below the average annual forecast demand of 23,000 programmers. Although precise figures on entrant programmers are not available, another Gilchrist/Weber study estimates that only 5,000 out of 7,500 persons with associate degrees in data processing entered the DP labor force in 1971. There should be a high correlation between associate degree graduates and business programmer entrants.

Afips has estimated that 122,400 entered the labor force from all computer-related educational programs in 1971.

That figure includes not only programming, but all entrants to the data processing field: key entry, unit record, computer operators, etc. Large numbers of programmers are produced by the private EDP schools. In addition, the computer manufacturers' courses and industrial in-house training provide widespread programmer training.

The past two years saw a drastic "culling" of marginal quality training organizations. On the other hand, the remaining demand reveals ample opportunity for growth of high quality training and education programs.

Couger is professor of computer and management science at the University of Colorado.

Occupational Group	1968 Employment	% Growth Forecast 1970-1980	Net Increase in Occupation	Average Annual Openings (not incl. Transfers)
Programmers	175,000	129	200,000	23,000
Engineers	1,100,000	40.2	400,000	73,400
Accountants	500,000	43.4	220,000	33,200
Systems Analysts	150,000	183	275,000	27,000
Physicians	295,000	53.1	155,000	20,000

The Bureau of Labor Statistics Forecast of Staffing Needs for the Period 1968 to 1980

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Civil Service Unit Plans Seminars On Retrieval, Fiche

SAN FRANCISCO – Administrators, analysts and programmers in government DP installations will have a chance to learn more about storage and information retrieval techniques, and about computer/microfilm interfaces, at seminars scheduled back-to-back this August, by the regional office of the U.S. Civil Service Commission.

Concepts of storage and retrieval, costs of systems and their advantages/disadvantages will be covered Aug. 20-22. A "systems" approach to using CPUs and microfilm in combination will be the focus of a two-day session, Aug. 23 and 24, according to Dataflow Systems, Inc., which is presenting the courses for the commission.

The ADP Management Training Institute at the commission's office, 450 Golden Gate Ave., is handling registrations.

APL Services Cuts School, College Cost

TRENTON, N.J. – Educational institutions can use the time-sharing facilities of APL Services, Inc. for half the normal commercial rates, under a plan just announced by the company. The special rates only apply in off-peak hours.

APL/Service, the implementation of APL supported by APL Services, is available locally in Boston; Hartford and Stamford, Conn.; New York; Princeton, N.J.; Philadelphia; Washington, D.C.; Richmond, Va.; Miami; and Houston. Under the reduced rate plan, schools and colleges are charged $4/hr for connect time, 40 cent/sec for CPU time and $1/7,200 char./mo for storage, all based on an IBM 370/155.

APL Services is headquartered at 865 Lower Ferry Road, 08628.

Analysis Course Set

LOS ANGELES – A short course covering modern approaches to data analysis and forecasting will be offered at the International Hotel here June 5-8. Prepared by Technology Service Corp. (TSC) of Santa Monica, the course will examine nonlinear regression, classification analysis, cluster analysis and hypothesis/significance tests.

Emphasis will be on computer-based analysis of multivariate data.

The course fee of $350 includes materials, texts and luncheons. TSC is at 225 Santa Monica Blvd., Santa Monica, 90401.

CI Notes

SBC Death Seen in 1970

TULSA, Okla. – IBM had decided as early as July 1970 that "the service bureau business is not a sound one for IBM," recently available IBM management committee minutes indicated.

However, the management committee felt it would be "undesirable" to get out of the business in 1970 or 1971 because of the impact on corporate profitability, according to the minutes.

At the same time the management committee decided to investigate various alternatives of getting out of the business.

DEC Drops Lockheed Suit

BOSTON – Digital Equipment Corp. has agreed to drop its patent infringement suit against Lockheed Electronics.

In the suit, DEC charged that the addressing techniques used by Lockheed's Sue minicomputer infringed on patented techniques for DEC's PDP-11.

DEC said a countersuit filed by Lockheed to block the DEC suit is also being dismissed.

CA Toots Famous Horn

IRVINE, Calif. – Computer Automation, Inc., maker of the Naked Mini, brought out its air horn to herald new contracts for more than $3 million. Since the firm moved to Irvine, it has resumed blowing the horn for orders, but only for orders over $1 million.

Previously, the firm blew the horn for each order over $10,000, but had to silence the horn because of neighbors' complaints.

Supershorts

Itel has arranged a $10 million revolving line of credit with a group of banks for a subsidiary of Itel Finance Corp. The line will be used to finance the receivables associated with the sale of ISS products to OEMs.

– – –

Datasaab, division of Saab-Scania, has established U.S. headquarters in New York, with C.E. Jacobsson as general manager, U.S. operations. The firm is promoting its on-/off-line banking terminals and minicomputer products.

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Fabri-Tek, Inc. has signed an agreement with Microteck, Inc., Jogjakarta, Indonesia, that will effectively almost double production capabilities through the addition of 800 people to string memory planes and stacks.

– – –

Computer Machinery Corp. has named General Computer Services, Inc. as distributor for its products in Puerto Rico, the Dominican Republic, Haiti and the U.S. Virgin Islands.

'Predatory Practices'

Telex Sets IBM Damage at $361 Million

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Before resting its case in its antitrust suit against IBM, Telex financial authority James Heavner indicated that Telex had suffered damages amounting to $361.3 million as the result of IBM's "predatory practices" in the peripheral marketplace.

Heavner said Telex had lost $11.3 million because of cancellations bv leasing companies of contracts to buy Telex equipment.

In addition, he said, because Telex had reduced the prices on rented equipment in the field in response to such IBM actions as the 2319 disk drive price cut, this had caused losses amounting to $92.3 million.

Earlier testimony indicated that Telex had reduced the prices on all installed rental equipment even though IBM had announced the cost reductions only for the 2319-type drive.

Telex had done this because the 2319 was compatible with all of its 2314-type disk drives installed.

In addition, Heavner said Telex had lost another $257.7 million because it was deprived of its "rightful share" of the market due to the IBM actions such as on the 2319, the fixed-term lease plan and the extended lease plan.

In the case Telex is asking for a trebling of these damages, thus bringing the total to the $1.2 billion figure announced for the case. Treble damages are permissible in antitrust cases if one firm is found guilty.

The last Telex witness, Steve Jatras, Telex president, noted Telex had had the image of a growth company with investors and the general public, one that was "going to the moon," before the alleged IBM predatory practices.

But the IBM announcements of the fixed-term plan and other product adjustments made users wonder about the viability of Telex and whether it would be able to stay in the business, Jatras related.

After the IBM actions, he said, Telex had had more difficulty in getting loans and had also had some trouble recruiting personnel.

At the same time, he said, Telex had been a profitable operation prior to the moves and the IBM actions had made it unprofitable. He indicated the firm would show a loss of $8 million before taxes for its 1973 fiscal year.

In addition, he stated, at the end of 1969 Telex stock had had a value of $19 per share in the market, but after the IBM moves this had dropped drastically and the current value is $4.63 per share.

On cross examination, however, Jatras admitted Telex had changed its method of accounting from the financing system to the operating system during the same time frame and that this was forcing the firm to take some writeoffs now that it would not otherwise have taken.

IBM Maintenance Profits Drop

TULSA, Okla. – When IBM asked for a maintenance price increase in 1971, which was temporarily delayed by the Nixon Administration's wage price controls, IBM was – in its eyes – in an extremely bad position.

But most companies would prefer similar problems in keeping their profit levels up on maintenance.

According to a memo from D.W. Sweeney to P.M. Foley at IBM at that time, there was concern over the drop in maintenance service profitability in the prior two years.

In all, the gross profit as a percent of revenue had dropped from 52.2% at the end of 1968 to only 46.3% in July of 1970.

However, the net profit as a percent of revenues had dropped more dramatically – from 28.1% to 14.5%.

Memorex Confirms Financial Problems

SANTA CLARA, Calif. – Memorex Corp. has confirmed earlier reports in the *Wall Street Journal* that it does have financial difficulties and that the Bank of America, its largest creditor, has taken a major role in running its affairs.

The firm also said it is negotiating with firms to sell "a substantial equity interest" or to reach "some other form of business combination."

In addition, Memorex indicated that orders for its MRX mainframe series are "lagging."

President Laurence L. Spitters attributed the slow sales to "the newness of the systems product line to our equipment sales organization, the difficulty of initial entry into the market by a new computer systems supplier whose demonstrated capability isn't in systems products, and the hesitance of prospective customers engendered by adverse publicity regarding the company's financial condition."

Kroger Co. has cancelled an MRX order that would have produced $800,000 annual revenue, Memorex said.

Dedicated Application Market Expected to Triple in Five Years

NEWTON, Mass. – The dedicated application market will grow the most rapidly of any sector of the EDP industry in the next five years, according to *EDP Industry Report*, published by International Data Corp. here.

The market research firm estimated the revenues to U.S.-based manufacturers of dedicated application computers, most of which are minis, will triple between 1972 and 1977, growing from $560 million to $1.7 billion in 1977.

Shipments of dedicated machines rose 55% during 1972 to $560 million, setting the pace for continued rapid growth during the next few years, according to IDC.

Several factors contributed to the buying splurge, IDC said. The following factors were mentioned:

- "Pent-up user demand was unleashed as budgets loosened and the Phase II investment tax credits could apply.
- "IBM began volume shipments of its System/7, broadening the market base rather than increasing competition for the same dollars.
- "OEM manufacturers and systems houses further broadened the demand for minis as these sophisticated function boxes began to show up in terminals, machine tools and small business systems."

The "average" value of units shipped remained around $30,000, the same as in 1971, and IDC said it expects this level to continue for the next few years.

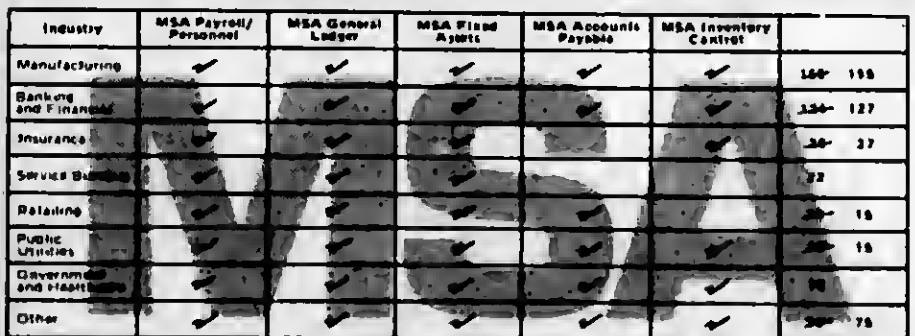
Although 50% or 9,400 of all dedicated application computers shipped in 1972 were in the under $25,000 price class, the total value of these shipments was $133 million or 24% of the $560 million total.

The $25,000 to $50,000 price range had 42% or 7,940 of the units shipped and held 50% or $278 million of the total value of shipments.

There were 1,200 units shipped in the $50,000 to $100,000 price range, accounting for 6% of the total number of shipments, but 16% or $90 million of the total value of shipments.

Units costing over $100,000 accounted for almost 11% or $59 million of the total value shipments, but numbered only 260 units shipped.

As typical systems in the various categories, the report mentioned the Nova and PDP—8/E in the under $25,000 range; the PDP—8/I, 11/20 in the $25,000 to $50,000 range; the IBM System/7 from $50,000 to $100,000 and SEL and GE/Pac in the over $100,000 category.



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Contracts

Management and Computer Services, Inc. has received a two-year facilities management contract from the West Chester Area School District, Pa.

La Compagnie Generale de Constructions Telephoniques, a French subsidiary of ITT, has received a $2.2 million contract from Russia's Aeroflot airline, to install message-switching equipment. The system will supply passenger information to Moscow area airports.

Keane Associates, Inc. has received a software subcontract from IBM to assist in the development of an on-line teleprocessing system.

Microdata Corp. has been awarded a contract to supply 1600 minicomputers to Photon, Inc. for incorporation in the Photon Pace Setter System.

Rapidata, Inc. has signed a $7.7 million, three-year contract with the New York Telephone Co., superseding a one-year contract already in effect. The new agreement covers the addition of dual processors to each of the two single Honeywell 400 systems now serving the company.

American Management Systems, Inc. has been awarded a contract by New Populist Action, Inc., a citizens' organization founded by former Senator Fred Harris, to develop and maintain a computer-based Membership Information Communications System.

PHD Systems for Computing, Inc. has received a consulting contract from John Hancock Mutual Life Insurance Co. for automation of a claims inquiry system.

Xynetics, Inc. signed a contract with Camsco, Inc. to provide Model 2000 automated plotting systems for incorporation into computerized Camsco "Markamatic" and "Gradamatic" systems.

FM4 Gila River Corp., which is operated by the Indians of the Gila River Reservation, has received a subcontract from University Computing Utility Co. to assist in data conversion.

Multinational Earnings

Nixon Backs Current Tax Laws

WASHINGTON, D.C. – President Nixon has backed the current tax laws governing profits earned abroad by U.S. companies, and essentially added his weight to those opposing the entire Burke-Hartke bill.

"Our income taxes aren't the cause of our trade problems and tax changes won't solve them," he told Congress.

He said the basic system of taxing profits earned abroad is "fundamentally sound. We shouldn't penalize American business by placing it at a disadvantage with respect to its foreign competitors," he stressed.

The President urged Congress to "refrain from enacting broad new changes in our tax laws governing foreign direct investment . . . (until) we see what possibilities for multilateral agreements emerge" from trade talks between nations.

The current ability of a U.S. firm to subtract the income taxes it pays to foreign governments from its U.S. tax liability would be repealed by the Burke-Hartke bill, which would also allow the company to deduct foreign taxes from foreign earnings.

Currently, a U.S. company pays U.S. taxes only on profits it brings back to the U.S. in any given year, and can defer taxes on the rest until such time as profits are returned to the states.

Under the Burke-Hartke bill, all corporate income earned abroad would be subject to U.S. income taxes in the year it is earned.

Mr. Nixon pointed out that other firms would fill the vacuum if U.S. firms were not abroad. If U.S. firms are hindered in taking advantage of "investment opportunities abroad, we can only expect that foreign firms will seize these opportunities at our expense," he warned.

L.D. Altman to Assume Fabri-Tek Presidency

MINNEAPOLIS – L.D. Altman has been named president of Fabri-Tek, Inc. He was formerly executive vice-president of the firm. Altman joined Fabri-Tek from Control Data Corp., where he had been a corporate vice-president and general manager of the western division.

Other Moves

- Gene Nicholl has been named president of DPA, Inc., a DP equipment leasing subsidiary of Pioneer Texas Corp. A former employee of DPA, he served with the firm for almost five years and was a vice-president before resigning in 1962.
- Dr. Robert Worsing has been appointed vice-president, development and operations, for the Infonet Division of Computer Sciences Corp.
- John B. Jackson has been elected a vice-president of IBM, where he continues as president of its Federal Systems Division. He joined IBM in 1954 and has acted as president of the Federal Systems Division since 1969.
- Charles R. Williams has been appointed vice-president, western operations, for Sperry Univac. He was formerly director of field marketing for the firm's western operations. In his new position, he will be responsible for all marketing and services operations in 11 western states.

Executive Corner

- Lockheed Electronics Co., Inc. has appointed two new vice-presidents: Arthur H. Benner is company vice-president and general manager, Products and Systems Division; and Matthew E. Tutino is vice-president, assistant to the president.
- Howard K. Cooper has joined Macrodata Corp. as vice-president, marketing and sales. He was formerly president of Nucleonic Products.
- George A. Hallenbeck, formerly vice-president, contract programming, for Interactive Data Corp., has been named vice-president, marketing, for the firm. He will continue to coordinate the company's contract programming activities.
- John R. Coutts, formerly vice-president, marketing, has been named president of Bunker Ramo Corp.'s Information Services Division.
- Herman W. Pass has joined Terminal Data Corp. as vice-president, technical marketing and new products development. In addition, he will direct the development of advanced laser recording and optical data processing systems.
- James Clark has been appointed executive vice-president of Terminal Equipment Corp. He was previously vice-president, operations, with Tycom Systems Corp., a manufacturing subsidiary of Terminal Equipment.

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Growth in Diversity of Components

Semiconductors Called Best for Any Digital Memory

By E. Drake Lundell Jr.
Of the CW Staff

BERKELEY, Calif. – Any digital memory requirement "can best be met using semiconductor technology," according to David A. Hodges of the Department of Electrical Engineering and Computer Sciences at the University of California here.

In a recent paper he noted that at present the diversity of the available components in this area was growing rapidly and the "optimum choice of components varies depending on the required storage capacity and on whether economy (component cost/bit), speed (access and cycle times), or usability (simplicity of timing, logic interfacing and powering) is of the first concern."

New Developments

At the same time, he said, new semiconductor processing techniques are being developed to improve the characteristics of semiconductor memory components and new forms of memories attractive for use in small systems and terminal applications are appearing.

Prices of large-quantity purchases – over 10,000 units – of semiconductor memory components "range roughly between $3 and $10 per component for designs that have been in production for a year or more," while the price of recently introduced devices "may be many times higher reflecting the supplier's attempt to recover development costs."

Price, he said, is less directly related to the number of bits per component than it is to "chip area, package cost, test cost, volume of production and competitive conditions."

The price of mature components, he predicted, will probably remain in the area of the $3 to $10 ranges rather than show radical departures from that level.

At the same time, Hodges forecast that the number of bits on a chip would continue to grow, but the rate of growth would slow down from the doubling every year that has been common in the past decade of the semiconductor memory business.

"The best single indicator of fundamental cost will continue to be the number of bits per component (bit density)," he added.

Today's bipolar RAMs and ROMs have access and cycle times that range from about 10 nsec to 80 nsec, while MOS units have a range between 80 nsec and 2 µsec, he noted, adding that "gradual reductions in these ranges are likely over the next few years."

The usability of semiconductor components, he said, is related to clock requirements, power supply requirements and address and data signal levels, and he noted that bipolar memories now available are easy to use since they meet most of these requirements as do the new 1K static MOS RAMs.

"Volatility of stored information used to be cited as a major disadvantage of semiconductor read-write memories," the researcher noted, but he added that "a variety of power supply backup, information storage backup and error correction techniques have been developed which eliminate volatility as a problem" for most systems.

At the same time, he said, "electrically alterable ROMs are being developed for the few applications where this still is a crucial issue."

Data on semiconductor memory components reliability indicates, he added, that component failure rates now fall between 0.0005% per 1,000 hours and 0.05% per 1,000 hours and that there is no significant difference between the MOS and bipolar units in this area of reliability.

What's Ahead?

However, to achieve these rates the components have to go through a careful burn-in period at the maximum rated temperatures to catch poor components, and he noted that during these tests as much as 1% of the units will fail and have to be rejected.

"Continuing attention to failure analysis, quality control in manufacture and screening and burn-in techniques could easily result in an order of magnitude of improvement in field service failure rates over the next few years," Hodges predicted.

At the same time, he claimed that both bipolar and MOS memory components are benefiting from new methods of manufacturing that will give them either higher densities or higher speeds or improve their usability in memory systems.

To date, he said, the memory market has been dominated by RAMs, ROMs and shift registers, but he stated that electrically alterable programmable read only memories would be available in the near future at only a slight increase in price over the more normally available ROMs.

Other new types of semiconductor memory involving "additional functional features obtained by using additional circuitry," in combination with the storage element, will also materialize in the near future, he predicted.

In addition, Hodges noted that "Content-Addressable Memories (CAM) have often been advocated as a replacement for the conventional location-addressed RAM in computer main memories" and that these devices were available to some extent today.

However, he found that "because the bit density is much lower than for RAM, the cost per bit is much higher," but predicted that "intensive development efforts might reduce the fundamental economic difference to a factor of two or so."

But even at this price reduction, he said, "CAM is not likely to find a major place in computer main memories" but will find its place in specialized applications requiring the storage of only a few hundred bits.

Growth Seen in Israeli DP

TEL AVIV, Israel – The total DP market in Israel is expected to rise about seven times above its current level in the next 10 years, according to a survey for the Israeli Ministry of Commerce.

An average annual growth rate of 22% is projected for total DP expenditures, with 60% of that figure devoted to teleprocessing and peripheral equipment.

Manufacturing of computers in Israel is expected to reach $120 million in 1981 from the current level of $11 million, the survey indicated.

About 65% of production in 1981 would be for export, the survey said.

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Cambridge Results Top 1972

6-Month Earnings Up at 2 Memory Firms

Six-month reports were improved at both Advanced Memory Systems, Inc. and Cambridge Memories, Inc., with Cambridge's revenues and earnings exceeding the results for all of 1972.

Cambridge President Joseph F. Kruy attributed the strong half performance to acceptance of the 370/Stor and minicomputer add-on memories, and the firm's steadily increasing rental base.

Cambridge Earnings Soer

Cambridge's six-month earnings, including a $62,880 tax credit, totaled $258,488 or 20 cents a share compared with $47,857 or 5 cents a share in the 1972 first helf.

Revenues more than tripled to $4.7 million from $1.5 million in a comparable year-ago period.

In the second quarter, earnings, including a $5,880 tax credit, totaled $140,076 or 11 cents a share, compared with $79,639 or 8 cents a share in the 1972 period. The 1972 figure includes a $38,277 tax credit.

Revenues jumped to $2.8 million from $872,163 a year ago.

Increased R&D

Cambridge has increased its R&D expenditures "substantially. We expect these measures to result in a high rate of new product introductions during the coming year," Kruy said.

Advanced Memory Systems' six-month earnings rose to $1.3 million or 74 cents a share, including a $616,000 tax credit, compared with a loss of $38,177 or 4 cents a share in the comparable 1972 period.

Revenues rose to $13.7 million from $4.8 million a year ago.

In the quarter, earnings totaled $695,201 or 38 cents a share, including a $321,000 special credit, compared with $287,616 or 19 cents a share in the year-ago period, which included $150,000 in tax credits.

Revenues for the second period rose to $7.5 million from $3.3 million in the same 1972 period.

TEC Records 9-Month Earnings

TUCSON, Ariz. – Record sales and earnings have been reported for the quarter and nine-month period ended March 31 by TEC, Inc., maker of CRTs and components.

In the quarter, earnings soared to $253,082 or 37 cents a share compared with $87,587 or 13 cents a share in the comparable 1972 period. Revenues climbed to $2.1 million from $1.3 million a year ago.

For the nine-month period, earnings rose 207%, to $475,383 or 70 cents a share compered with $154,877 or 23 cents a share in the same period last year.

Revenues rose 50% to $5.1 million from $3.4 million in the 1972 period, for which figures are restated.

Wang Quarter Earnings Up

TEWKSBURY, Mass. – Wang Laboratories, Inc. posted increased third quarter earnings of over $1 million, but the nine-month report showed decreased earnings, attributed by the firm to marketing costs for the 1200 cassette typewriter.

In the first quarter, earnings reached a record. $1 million or 26 cents a share compared with $889,598 or 22 cents a share in the year-ago period. Revenues reached $12.9 million, up from $9.8 million in the 1972 third quarter.

For the nine months, earnings declined to $1.8 million or 44 cents a share from $2 million or 50 cents a share in the 1972 period. Revenues rose to almost $33 million from $26.1 million a year ago.

Dr. An Wang said nine-month expenses for the 1200 typewriter exceeded income, primarily from short-term rentals, by about $1 million, but he expects that on a current monthly basis income will overtake expenses by June 1973.

The 2200 "Basic" language programmable calculator is being well received in the market, Wang said, and he anticipates sales of this product will become an important portion of the company's total business in the forthcoming periods.

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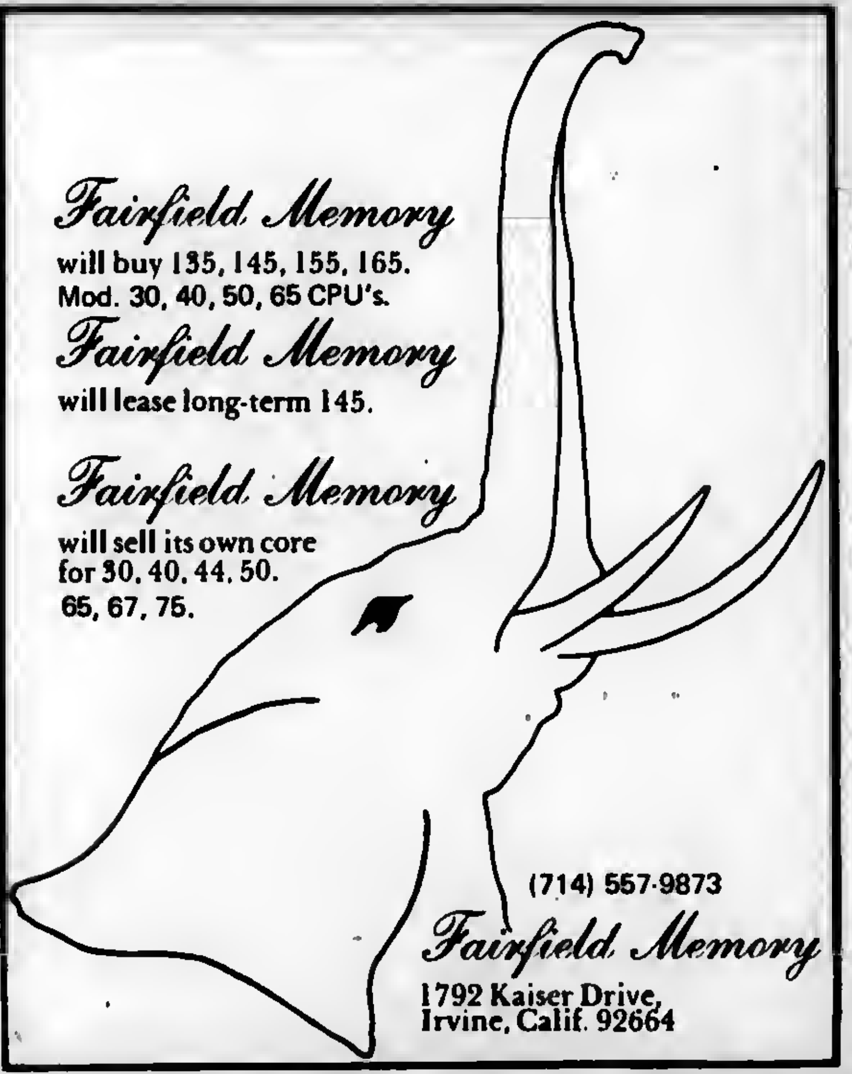

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Nickels & Dimes

Pitney Bowes' first quarter earnings, which rose 15% from last year, were reduced by $1.3 million in the first quarter by its equity in losses and amortization charges of **Pitney Bowes-Alpex**, and by $652,000 by the losses of its European retail systems operations.

Pitney Bowes expects Pitney Bowes-Alpex to "continue to have losses at least through the balance of the year," President Fred T. Allen said.

$$$

Wavetek is optimistic about the future of its data communications operations, but expects profitability in the area of data communications operations is "at least six months away," President John M. Thornton said.

$$$

The management of **NN Corp.** is paying particular attention to the operations of its **Executive Computer Systems** subsidiary, where revenues "have not materialized as rapidly as anticipated," the firm said.

$$$

The board of directors of **Graham Magnetics** has authorized the company to purchase up to 50,000 shares of its outstanding common stock on the open market to be held as treasury stock.

$$$

National Information Services saw "major improvement in its minicomputer system business in 1972, especially in the area of management information systems designed for small- to medium-size business, President Gilbert D. Beinhocker said.

$$$

Rapidata increased its annual dividend to 5 cents a share from 3 cents a share last year. The dividend is payable May 21 to shareholders of record May 7.

$$$

Correction

Applied Data Research had its second consecutive quarter in which software product sales exceeded $1 million. Earnings for the period totaled $56,287 compared with $13,590 in the year-ago period, while revenues reached a record $2.4 million from $2.1 million a year ago.

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UCC First Quarter Earnings Decline

DALLAS – University Computing Co.'s first quarter earnings figures reflect negligible realized capital gains from insurance operations in the period ended March 31.

Earnings for the period totaled $2.1 million or 26 cents a share compared with $11.8 million or $1.34 a share in the year-ago period. Capital gains from insurance operations accounted for $10.6 million of earnings in the 1972 period.

Consolidated revenue totaled $25.8 million compared with a restated $26.2 million in the same 1972 quarter. Operating results were restated to set forth separately results of the sold communications manufacturing and life insurance subsidiaries as discontinued operations, the firm said.

Income From Units

Results from the units before taxes, corporate overhead and financial costs were $1.3 million on revenue of $20.9 million from computing operations, University Computing Utility Co.; and underwriting income of $1.9 million and investment income of $1.8 million from the Gulf Insurance Company.

No earnings were reported from the Computer Leasing Co. which had $4.9 million in revenue, as depreciation of equipment is calculated to equal revenue, less selling, administrative and financial costs.

During the quarter, UCC increased by $3.5 million to $21.7 million its investment in Data Transmission Co., the firm said.

Overseas Sales and Rental Revenue Help Boost Inforex 1st Period Net

BURLINGTON, Mass. – Increased sales to its overseas distributors and higher rental and service revenues were cited as helping Inforex, Inc. report first quarter earnings of $813,000 or 29 cents a share compared with a loss of $194,000 or 8 cents a share in the 1972 period ended March 30.

The key-to-disk maker's revenues totaled $7.8 million compared with $4.3 million in the year-ago period.

Rental and service revenues of $3.4 million for the quarter represent an increase of 19% over the fourth quarter of 1972, and were more than twice the $1.6 million reported for the first quarter of last year, the firm said.

The three-fold gain in other sales as reported a year ago largely reflects increased sales to the firm's overseas distributor network, an Inforex spokesman said.

Keystation shipments during the quarter totaled 2,046. At the end of March, the company said its installed base was 13,893 keystations, with 826 customers. Inforex said 97 new customers were added during the quarter.

The backlog at the end of March was $9 million compared with $11.7 million at year-end, although the keystations were at the same level, according to President T.B. Horgan.

The if sold value of the backlog declined, he said, because of heavy first quarter installations of extra-charge features plus a reduction in the selling price of Inforex equipment in Europe.

Pertec 3d Period Up, 9 Months Drop

LOS ANGELES – Pertec Corp.'s third quarter earnings and revenues were up from those of the same period a year ago, but nine month earnings sagged.

Earnings in the quarter reached $435,000 or 14 cents a share compared with $379,000 or 12 cents a share for the year-ago period.

Revenues rose to $7.5 million compared with $5.1 million in the same 1972 period.

The rise in revenues came from increases in all segments of business, according to President Ryal R. Poppa, who added that despite continuing high expenditures in engineering and marketing, earnings increased over the previous quarter.

In the nine months, earnings, including an $80,000 extraordinary expense associated with a proxy fight, totaled $1.1 million or 35 cents a share compared with $1.6 million or 50 cents a share in the same 1972 period.

Revenues rose to $19.4 million from $16.8 million a year ago.

New Registrations

WALL STREET COMPUTER CORP., 1212 Ave. of the Americas, New York, N.Y., a brokerage house bookkeeping service, filed to register 117,466 shares of common, issuable upon exercise of warrants issued in connection with the acquisition of the assets of Data Decision Corp.

RECOGNITION EQUIPMENT INC., 2701 East Grauwyler Road, Irving, Texas, filed to register 120,377 shares of common, in exchange for outstanding common stock of Corporation S, at the rate of one-seventh of a Recognition share for each Corporation S share.

Acquisitions

Bunker Ramo has acquired the Electronic Store Information Systems Division of Nuclear Data, Inc. for $3.2 million in cash.

Negotiations have been terminated regarding the acquisition of First National Indemnity Co. of Cisco, Texas, by Itel Corp.

Airpax Electronics Inc. has reached an agreement in principle to acquire all outstanding stock of American Data Corp. of Huntsville, Ala.

Western Union Corp. has agreed in principle to acquire National Sharedata Corp. in a stock swap valued at $23.5 million.

Computer Identics Corp. has acquired ACI Systems Corp. from Intermodal Transportation Systems, Inc. for an undisclosed sum of cash and shares of Computer Identics' common stock.

The acquisition of Western Dynex Corp. by Microdata Corp. has been terminated by mutual agreement.

Fabri-Tek Inc. has agreed to acquire Digiac Corp. of Long Island, N.Y. Digiac produces computer educational training systems.

Sedgwick Printout Systems Corp. of Princeton, N.J., has acquired American Computergraphics Corp. for an undisclosed amount of cash.

Transnet Corp. has absorbed Sigmatron, Inc., a California corporation, into Sigmatron, Inc., a wholly owned Delaware subsidiary of Transnet for 613,274 shares of its common stock.

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CLOSING PRICES THURSDAY, MAY 17, 1973

SOFTWARE & EDP SERVICES

EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 17 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1 1/4	0	0.0
A	APPLIED DATA RES.	2- 4	2 1/8	- 5/8	-22.7
O	APPLIED LOGIC	2- 3	1 1/2	- 1/8	-7.6
N	AUTOMATIC DATA PROC	65- 94	68 1/4	-5 1/2	-7.4
O	BRANDON APPLIED SYST	1- 1	5/8	0	0.0
O	COMPUTER DIMENSIONS	2- 5	4	- 1/4	-5.8
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	2- 5	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	2 5/8	- 1/2	-16.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	+ 1/8	-9.0
O	COMPUTER TECHNOLOGY	2- 3	1 1/2	- 1/4	-14.2
O	COMPUTER USAGE	5- 9	5 1/4	- 1/2	-8.6
O	COMRESS	1- 2	1/4	0	0.0
O	COMSHARE	5- 9	5 1/4	- 1/8	-2.3
N	CORDURA CORP	6- 15	6 7/8	- 7/8	-11.2
O	DATATAB	3- 4	2 1/4	0	0.0
O	EDP RESOURCES	1- 3	1	- 1/8	-11.1
A	ELECT COMP PROG	1- 2	1 1/8	- 1/8	-10.0
N	ELECTRONIC DATA SYS.	35- 56	37 1/2	-1 5/8	-4.1
O	INFORMATICS	2- 6	3 1/2	+ 3/4	+27.2
O	I.U.A. DATA CORP	1- 1	3/4	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 3/8	- 3/8	-5.5
O	LOGICON	4- 7	4 1/8	- 1/8	-2.9
A	MANAGEMENT DATA	2- 5	2	0	0.0
O	NATIONAL CSS INC	8- 41	24	-1	-4.0
O	NATIONAL INFO SRVCS	1- 2	1 1/8	0	0.0
P	ON LINE SYSTEMS INC	13- 17	13	-1 3/4	-11.8
N	PLANNING RESEARCH	3- 7	2 5/8	- 7/8	-25.0
O	PROGRAMMING METHODS	22- 24	23 1/4	0	0.0
O	PROGRAMMING & SYS	1- 1	7/8	0	0.0
O	RAPIDATA INC	13- 24	11	-1 3/4	-13.7
O	SCIENTIFIC COMPUTERS	1- 2	1	0	0.0
O	SIMPLICITY COMPUTER	2- 4	3 1/4	- 1/4	-7.1
O	TBS COMPUTER CENTERS	3- 4	2 3/4	0	0.0
O	TCC INC	1- 1	1/2	0	0.0
O	TYMSHARE INC	7- 12	7 1/8	- 1/2	-6.5
O	UNITED DATA CENTER	5- 6	4	- 1/4	-5.8
N	UNIVERSITY COMPUTING	5- 11	5	-1 1/8	-18.3
A	URS SYSTEMS	4- 8	4 1/2	- 1/4	-5.2

PERIPHERALS & SUBSYSTEMS

EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 17 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	15- 34	15 1/8	-1	-6.2
O	ADVANCED MEMORY SYS	8- 23	9 1/2	+1 1/4	+15.1
N	AMPEX CORP	4- 7	4 1/8	- 3/8	-8.3
O	ANDERSON JACOBSON	3- 6	3 1/4	-1	-23.5
O	BEEHIVE MEDICAL ELEC	6- 10	7	- 1/2	-6.6
A	BOLT,BERANEK & NEW	7- 12	7 1/8	- 7/8	-10.9
N	BUNKER-RAMO	6- 18	12 1/2	-2 1/8	-14.5
A	CALCOMP	7- 13	7 3/8	-1 5/8	-18.0
O	CAMBRIDGE MEMORIES	10- 15	11 1/4	+ 1/4	+2.2
O	CENTRONICS DATA COMP	13- 28	20	-2 1/4	-10.1
O	CODEX CORP	11- 19	11 1/2	-1 1/2	-11.5
O	COGNITRONICS	1- 3	1 7/8	- 1/8	-6.2
O	COMPUTER COMMUN.	2- 4	1 3/4	+ 1/8	+7.6
A	COMPUTER EQUIPMENT	2- 3	2 1/2	- 3/8	-13.0
O	COMPUTER MACHINERY	7- 13	7 5/8	- 5/8	-7.5
O	COMPUTER TRANSCEIVER	2- 6	1 3/4	- 1/8	-6.5
A	COMPUTEST	3- 5	4 7/8	0	0.0
N	CONRAC CORP	17- 32	17 1/4	-1 5/8	-8.6
A	DATA PRODUCTS CORP	3- 4	2 5/8	- 1/8	-4.5
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 5/8	0	0.0
O	DIZAN CONTROLS	2- 4	2 1/4	- 1/8	-5.2
N	ELECTRONIC M & M	3- 6	3 3/8	- 5/8	-15.6
O	FABRI-TEK	3- 5	2 3/4	- 1/4	-8.3
O	GENERAL COMPUTER SYS	6- 9	5 3/4	0	0.0
N	GENERAL ELECTRIC	58- 76	57 3/4	-3 1/4	-5.3
N	HAZELTINE CORP	7- 9	6 3/4	- 3/8	-5.2
O	INFOREX INC	12- 23	11 7/8	-3 5/8	-23.3
O	INFORMATION DISPLAYS	1- 2	3/4	0	0.0
O	INFORMATION INTL INC	11- 15	10 1/2	- 1/2	-4.5
A	LUNDY ELECTRONICS	4- 9	4 1/2	- 3/8	-7.5
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	17- 28	18	-1 3/4	-8.8
N	MOHAWK DATA SCI	4- 13	4	- 7/8	-17.9
O	ODEC COMPUTER SYST.	3- 6	3	- 1/4	-7.6
O	OPTICAL SCANNING	2- 7	3 3/4	0	0.0
O	PERTEC CORP	5- 8	6 1/8	- 5/8	-9.2
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	4- 9	4 1/8	- 3/8	-8.3
O	PRECISION INST.	2- 6	3	- 1/2	-14.2
O	RECOGNITION EQUIP	4- 8	4 5/8	- 5/8	-11.9
N	SANDERS ASSOCIATES	8- 18	7 3/4	- 7/8	-10.1
O	SCAN DATA	2- 6	1 3/4	- 1/4	-12.5
O	STORAGE TECHNOLOGY	17- 34	13 3/4	-3 1/4	-19.1
O	SYCOR INC	9- 14	12	-1 1/2	-11.1
O	TALLY CORP.	2- 14	2 3/8	-1 1/8	-32.1
N	TEKTRONIX INC	34- 53	33 7/8	-2 7/8	-7.8
N	TELEX	4- 6	3 5/8	- 1/8	-3.3
O	WILTEK INC	13- 18	11 3/4	0	0.0

SUPPLIES & ACCESSORIES

EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 17 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	6 1/2	- 1/4	-3.7
A	BARRY WRIGHT	3- 13	7 1/2	- 1/2	-6.2
A	DATA DOCUMENTS	19- 22	19 5/8	- 3/8	-1.8
O	DUPLEX PRODUCTS INC	8- 10	7 3/4	0	0.0
N	ENNIS BUS. FORMS	5- 8	5 1/4	- 1/2	-8.6
O	GRAHAM MAGNETICS	13- 20	13	- 3/4	-5.4
O	GRAPHIC CONTROLS	10- 12	9 3/4	-1	-9.3
N	3M COMPANY	78- 89	80	-3	-3.6
O	MOORE CORP LTD	55- 60	54 3/4	-3 1/8	-5.3
N	NASHUA CORP	42- 58	48 3/4	+ 1/2	+1.0
O	REYNOLDS & REYNOLD	41- 51	41	-3	-6.8
O	STANDARD REGISTER	16- 20	15 3/4	-1 1/4	-7.3
O	TAB PRODUCTS CO	14- 23	12	- 1/2	-4.0
N	UARCO	19- 23	18 1/2	- 1/4	-1.3
A	WABASH MAGNETICS	6- 7	5 7/8	+ 1/8	+2.1
N	WALLACE BUS FORMS	20- 26	19 1/2	- 3/4	-3.7

COMPUTER SYSTEMS

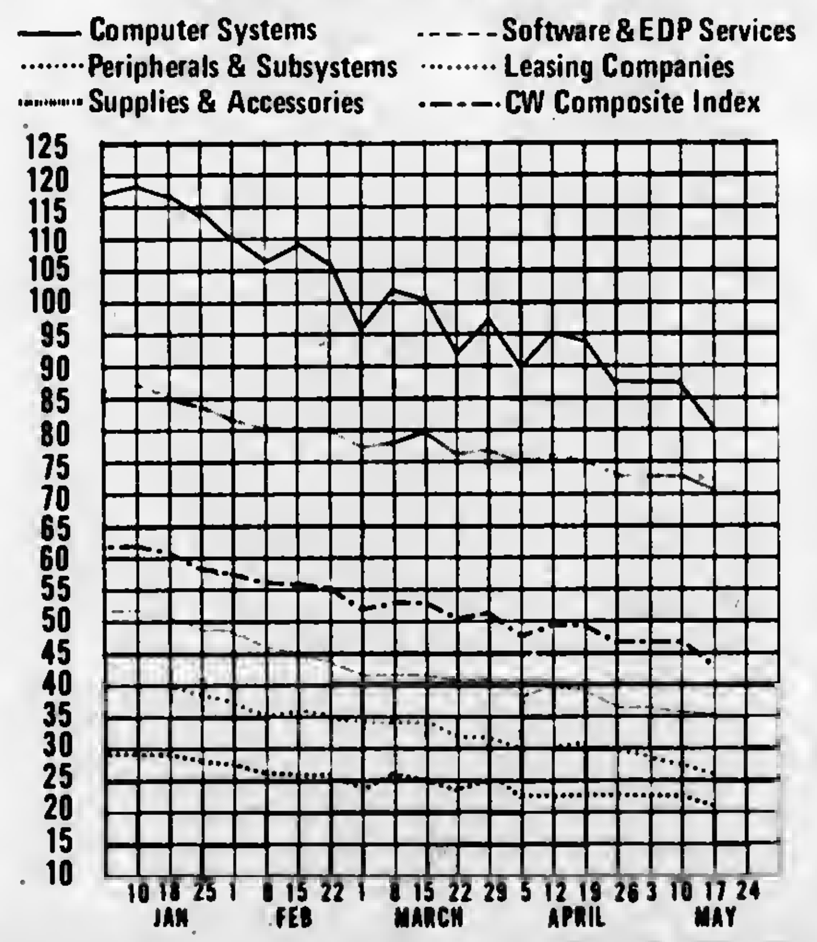
EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 17 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	211-245	217 1/8	-5	-2.2
N	COLLINS RADIO	18- 26	19 3/8	- 7/8	-4.3
N	CONTROL DATA CORP	42- 62	42 1/2	-3 1/8	-6.8
O	DATA GENERAL CORP	32-131	37	-3 1/4	-8.0
O	DIGITAL COMP CONTROL	3- 6	3 1/8	+ 1/8	+4.1
N	DIGITAL EQUIPMENT	73-105	80	-6 3/8	-7.3
N	ELECTRONIC ASSOC.	4- 9	4 1/4	- 7/8	-17.0
A	ELECTRONIC ENGINEER.	7- 11	6 1/2	-1 1/8	-14.7
N	FOXBORO	24- 32	24 1/2	-1 1/8	-4.3
O	GENERAL AUTOMATION	26- 55	28 1/2	-7 1/2	-20.8
O	GRI COMPUTER CORP	1- 3	1 1/8	- 1/8	-10.0
N	HEWLETT-PACKARD CO	74- 95	75 1/2	-3 5/8	-4.5
N	HONEYWELL INC	105-139	106 3/4	-2 7/8	-2.6
N	IBM	396-457	397	-13 1/2	-3.2
O	INTERDATA INC	7- 13	9 7/8	- 7/8	-8.1
N	MEMOREX	2- 19	3	-3 1/8	-51.0
O	MICRODATA CORP	6- 10	4 1/2	- 7/8	-16.2
N	NCR	27- 35	32 5/8	-1	-2.9
N	RAYTHEON CO	26- 34	27 1/8	- 7/8	-3.1
N	SPERRY RAND	38- 50	38 1/8	-2 5/8	-6.4
A	SYSTEMS ENG. LABS	3- 8	3	- 5/8	-17.2
N	VARIAN ASSOCIATES	12- 20	12 1/8	-1	-7.6
N	WANG LABS.	15- 34	15 1/4	-1 3/4	-10.2
N	XEROX CORP	141-169	141 1/4	-13 1/2	-8.7

LEASING COMPANIES

EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 17 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	2- 5	1 3/4	- 1/2	-22.2
O	BRESNAHAN COMP.	1- 2	2 1/8	+ 1/8	+6.2
O	COMDISCO INC	9- 17	8 5/8	- 7/8	-9.2
O	COMMERCE GROUP CORP	4- 4	3 1/2	- 1/4	-6.6
O	COMPUTER EXCHANGE	1- 1	5/8	0	0.0
A	COMPUTER INVSTRS GRP	3- 8	2 3/4	- 3/8	-12.0
O	COMP. INSTALLATIONS	2- 2	1 1/2	- 1/8	-7.6
N	DPF INC	6- 9	6	0	0.0
M	DATRONIC RENTAL	2- 3	2 1/4	0	0.0
A	DCL INC	2- 3	2	- 1/4	-11.1
A	DEARBORN-STORM	15- 26	14 7/8	-2	-11.8
A	DPA, INC.	5- 8	5 3/8	+ 1/4	+4.8
A	GRANITE MGT	3- 6	2 7/8	- 1/8	-4.1
A	GREYHOUND COMPUTER	4- 6	3 5/8	- 1/2	-12.1
A	ITEL	5- 12	5 3/8	+ 1/8	+2.3
N	LEASCO CORP	9- 18	9 5/8	- 7/8	-8.3
O	LEASPAC CORP	2- 8	2 1/4	0	0.0
O	LECTRO MGT INC	1- 2	3/4	0	0.0
A	ROCKWOOD COMPUTER	1- 3	1 1/4	- 3/8	-23.0
O	SYSTEMS CAPITAL	7- 15	6 1/4	- 1/4	-3.8
N	U.S. LEASING	20- 36	20 1/4	-4 1/2	-18.1

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

NATIONAL DATA
Nine Months Ended Feb. 28

	1973	1972
Shr Ernd	$.29	$.16
Revenue	9,932,000	6,539,000
Earnings	1,420,000	807,000

XEROX
Three Months Ended March 31

	1973	1972
Shr Ernd	$.88	$.73
Revenue	668,700,000	549,800,000
Earnings	69,800,000	57,400,000

COMPUTER DESIGN
Year Ended Dec. 31

	1972	1971
Shr Ernd	.....	$.58
Revenue	$18,582,000	14,332,708
Earnings	(678,036)	828,313

TALLY
Year Ended Dec. 31

	1972	a1971
Revenue	$12,332,345	$9,962,142
bSpec Cred	17,500	116,658
Loss	1,441,787	1,665,785

a-Restated to reflect reclassification of a loss from discontinued operations of subsidiary. b-In 1972, tax credit; in 1971, gain on sale of assets on discontinuance of operations of subsidiary, from costs of relocating to new plant and tax credits.

IBM
Three Months Ended March 31

	1973 (000)	1972 (000)
Shr Ernd	$2.92	$2.64
Revenue	2,450,511	2,312,249
Earnings	340,132	305,708

BURROUGHS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.99	$.66
Revenue	274,435,000	220,602,000
Spec Cred	a2,425,000	.....
Earnings	18,771,000	12,160,000

a-From sale of securities.

TERMINAL EQUIPMENT
Six Months Ended March 31

	1973	1972
Shr Ernd	$.17	.....
Revenue	907,709	$256,914
Earnings	112,436	(118,464)

INTERDATA
Three Months Ended March 30

	1973	1972
Shr Ernd	$.13	$.11
Revenue	3,829,600	2,841,500
Tax Cred	43,600	146,800
Earnings	272,500	210,700

HONEYWELL
Three Months Ended March 31

	1973	1972
Shr Ernd	$.89	$.60
Revenue	525,928,000	450,195,000
Tax Cred	786,000	.....
Earnings	16,905,000	11,224,000

TEXAS INSTRUMENTS
Three Months Ended March 31

	1973	1972
Shr Ernd	$1.67	$.97
Revenue	289,008,000	215,762,000
Earnings	18,864,000	10,777,000

COMPUTER AUTOMATION
Three Months Ended April 1

	1973	1972
Shr Ernd	$.16	$.12
Revenue	3,081,161	1,227,002
Tax Cred	1,000	78,000
Earnings	272,020	162,827
9 Mo Shr	.54	.26
Revenue	7,892,090	2,936,413
Tax Cred	184,000	151,000
Earnings	849,927	316,270

GRAHAM MAGNETICS
Nine Months Ended March 31

	1973	1972
Shr Ernd	$.73	a$.89
Revenue	8,263,333	6,897,093
Tax Cred	.....	190,000
Earnings	680,091	661,348

a-Adjusted to reflect a 3% stock dividend in March 1973.

APPLIED MAGNETICS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.14	$.09
Revenue	11,483,000	6,268,000
Earnings	603,000	393,000
6 Mo Shr	.24	.16
Revenue	21,872,000	11,900,000
Earnings	1,028,000	676,000

CONTROL DATA
Three Months Ended March 31

	1973	1972
Shr Ernd	$1.08	$.73
Revenue	200,598,000	127,721,000
Spec Cred	274,000	510,000
Earnings	17,417,000	11,047,000

RAPIDATA
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.58	a$.33
Revenue	7,684,214	5,401,463
Tax Cred	.....	74,070
Earnings	1,086,253	567,644

a-Adjusted for two-for-one stock split in June 1972.

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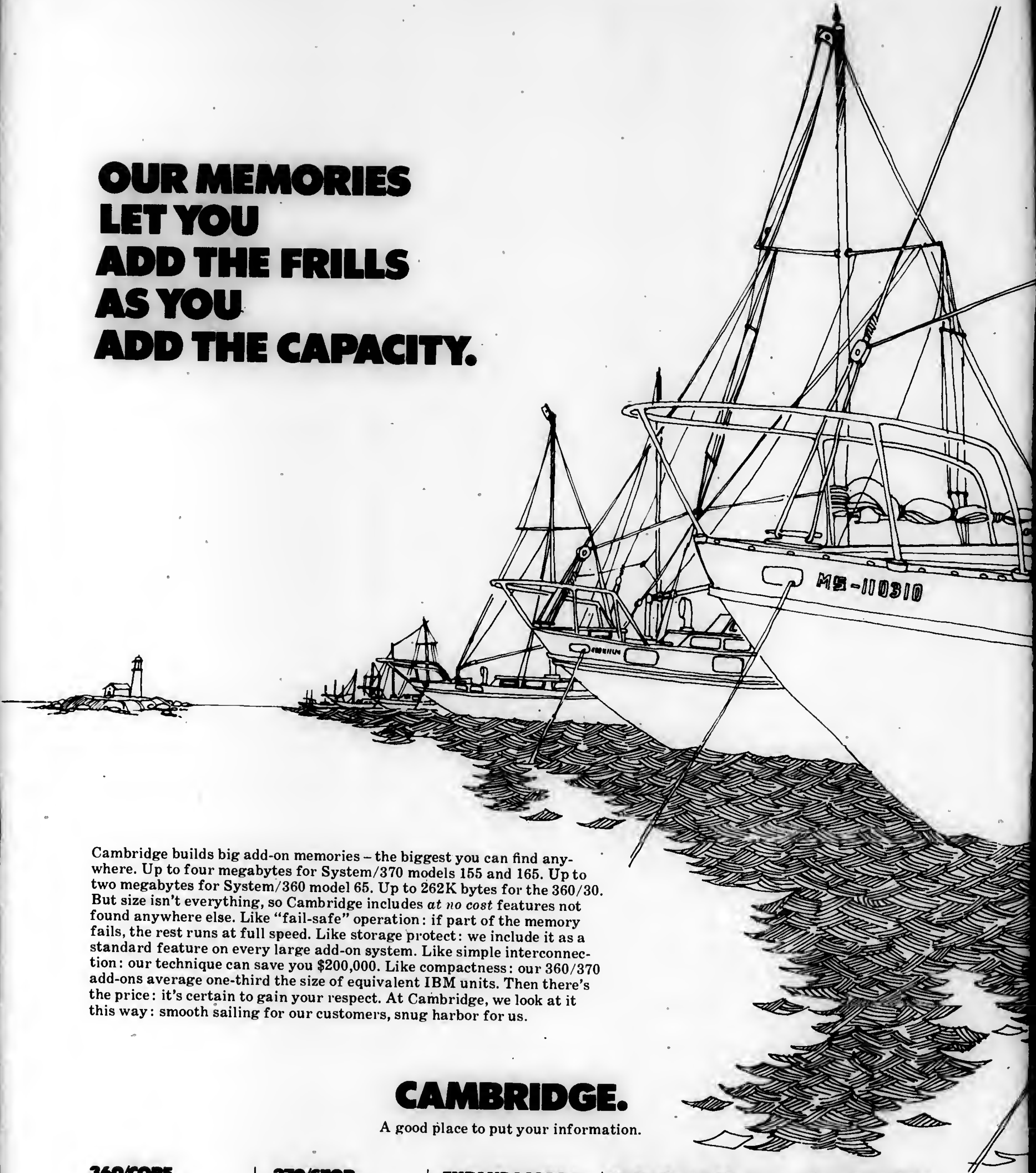

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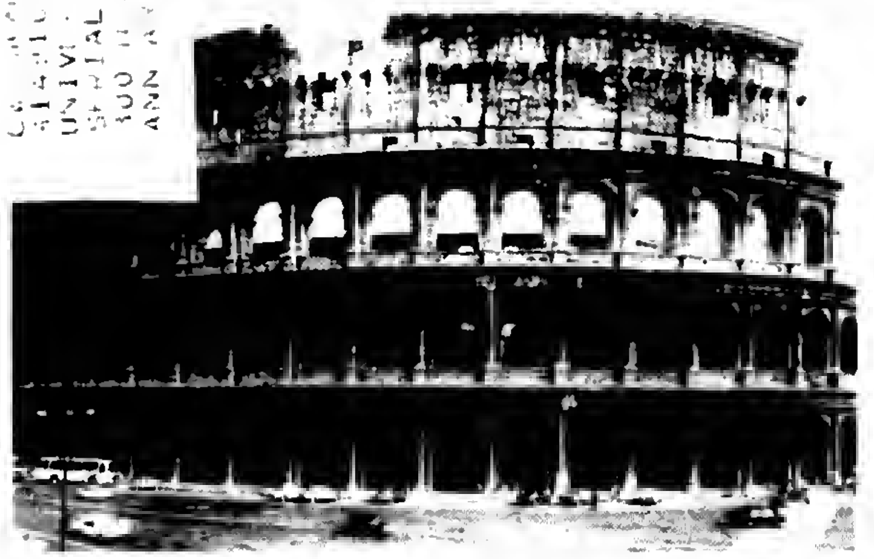

NCC visitors to the exhibition floor of the New York Coliseum may not notice any superficial resemblance to the above, but the exhibitors are prepared for gladiatorial battle.

First NCC Promises Five Days of Variety

By Molly Upton
Of the CW Staff

NEW YORK – Attendees at the first National Computer Conference and Exhibition should find no dearth in the number or variety of sessions and exhibits when the five-day show opens here next week.

NCC preview coverage begins on Page 31.

Under the chairmanship of Harvey L. Garner, the conference will offer 103 concurrent sessions at the New York Hilton and the Americana hotels while at the Coliseum, about 220 firms will be exhibiting in over 625 booths. The products, led by communications gear, peripherals and equipment for original equipment manufacturers, will be on display for an extended 35 hours.

Keynoter Returns

The conference marks the return of a keynote speaker, Sen. Philip A. Hart (D-Mich.), who will lead off the conference Monday morning speaking on "A Reasonable Little Bill" concerning industrial reorganization. Hart is known for his interest in antitrust and patent legislation.

Sessions on Monday afternoon also reflect concern over the topics of regulation and legal protection for software.

At the conference luncheon on Wednesday, Dr. Lewis M. Branscomb, vice-president and chief scientist from IBM, will speak on "The Doomsayers and Human Destiny."

Also at the luncheon, Afips will present two best paper awards for the categories of general interest and specialized contributions. Prizes will be awarded for outstanding displays in the high school science fair.

A special industry luncheon on Thursday will feature an address by Edward N. Cole, president and chief operating officer of General Motors Corp., on "Common Language – Common Future."

Wednesday morning there will be an interim report from the IBM data security study sites. The program was announced by IBM at last year's Spring Joint Computer Conference.

To clarify the large number of sessions for attendees, the meetings are divided into three categories – methods and applica-

(Continued on Page 3)

On the Inside

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Systems/Peripherals 25

Fast Tapes Hooked to 40 — Documentation Question

User Does the 'Impossible'

By Michael Weinstein
Of The CW Staff

MIAMI – Despite the limitations of IBM hardware specifications, the innovative user can often improve his system operation. This type of innovation has led at least one user to attach IBM-compatible tape drives to a "slow" 360 that would not support the "faster" equipment, according to IBM specifications.

The net result has been "a minimum of 30% better operation" on tape-oriented jobs.

The user is Bob Rackley, Manager of Computer Resources at American Bankers Life Assurance Co., who despite the advice of IBM and the guarded optimism of Calcomp has successfully hooked up Calcomp 347 tape drives to his 360/40. The 347s are plug-compatible with IBM 3420-7 drives.

If he had followed IBM's documentation, this configuration should not work since the data transfer rate of the 347s is stated to be too fast for the channels on the 360/40.

The 347 was announced by Calcomp in December 1971 as a direct replacement for the 1,600 byte/in. IBM 3420 Model 7. Performance specifications of the units are identical: a tape speed of 200 in./sec and a transfer rate of 320 kbyte/sec.

Both IBM in its release of the 3420 Model 7 and Calcomp in its release of the 347 indicated these tape drives were for users of 360/50s and higher.

Spotlight on User's Lib

"What gave us the initial impression that faster tapes could be used with the 40 was the knowledge that other users had hooked up disk subsystems to the Model 40 that utilized a faster transfer rate.

"We wondered, if users could hook up disk drives, why couldn't we hook up a tape drive with a higher transfer rate?" Rackley explained.

Rackley took his question to the local Calcomp office and was told the task was impossible by definition.

"But when I asked why, their (local Calcomp personnel) only response was that IBM said it was impossible.

"We were unwilling to accept

(Continued on Page 2)

Oakland's Ills

Why is it so difficult for the DP staff of the City of Oakland to get a new mainframe? Amidst a bitter bidder protest and many city council meetings there breeds a strange tale. Page 6.

Non-Bell Competition May Be in Jeopardy

By Ronald A. Frank
Of the CW Staff

ST. PAUL, Minn. – A bill now pending in the Minnesota legislature would give the state Public Service Commission (PSC) the power to regulate any supplier which installs or maintains equipment connected to the telephone network. And this would include carrier and non-carrier vendors.

The impact of such a change, if approved, could be disastrous for users of customer-provided communications equipment including data modems and terminals.

It could mean that independent communications equipment would have to be provided to the user at the same rates charged by the telephone companies.

How to Save?

One of the results of the proposed bill could be to eliminate any cost advantage for non-Bell equipment now available to users of such equipment.

If all data equipment were regulated, these units (both carrier and non-carrier) might have to be made available at standard rates to the user, one regulatory source said.

This would eliminate the savings now available to users.

The proposed amendment of Section 237.01 of the Minnesota Statutes would change the term "telephone company," to apply to any firm engaged in the "installation and maintenance of telephone equipment which is connected to a common carrier telephone system and its network."

(Continued on Page 2)

Calif. Hearing Finds Audit Laxities

DP Expert on Insurance Lacking

By Marvin Smalheiser
CW West Coast Bureau

SACRAMENTO, Calif. – Gleeson L. Payne, state insurance commissioner, told a State Assembly committee hearing that until January of this year his department did not have a computer expert to help check out insurance company systems.

Payne also told the Insurance and Finance Committee that his agency did not adhere to its regular, three-year audit schedule with now-bankrupt Equity Funding Corp. of America or other big insurance companies.

Meanwhile, Equity Funding officials have been accused of created $120 million in bogus assets and of selling $2 billion in phony life insurance policies. The firm is now under state conservatorship.

Payne said his department only recently hired a computer expert. But Payne indicated he was hired as an auditor and just happened to have a computer background.

Payne said: "We're not the only idiots in the group. All of the industry has assumed until now that computers were always accurate. Computer fraud wasn't expected."

Payne and his chief deputy, Lawrence Baker, said investigators now suspect that a "company conspiracy" at Equity involved as many as 12 to 15 executives and possibly more.

Baker said very few insurance companies use computers as extensively as did Equity Funding.

"We found very few file cabinets and physical records at the company," he said.

Profile of a Thief

What kind of person would use a computer to perpetrate a crime? A study of 24 such cases gives an interesting profile. Also, a California State Assembly hearing on computer security hears IBM's views on a vital issue. Page 2.

In Tulsa... Telex Rebuts

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Action on the IBM counterclaim to Telex's $1.2 billion antitrust suit continued last week with Telex rebutting charges that it hired IBM engineers to steal trade secret information.

In the counterclaim, IBM is seeking $25 million in damages for the alleged theft.

Jack James, president of Telex Computer Products, denied that Telex had hired IBM engineers for the sole purpose of duplicating IBM products.

Telex, he said, had decided to offer a broad product line in the peripherals field and wanted to hire the best people it could.

Since the best talent available in the industry was working for IBM, he admitted Telex tried to hire IBM people to help in this effort.

But, he said, the IBM engi-

(Continued on Page 2)

24 Cases Documented

DP Crime — Who Does It?

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – The thief who uses a computer to perpetrate a crime is likely to be a white-collar male, 18 to 30 years old, highly rational and deviating only in small ways from his peers.

That profile was given by Donn B. Parker of Stanford Research Institute (SRI) in recent testimony before a State Assembly committee hearing on efficiency and cost control.

Parker told of a study of 24 cases occurring since 1967 involving unauthorized acts associated with computers in local, state and federal facilities.

Suprisingly, none of the cases involved manipulation of computer programs, although his studies of nongovernment environments show several such cases.

Parker noted a "high frequency" of collusion and a surprisingly large number of perpetrators.

"This is common among computer-related acts because of the need for different skills, knowledge and access to carry out an act within the compartmentalized and highly technical computer environment."

Parker said perpetrators' acts differed only in minor ways from the accepted and common practices of their non-criminal associates.

"In one case of program theft through a terminal, it was revealed at the trial that programmers in both the victim organization and perpetrator's organization had frequent access to each other's computers."

There was also a Robin Hood syndrome in which the perpetrators claimed they were just getting even with large organizations which are harmful to society, he said.

Parker predicted a growing level of crime related to information processing systems.

In particular, he cited a "significant increase in multiaccess system cases" based on the proliferation of these systems.

He said a trend toward increasing computer crime can be reversed by the following precautions:

- Increasing the security of systems to the point where only the most knowledgeable systems programmers associated with a system could penetrate it.
- Establishing norms of professional conduct inhibiting such activities.
- Providing detection and warning features to confront an individual with the nature of his act and to use as a basis for legal action.

Type	No. of Cases
Vandalism	4
Theft of address lists	5
Manipulation of checks	4
Manipulation of payroll files and checks	3
Confidentiality violation	4
Unauthorized sale of EDP services	2
Vote-counting fraud	2

Position	No. of Cases
EDP employee	16
Elected official	2
Citizen	2
Private businessman	1
Manager of claims	1
Welfare employee	1
Policeman	1

Data Learned About Cases

IBM Delineates Security Plans

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – IBM intends to spend an estimated $40 million on its data security-related program, a spokesman testified last week at a State Assembly committee hearing on computer security.

Robert A. Sayles, western region manager, public sector, IBM, said a major portion of the funds will be spent on research and development directed toward the security enhancement of IBM hardware and software products.

Sayles, who was accompanied by Robert H. Courtney, IBM's manager of data security and privacy, said IBM recognizes "a basic responsibility to assist in assuring privacy by making available to the user the technological safeguards in our data processing products that the user may utilize to make sensitive information secure."

It is up to the user, he said, "to determine the need for security measures appropriate to his particular situation" and the degree of confidentiality he requires.

"He then selects the combination of operating procedures, physical security measures and hardware devices and programs appropriate to his particular needs," Sayles said.

Perfect security, he said, is an unattainable goal. "The objective of a data security program is to reduce the risk and probability of loss to an acceptable low level at reasonable cost, while making appropriate provisions for adequate recovery."

Sayles said IBM will continue to work on advanced security measures such as the recently announced system control program "which provides capabilities of protecting one user's programs and data from another's while both are using the system."

Sayles was one of eight witnesses at the hearing held by the Committee on Efficiency and Cost Control.

Mike Cullen, chairman of the committee, said the testimony was reassuring that "there are ways and means of safeguarding information."

He said it indicated that internal auditors may be needed to monitor DP procedures in the state.

Donn B. Parker of Stanford Research Institute (SRI) told the committee of his study of security under a National Science Foundation grant and said DP auditing should be the first line of defense.

User Accomplishes 'Impossible'

(Continued from Page 1)

The test program was designed to read 32K-byte blocks and write 7K-byte blocks – the maximum allowable under DOS – through the 320 kbyte/sec tape drives.

With his benchmarking program, Rackley flew to the Anaheim, Calif., headquarters of Calcomp. Here, according to Rackley, Calcomp personnel allowed him to use their own 40 with three 347 tape drives attached.

"But they made it clear that while they wished me luck and were willing to provide the equipment needed for the test, they were skeptical and did not take responsibility," Rackley said.

Multiprogramming Factor

"When we ran our test, everything worked fine, but there was still one factor unresolved. The system we benchmarked had no multiprogramming support (MPS) capability, so we did not know if the tape drives would work in a multiprogramming environment. However, we did know that the tape units would work on one partition."

Despite the uncertainties, Rackley had eight 347s delivered to his Miami installation. He also had Calcomp supply extra parts so that if all failed the 347s could be field-converted into 345s – identical specifications to the IBM 3420 Model 5 – which is the tape drive documented for the 360/40.

The 347s arrived April 24, or about two weeks ahead of the time the 360/40 was due for delivery.

Worried about the problems of trailblazing, Rackley feared IBM might either refuse to service his 40 with the tape drives attached, or in case of any future troubles might cite the use of unrecommended equipment.

His solution was unique, and startled his Calcomp advisers, according to Rackley.

Rackley wanted to hook the 347s to his existing 360/30. If they did run, then it would be difficult for the installing IBM personnel to argue they would not work on the 40, he rationalized.

He attached the 320 kbyte/sec units on channel 1 of the Model 30 in a switching arrangement with the disk subsystem attached to that channel.

"They ran with no flaws," Rackley related, "so when the 40 was signed off we merely moved them over to the larger machine."

In the present 40 configuration the 347 tape drives have dedicated use of channel 1 while the disk system has dedicated use of channel 2.

Bill Puts Non-Bell Competition in Jeopardy

(Continued from Page 1)

The amendment would cover data communications equipment, according to a PSC spokesman. As the commission has become more involved with suppliers in competition with the existing telephone companies, it found that total regulation would be required, he said. "It doesn't make sense that we are just regulating half of this industry."

Although some industry sources said Northwestern Bell was actively campaigning for passage of the bill, a spokesman for the AT&T affiliate in Minnesota said his company really had "no position to take" on the proposal.

If the proposal is passed by the legislature, any firm supplying equipment in competition with Bell (and any other existing telephone companies) would have to file a tariff for its equipment, the spokesman said.

One major intent of the bill would be to require the telephone company to offer equipment at fair prices without "undercutting" to meet competition, a PSC spokesman said. He cited a case where an independent equipment supplier had complained to the PSC about "Bell unfairly lowering its prices" to compete.

But a check of the independent company indicated it had not been the sponsor of the proposed legislation.

Records in the legislature show the bill was introduced by Rep. Robert Johnson whose law firm reportedly represents the Minnesota Telephone Association, an organization of independent telephone companies in Minnesota. Johnson was not available for comment.

The effect of the bill would be "to preclude a situation where either Bell or an independent vendor could cut costs to provide a luxury service to the public," a PSC spokesman said. The commission defines luxury service as any type of equipment, including modems and terminals, that goes beyond a "standard black phone in a home or business office."

The proposed bill was introduced several weeks ago in both the Minnesota House and Senate. The legislature has adjourned without taking action on the measure. The next regular session of the lawmakers is scheduled for January 1974, but the governor could call a special session for "unfinished business," according to one state source.

In Tulsa Telex Rebuts IBM Charges

(Continued from Page 1)

neers were hired because of their broad experience and not for their specific skills on a particular product.

James admitted he may have taken some notes on confidential IBM information when he himself left IBM, but he said he was not sure that any of it was revealed to other top management at Telex.

He said he had been warned before he left IBM that he could not divulge any information on the technology IBM was planning for new products, but that he could use general knowledge gained while at IBM in his new position, even if it did involve some of the general details on some new products.

Engineers 'Only Human'

Howard Gruver, formerly an engineer on the Aspen project at IBM and now with Telex, said he had never "knowingly" divulged any trade secret information after he joined Telex, but some of it may have slipped into his work on an Aspen-compatible tape controller.

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First NCC Promises Five Days of Variety

(Continued from Page 1)

tions, science and technology and special.

Several topics will be covered by more than one session, providing attendees with various views. Included in this category are computers and the automotive industry, personnel, computer use in the government and electoral processes, and privacy and security.

A record 56 sessions will be given in the Science and Technology Program, under tbe chairmanship of Carl Hammer of Univac. Topics to be covered include: communications, hardware and architecture, management problems, simulation and process control, software, education and displays and graphics.

There are 37 sessions in the Methods and Applications Program, directed by Robert W. Bemer of Honeywell.

The special program includes a Day of the Arts, a session by *Business Week* on the Economic Future of the Data Processing Industry, as well as sessions on Marketing Abroad and Venture Capital for the Computer Industry. On Thursday and Friday, a special session requiring separate registration takes an in-depth look at Managing tbe Impact of Generalized Data Bases.

Constituents Participate

Highlighting the broad participation in conference planning, the 13 constituent societies of Afips are presenting sessions in the Science and Technology sector.

The IEEE Computer Society is responsible for the Monday session on Computer Evolution and the Next Decade; Simulation Councils is presenting Simulation: Past, Present and Future; and the American Statistical Association will feature Computing for Statistical Purposes – Expectations Amid Accomplishments and Gaps.

Also on Monday, the Association for Computational Linguistics will present reports on What's the Computation in Computational Linguistics?

On Tuesday, the Instrument Society of America session on Instrumentation, Computers and Process Control will meet at the same time as the Association for Educational Data Systems' The Use of Computers in Education.

The Special Libraries Association has prepared a session on Specialized Information Processing and the American Institute of Certified Public Accountants will conduct a session on The Auditor's Interface with EDP Systems.

On Wednesday, the Society for Information Display will present Interactive Computing: A Mind Expander while the ACM features Resource Utilization in the Computing Community.

The American Society for Information Science will discuss Information Science and Technology Through the Eyes of Asis. The Society for Industrial and Applied Mathematics session will look at Mathematical Software State of the Art.

Under the auspices of the American Institute of Aeronautics and Astronautics, a session on Data Communications Via Satellite will explore error control and other features of this method of communications.

Foundation Finishes Organization Draft

Special to Computerworld

CHICAGO – The Computer Foundation Organizing Committee has concluded the work of producing a draft to set up a wide-based organization to carry on the CDP and other programs.

Also, the name of the future organization was changed from "Computer Foundation" to the "Institute for Certifying Computer Professionals."

The final wording of the full document was left to the attorneys working with the legal and organizational subcommittee. It was hoped that the draft would be ready for publication by the beginning of June.

A Speaker's Bureau was set up by the Organizing Committee to provide speakers on the policies and functions of both the institute itself and on certification in data processing in general. Organizations interested in obtaining speakers should contact Jack Beyer, at Chairperson-Pisc, 338 South Warrington Road, Des Plaines, Ill.

Firm Claims Ford Copied DP System

CW West Coast Bureau

LOS ANGELES – Datamotive, Inc., an El Segundo data processing firm, has sued Ford Motor Co. in U.S. District Court for $18 million, charging that it violated state antitrust laws by pirating a computer system.

The complaint said Datamotive developed a computerized inventory control system originally designed specifically for Ford dealers to keep track of the dealers' parts and supplies inventory.

The complaint alleged a three-man team sent to Datamotive in 1967 by Ford to inspect operations was actually sent to copy Datamotive's techniques so they could be applied to a system Ford was working on.

A spokesman for Ford said the firm had not seen the complaint and had no comment at this time.

NCIC Gets Its Man

CANTON, Ohio – Clyde Baird is back in jail facing charges of auto theft and forgery and an additional charge of escape from confinement after the National Crime Information Center (NCIC) computer "fingered" him.

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Monkey on Trial

Epulu, a three- and one-half-year-old chimpanzee from the Wuppertal Zoo in Germany, has no complaints about job discrimination. Aping the role of an assistant operator at the Univac 1004 processor Euplu took a one-day tour at the Technical Academy of Wuppertal on, appropriately enough, April 1. The chimp quit the job the same day complaining of "personality differences" with managers.

Europe Journal Reveals IBM 'Political Pressure'

By Joseph Hanlon

Special to Computerworld

FRANKFURT, Germany – IBM resorted "to the crudest types of political pressure" in an attempt to win a contract in Springfield, Mass., according to the May issue of the *Data Exchange* magazine, published by the Diebold Europe consulting firm.

The magazine, citing *Computerworld* reports of similar incidents, said "further investigation tends to indicate these incidents are not isolated but in fact rather widespread.

There are strong indications, the article continued, that "these incidents are too widespread to be called a local salesman's ploy, but . . . reflect a broader manufacturer policy."

The "snowballing trend of these incidents" has led a user group to consider the possibility of retaliatory action.

The small Government Management Information Sciences Organization, which consists of 40 to 50 city, county and state DP managers, recently undertook a study to determine the extent of the problem and to develop a means of protection, *Data Exchange* said.

The magazine's own investigation turned up the previously unreported example in Springfield. The magazine said:

"Data Processing Supervisor of the City of Springfield, Mass., Leonard Brodeur, related how IBM questioned his competency to the mayor after he decided to cancel a 370/135 order and acquire Univac equipment. The problem originated following a study by Brodeur and the city auditor as to the city's longer-term hardware needs.

"Although a 370/135 was already on order, it was felt prudent to obtain additional equipment bids as the 370/135 cost was 'beginning to snowball.'

IBM Withdrew

"IBM's 'unbundled' stance and refusal to allow a government discount literally put them out of the price competition and following an unsuccessful attempt to persuade Brodeur that a System 3 would suffice, they withdrew from active bidding.

"The selection of Univac by Brodeur (the city auditor had in the meantime suffered an untimely death) resulted in calls to the mayor suggesting that 'Brodeur was not competent enough to make this selection,' that 'IBM had a large building in the city,' and that 'the deceased city auditor would certainly have selected IBM.'

"IBM also suggested that Brodeur was making a 'career mistake' by not maintaining his contact with IBM technology.

Deaf Ears

"IBM's complaints fell on deaf ears, however, as the city's DP plans had been carefully documented and justified to the satisfaction of both Brodeur and the Mayor's office."

The magazine concluded: "If there is a lesson to be learned from this, it would appear that the well formulated plans of Leonard Brodeur contributed to an early end to the problem in his city, for he was able to clearly defend his position."

It has also been reported that the Commission of the European Economic Community is now working on a document on the European computer industry intended to curb IBM in Europe.

... Or How to Get a New CPU

The Battle of Oakland DP Center

By Mike Merritt

Special to Computerworld

OAKLAND, Calif. – After spending months obtaining and evaluating bids for a new mainframe, the DP staff of the City of Oakland has spent four more months dealing with a questionable bidder protest and countless hours at city council meetings, contended with sudden demands for a "long-term data processing plan" in the face of current DP crises, and has been forced to defer to the judgment of a committee of local users who devoted a brief time reviewing proposals.

And, Oakland still doesn't have a new computer, while its DP operations run months behind schedule.

The city's current IBM 360/25 was scheduled for replacement in 1971, but it wasn't until July 1972 that Oakland's DP staff got an OK to find a new mainframe. By that time the 25 was incapable of handling the city's workload; some applications were then running 90 to 120 days late as basic bookkeeping chores preempted machine time.

The DP staff prepared an RFP to which Burroughs, Honeywell, IBM and Univac responded; their systems were benchmarked. A five-person evaluation committee from the staffs of the City and Port of Oakland unanimously recommended the Honeywell proposal, an H2060.

The city's financial director, who has staff responsibility for data processing, wanted outside confirmation of the selection, so the city engaged Lyhrand, Ross Bros., Montgomery, a "Big Eight" auditing firm which has been the city's DP consultant since 1969, to evaluate the evaluation.

Lybrand agreed the Honeywell choice was correct, and a letter of intent was sent to HIS in December 1972.

Then the trouble really started.

The opening salvo in the battle of the Oakland DP center was a letter of protest from IBM to the Oakland city manager charging that the HIS system didn't meet bid specs, that the Lybrand review hadn't been objective and that the selection study had been inaccurate.

The IBM protest was apparently based on such things as the definition of a byte and comparison of rental prices.

In the course of meetings of the DP staff and the Oakland City Council, IBM's protest was rebutted and finally disallowed. The protest was effective, though, in bringing the situation before the city council.

A further complication: since the benchmarking HIS had introduced the H2070A, a purchase-only machine with better performance and lower price than the 2060. The city staff altered its recommendation, choosing the 2070A. IBM claimed this was unfair, since the system hadn't been benchmarked.

While this was going on, city officials mysteriously received copies of articles from the *Wall Street Journal* and *EDP Newsletter* disparaging the technical and financial soundness of IBM's competitors.

City councillor George F. Vukasin apparently has no data processing background except an administrative acquaintance acquired while he was a director of the Port of Oakland. In addition, Vukasin was a classmate of the IBM salesman on the account, Winton Malher, at the University of California at Berkeley.

In additon, a former IBM salesman on the account once boasted to a city official that Vukasin and Mather had been fraternity brothers, a fact *Computerworld* has not been able to confirm. IBM has denied they were fraternity brothers.

Vukasin and other councillors also suddenly began demanding a "long-range data processing plan" detailing the city's DP needs for the next five to eight years, before permitting purchase of any new computer.

As the city council meetings stretched on through the spring, and as councillors, including Vukasin, campaigned for reelection, the situation in the DP department continued to worsen.

To break the logjam, Vukasin suggested that the mayor of Oakland request five large computer users in the city to loan their DP managers for a day or two to review the RFP, the bids, the benchmarks, the Lybrand report and IBM's protest. The council took up the suggestion. Four of the five turned out to be IBM users.

The users' group then temporized. It said that while Honeywell's was the best bid, the city council really should be aware of the possibility that its DP needs might increase greatly over the next eight years, and really should have a long-range plan. As an alternative the group suggested third-party rental for one year while the city staff developed a plan.

So the council directed the DP staff to get third-party bids, apparently depriving all the bidders of an immediate shot at the city's account, but at least keeping the city a user of IBM equipment.

The staff, however, has sent out RFPs to the four bidders as well as lessors. And it looks as though there may be more problems.

The lowest bid from a lessor has been Itel's, proposing a 360/40 for $140,000/yr. Honeywell, however, submitted a bid of $100,000/yr for a comparable, and perhaps more powerful, H2050A.

Though the effect to the city will be of leasing the machine, technically the city would have to purchase the machine, though it could return it without penalty any time after one year and before two and a half years.

This is not specifically what the city council requested. The HIS machine would also cost some $40,000 more for site preparation, which would not be necessary for the 40, from Itel, but would be required for any larger system.

Bid Procedures Keep State DP in a Stew

By Michael Weinstein

Of the CW Staff

DOVER, Del. – This state's procedure of obtaining computer equipment through closed and often secret bidding at each state level is again causing problems.

The last major eruption involved the then state DP director Arthur Hill who wanted to go third-party leasing.

This effort led to complaints of pressure by the state's vendor in concert with local politicians, eventually convincing Hill it would be wiser to obtain another position – he is presently DP director of New Hampshire.

With Hill leaving the state, the pot is brewing again and all the ingredients are still present to renew the computer procurement quagmire, brought on by the lack of public bidding.

Delaware is now considering canceling the contract for the third-party lease with Greyhound and remaining with IBM for an interim period, according to Earl McGinnis, state auditor.

The conjecture of personnel opposed to canceling the lease is that after a suitable period of inactivity the state will return to IBM's original plan of upgrading the state's computers to the 370 line.

What's New in Delaware?

If this is true, the IBM salesman who threatened Hill in an attempt to keep the account was primarily guilty of bad tactics and bad timing only, a remaining DP staffer observed.

Spotlight Turns

On another front, with the state under an interim DP director, the spotlight now appears to be on Maya Zistl, DP director for the Wilmington County school district.

Prior to Hill's departure, Zistl was apparently fighting to stop the state from disbanding her computer department.

The rationale for centralization was based on the fact that Wilmington county is the only one of the three Delaware counties with an independent computer operation.

Since the state performs the same functions for the other counties with its large computers, it was argued that it could also perform Zistl's work (now done on a 1401), and save the taxpayers over $100,000/yr. But the state was unable to pursue its plan when Hill's position eroded following his hassle with IBM.

In the meantime Zistl stated she was going to evaluate her system and that this evaluation would take some time.

One vendor, NCR, took these overtures seriously and spent considerable time trying to convince her that a Century system was her best option, a spokesman from the firm said. But NCR's efforts turned sour when, in the beginning of April, Zistl announced she had decided to upgrade to a 360/25 as an interim machine to be replaced with a 370 in a year or two.

Local NCR personnel said they felt Zistl had led them down the garden path to gain time to save her own installation.

A letter sent to local officials from NCR blasted the arbitrary practice of allowing orders to be made without public bidding. The letter also included remarks detrimental to Zistl and pointed out that NCR is a "substantial employer (2,000 people) in the State of Delaware."

McGinnis responded that he knew there were problems and these problems could be traced to the bidding procedures. But, he stated, his hands were tied by the laws and the state attorney general's interpretation.

Despite McGinnis's observations, the general feeling is that the situation will not be changed unless a major political scandal arises as the free-form situation allows for wheeling and dealing for those who want to play the game.

Detroit Tries Computerized Voting -- Again

DETROIT – If at first you don't succeed . . . .

The "try, try again" spirit was in evidence here recently as the city began "recomputerizing" the vote.

The city experienced many problems in the 1970 primary and general elections, including delays caused by rain-soaked voting cards. Even so, local officials apparently are convinced that computers can be put to work to eliminate some of the delays in vote-counting.

News Wrapup

In a recent vote-by-mail election, which would parallel absentee voting, about 7,000 city employees cast punch-card ballots in a race for a position on the General Retirement System Board.

The votes were counted in 34 minutes by a Ballot Tab computer, which is based on a Data General Nova 1210, according to Ron Pollet, head clerk in the elections office.

The chief problem this time, Pollet related, was that some of the voters inadvertently tore the corners of some of the cards, when removing a stub from the form. This stopped the card reader, and the cards were hand-fed into the machine.

City Clerk George Edwards will try to convince the city council to buy one or more of the systems to be used strictly for absentee voting in next fall's mayoral election, local sources said.

A council meeting will be held in two or three weeks, at which time proposals and arguments will be heard on the computer-vote issue, Pollet added.

UN School Receives Free DEC Edusystem

NEW YORK – The United Nations International School has received an educational computer system, the Edusystem-25, from Digital Equipment Corp.

DEC donated the system, which is built around a 12K PDP-8E, with instruction and sample programs.

The system is designed primarily for instruction in mathematics problem-solving starting at the seventh grade level. The system can run simulations in physics, chemistry, biology, earth sciences and the social sciences. The equipment can also be used for remedial and tutorial drill in mathematics and other subjects.

The system donated has four terminals. Students from over 90 countries will share the system at the UN school.

DP Brings Labor, Management Together

NEW YORK – Management and labor put aside their traditional differences over automation recently to introduce a computerized typesetting system at Pandick Press here.

"The manner in which Pandick Press and the union were able to work out the problems involved in the retraining of composing room personnel," Bertram A. Powers, president of Typographical Union 6, said, "is a good example of how it is possible for management and labor to cooperate to their mutual benefit in the introduction of technological advances."

Under the union-company agreement that accompanied the installation of this system, journeymen printers now employed cannot be laid off because of the introduction of the computer. In addition, an amount equal to 1% of the payroll of typographers in the computer operation goes into an automation fund to help with training and relocation problems.

CPU Plans Carpools

FAIRFAX, Va. – The Northern Virginia Transportation Commission recently authorized a $30,000 project to select carpools by computer for three major employment centers in this area. About 15,000 employees are involved in the three centers.

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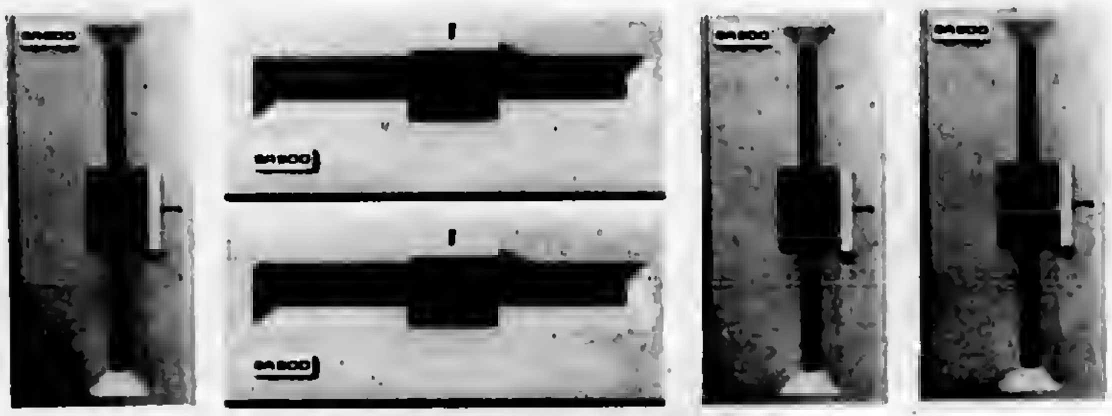

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TEXAS INSTRUMENTS
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User Role Is Stressed For DP Site

By Marvin Smalheiser
CW West Coast Bureau

SAN DIEGO – To make a new installation effective the user must be prepared to marshal the right resources and then manage them, an NCR official told a user conference here.

Stephen E. Loewy, assistant vice-president of Systems Services, said the user has to share responsibility with the supplier for a profitable EDP operation.

"The vendor," he said, "has the right to expect the user to be prepared for installation of his computer.

"I don't mean just the visible, more obvious preparations such as the physical site, air conditioning, files and electrical requirements, but the less obvious adjustments that are absolutely mandatory to make things work smoothly."

Loewy said all levels of personnel must be educated so they understand the changes that will be occurring.

"Those who will utilize the results of the new system must be included in the development plans so that they understand what is being done, why it is being done and how it is being done."

"This is not the time to make change for the sake of change alone. Modifications should be made only to improve operations or to get data otherwise unavailable."

The user, Loewy said, has the right to expect "a product of high quality not only in a manufacturing sense but also in its design philosophy.

Loewy said it is the manufacturer's responsibility, within the constraints imposed by the marketplace, to provide quality products and service.

Criminal Justice Conference Theme

NEW YORK – "New Systems in Law Enforcement and Criminal Justice" will be the theme of the National Annual Government Data Systems Conference. Sponsored by New York University and the New York Management Center, the conference will be held June 6-7 at New York University.

Director of the program is William A. Kulok, New York University, Division of Business and Management, 600 Third Ave., New York, N.Y. 10016.

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The Machines Sit and Wait Because of Building Delays

By Edward J. Bride
Of the CW Staff

HOUSTON – For lack of a nail, the system was delayed. For lack of the system, money was wasted.

Delays in constructing a new municipal building here are costing the city more than irate tempers. An estimated $175,000 has been spent, local sources claim, for leasing computers that have never been implemented.

Douglas L. Williams, director of the city's DP operation, confirmed that the system, a Honeywell 632, "is available. We're behind schedule, not the company."

The 632 is to perform message-switching functions for the police department's Univac 418-III, but the project is running four to six months behind schedule, Williams said.

Other Delays

The building is only one of several delays, with others including Univac system software in name-matching algorithms, and a shortage of municipal personnel, he related.

An additional delay is being caused by problems with the state's, installation of a 2,400-baud line to Austin, he continued.

Since the message processor is "available" and working, the city is required to pay its lease, Williams also said. Municipal data processing employees are performing development work on the unit, at the facilities of Urban Systems and Services, the supplier of the hardware and some of the software.

If the rest of the implementation process goes as expected, the city may have its system by the end of the year, spending another $60,000 before being completely on the air, Williams noted.

When complete, the police department will have an on-line jail-booking system with other on-line terminals (including CRTs in courts) to follow individuals through the judicial and corrections processes, he said.

The goals of the system include providing more information for police in the field, doing this without an increase in paperwork, Williams stated.

His problems have been compounded, he continued, by the difficulties of explaining technical details to non-technical politicians, who are concerned about the wasted money.

Student Builds Microcomputer

By Ken Shonk
Of the CW Staff

BOZEMAN, Mon. – A microcomputer designed and built by a Montana State University senior in electrical engineering can be used to analyze systems and debug programs.

"I set out to build a small computer for use in fixed applications, but one that could be reprogrammed without having to go through the costly process of programming an ROM," Dan Cheever, the designer, said.

The basic building block in the microcomputer is an Intel microcomputer set which is a complete CPU on an LSI gold chip – but which is designed to use read-only memories of the type that cost $600 to program.

Cheever put the system together so that the software could be changed at any time by using a random-access type of read and interfacing the CPU chip so that any type of memory could be attached to the unit.

Mainly for Testing

"The system is mainly for testing," according to Cheever. "If someone wants to build a system using the Intel chip, they would use a similar system to build up the prototype, making changes in the programming and the hardware as they find problems. Once in the final configuration, they could program an ROM for the application and use a system that isn't intended to be reprogrammed."

Don Bjork, one of Cheever's instructors who works in the Electronics Research Laboratory at Montana State University, said the "special topics" project has a number of possible application areas.

The Montana Power Co. participated with the department of electrical engineering in funding the project. The company is also considering the use of the microcomputer at substations for gathering data in fault detecting.

Intricate Interfacing

The key to the system is the interfacing Cheever worked out, enabling the whole system to be run off the bus structure he built to interface with the transistor-transistor logic. The system can also be interfaced with tape readers or any kind of memory quite simply, he said.

OCR Users Set To Meet in June

ANNAPOLIS, Md. – "Source data capture and required controls" will be the theme of the OCR Users Association Conference June 11-13 at the Annapolis Hilton Inn.

Dr. Ruth M. Davis of the National Bureau of Standards will deliver the keynote address, followed by concurrent multimedia and forms sessions on Monday.

Tuesday morning offers concurrent hand-print and OCR applications sessions, including sessions on "how not to reinvent the OCR wheel," by W.J. Goff of Minute Man Data Services, and "order form scanning," by R.J. Shallow of Ship 'n Shore.

The OCR Users Association address is P.O. Box 106, S. Holland, Ill. 60473.

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Fraud Squad Next?

CW West Coast Bureau

LOS ANGELES – An informal program is underway here to train Los Angeles County Sheriff's deputies to handle computer crime investigations.

An official said five deputies have been working with automated systems as part of their regular duties and have also been training to prevent theft and misuse of data in the sheriff's department.

Although they could also conceivably be used for external computer crime investigations, the present focus of the deputies is on internal computer crime prevention.

The spokesman said the deputies have been taking courses involving studies of case histories, security system planning, software security and computer-oriented fraud.

The training began in June 1971 and has continued on a limited basis with no present plan to expand or formalize it.

Application Transferability

Cross-Configuration Software a 'Must'

By Don Leavitt

Of the CW Staff

JACKSONVILLE, Fla. – There is an "urgent need for development of a generalized file management software package" which can be operated at any computer site, covering a "reasonable range of sizes and compatible with all major computer hardware," according to Andrew S. Atkinson, executive director of the Government Management Information Sciences (GMIS) users group.

Speaking here recently at the group's annual conference, he warned that transferability of application programs, long the goal of DP users, will never be completely successful until the more basic problem of cross-machine-compatible systems-level software is solved.

The federally funded Urban Information Systems Inter Agency Committee (Usac), already working on the application transfer problem, would be the natural group to work on the more general project, he said.

Though looking for the generalized file management system primarily as a solution to the problems of state and local government users, Atkinson agreed development of such a cross-configuration software "bed" could have profound effect on application programming throughout the DP community.

If it works, most programs utilizing the system would be transferable without being adapted to a new machine, a process – in Atkinson's view – that often required more effort than coding the application from scratch.

The computer-independent standard communications and file management system to be developed by Usac should be adaptable to classes of hardware with "minimal adjustments or modifications," he said, and should accommodate high-level languages such as Cobol or Fortran.

It should be able to accommodate free-form file formats, work with a wide range of access methods for both sequential and random files, and be adaptable to handle either real-time communications or batch-oriented application systems.

Get a Head Start

Atkinson admitted this proposed "GMIS Project 74" may still be beyond the state-of-the-art to implement in fact, but argued that a lot of work can be done now in defining the possible parameters of such a system.

A task force of federal, state and local users, and representatives of each hardware manufacturer, should be established as the first of four phases in the development project, he said.

This task force might spend a year identifying desired parameters and characteristics as a conceptual design of an ideal communications/file management system. This effort would include a review of many systems currently available, Atkinson said, and the one closest to the ideal would be selected for further work.

The task force should perform whatever enhancements are possible within a "reasonable time frame," he said, to make the chosen system as complete as possible before being installed in a number of test sites.

Implementation and evaluation of the generalized system, phase 3 in Atkinson's proposed project, would overlap the end of the basic selection/modification phase and would probably entail further tailoring of the system in the light of actual experience.

Development of standards for communications, file formats, application program structures and possible "clearinghouses" for shareable programs would not be attempted until the system had been through its "shakedown cruise."

The program or work laid out by Atkinson would cost an estimated $500,000 and might be complete in two years. Full-time technical specialists would, he hoped, be made available by agencies and hardware manufacturers

University DP Ends City Election Ills

COLUMBIA, Mo. – What does a city do when it lacks elected officials? The city of Columbia almost found out.

The city election returns were scheduled to be tallied on the main computer at the University of Missouri-Columbia, but the failure of a voltage regulator caused the CPU to go down and there was no way to get it up in time to get the returns out.

MFA Insurance Companies offered its services, since it had the only computer in town with the IBM 2501 card reader needed to read the punched cards.

It was no problem at all, according to Don Goodwin, MFA Insurance vice-president in charge of data processing.

"The university people brought the programs over here," Goodwin said, "and it was just a matter of running them on our machine. It only took one partition of our system, so we could process most of our normal business at the same time."

DP 'Checks' Treasury Checks

WASHINGTON, D.C. – A computer is limiting the U.S. Treasury's check-writing capabilities. The Treasury, which each year disburses something like $200 billion, cannot write a check for more than $99,999,999.99 due to software limitations.

"Ordinarily that does not cause us too many problems," a Treasury spokesman said. "On the few occasions when we do have to go above $100 million, the agency making the payment makes out two vouchers and we make out two checks, he said.

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Editorial

Updating the News

From time to time users have asked us for more information from the documents released in the Telex/IBM antitrust suit or for clarification of stories based on those documents.

The file of material released in the case is massive – it amounts to over 25,000 pages – some hard to read and some practically illegible.

Early in the case, we made the decision to get as much information to our readers as possible in the shortest possible time. Because of this, not all the documents had been read, classified and examined in depth when the first stories began to appear.

Because IBM changed marketing and product plans over the time period covered by the documents, there may be some discrepancies between earlier stories and information uncovered later.

So if you notice any differences on products and facts, you can assume the latest story contains the most up-to-date information.

'Are We Secure! We Need a Display for Our New Multiprocessor But Division Security Won't Even Release the Specs to the Peripherals Division!'

Letters to the Editor

RBP Exam Passes Test: Fine Judge of Ability

I have just returned from DPMA's RBP (Registered Business Programmer) certification exam. I had planned merely to make a quick evaluation of the test based on the preconceived assumption that the exam was inadequate. I was never more wrong.

I have been in the field of data processing for over 10 years and for the past few years have been very active in an "underground" organization called Quality Data Processing. QDP has one primary reason for existence – to promote quality and professionalism in the field of data processing. It was in the capacity of an evaluator for QDP that I sat for the RBP exam.

The RBP exam is by far the finest measuring stick of programming ability yet devised. Lately there has been considerable press (pro and con) about DPMA and its CDP (Certificate in Data Processing) certification exam. Unfortunately, little has been said about the RBP exam. In my opinion, DPMA has a "sleeper" on its hands. If any criticism is due DPMA, it is for lack of promotion of a fine exam.

The RBP exam is an excellent test for verifying programming ability. It has two sections. The first covers common programming principles. The "flavor" is definitely Cobol, but a bit of everything is intermixed. The questions are written with extreme care and none are of the "trick" question type.

There are some questions of the book definition variety, but the terms were primarily those commonly used throughout the profession. The first section required some problem solving and section two was completely devoted to high-level problems.

Because of the part the RBP program plays in the upcoming Institute for Certification of Computer Professionals (formerly the Computer Foundation), I feel it is necessary to set the record straight. Therefore QDP and I wholeheartedly support the RBP program. RBP has passed the test.

Robert Sennet
Bartlett, Ill.

How Long to Decide When AT&T at Fault?

Re AT&T Blames Non-Bell Equipment [CW, May 16]:

I would be interested in the details of the figures AT&T called out in the article. If 48% of the 10,224 trouble calls were caused by non-Bell equipment and 38% were caused by telephone company equipment, what caused the other 14%?

It took "30,000 unnecessary dispatches" in 4,973 cases to tell the customer his equipment was at fault. How many "dispatches" did it take to determine the telephone company equipment was at fault?

When someone has a data communication problem, one of the first persons he calls would be the telephone company, but he doesn't unless he is a very large user of telephone services. The tendency is to send someone out in a couple of days.

The first person is normally a telephone installation type who will have to get a data communication type out with the proper equipment. This is why it takes six or more dispatches to correct a problem.

I would like to know how many times the telephone company has dispatched someone when the problem was not a data communication problem as compared to how many times a computer customer engineer has been called for equipment failure and the problem was in the telephone system.

C.A. Cline
Raytheon Service Co.
Santa Ana, Calif.

The Church and IBM

Why in the world does the Episcopal Church have any business in criticizing IBM or any other business enterprise? Why should anyone comply with any of its requests except if they are users of something. Does IBM tell the Episcopal Church how it should operate?

T.C. Eickmeyer
Dayton, Ohio

(Other letters and viewpoints on Pages 11 and 12.)

Generalized Software Often Justified

By P.E. Borkovitz
Special to Computerworld

Viewpoint

While Tom Gilb [CW, May 16] appears to be attacking the concept of generalized data base software generally and IBM specifically, he is, by implication, indicting the entire independent software industry in defense of the principle of in-house development of software needs. I don't think that's fair either to the software industry or the many thousands of users who rely on it for assistance.

The factors cited by Gilb as justification for not procuring outside proprietary software products are the same factors which responsible vendors of such products urge their customers and prospects to use to evaluate products prior to a make-or-buy decision, However, to see such factors used in so one-sided a manner, to justify in-house development as opposed to outside procurement, sounds like a rationale for the pinciple of "not invented here."

Gilb's basic premise remains that he never has seen or heard of any "convincing" total cost risk argument . . . etc. The fact that he has not been exposed to such an argument (product presentation) does not mean that such an approach does not exist, or is not readily available to anyone who cares to be exposed to it.

No vendor of software products can do business successfully today without proving cost/risk justification beyond a reasonable doubt, simply because user management has become knowledgeable and sophisticated enough in computer-related procurement to reject any buy-recommendation which lacks that essential decision element.

In regard to Gilb's specific points, I offer the following:

- Portability. It is obvious that a user has a far better chance of assuring portability by dealing with a vendor who stands to lose a major portion of his customer base if that element is lacking.
- Implementability. If I were a user, I would be quite offended by Gilb's lack of regard for my ability to conduct a complete and objective product evaluation.

I can recall, without even consulting my files, at least six specific instances in the past 18 months where exactly that kind of comparative test was conducted prior to a make-or-buy decision. In every instance, the decision was made to buy, based upon solid, irrefutable evidence.

The whole thrust of the industry today is away from restricted, specialized applications using individual files, and toward more generalized approaches to applications using a common data base, capable of change and adaption as requirements and technologies alter and advance.

- Maintainability. One of the most dominant reasons for acquiring an outside product, particularly in the area of utility software which is used day in and day out, is to avoid the costs and problems inherent in maintaining complex software. Responsible vendors insist on maintaining their own products.

Further, most vendors are quite willing to evaluate user requests for viable modifications, thus totally obviating the need to have "a system programmer staff."

- Operational cost. This is obviously a part of any preprocurement evaluation. Furthermore, a vendor whose business depends upon successfully marketing a product is far more likely to pay close attention to operational efficiency of his product than a user, who is usually more concerned with simply getting a needed system operational in the shortest possible time frame.
- Software Reliability. As with portability, the user's best assurance lies in the fact that the vendor's ability to remain in business is inextricably tied to the reliability of his products.

Again, fixing any errors that do occur is the vendor's responsibility, not the user's, and a properly-evaluated vendor does have both the documentation and the competence, as well as the motivation and usually an effective procedure, for timely bug-shooting.

- Supportability. As with reliability and portability, the user's best benefit in this area lies in the vendor's need to maintain his customer base.

One common way is to guarantee to support standard hardware and software releases. Furthermore, failure in this area is a far more common occurrence among "tailored" software, than among generalized packages.

- Data Security and Reliability. Again, Gilb is generalizing, and seemingly ignoring the role of adequate preprocurement evaluation (since he apparently doesn't feel the user is capable of such evaluations). Many file-security devices are bypassable at the user's option.

If a system has inadequte recovery/security features, simply don't buy it! Competitive forces in the marketplace will force that vendor to cure the defect or kill the product soon enough!

P.E. Borkovitz is vice-president, software products division, Applied Data Research, Inc., Princeton, N.J.

Disputes Aired, Public Money Protected in SPDP Plan

The Society of Professional Data Processors, which was initiated by a number of *Computerworld* readers last year, has been remarkably active in a way that few societies are. It has been active in setting up its structure to match its goals – and finding out what its members want as goals.

The Taylor Report

By

Alan Taylor, CDP

The process has resulted in a society which insists that its members agree that their membership can be suspended (after due process) and that they should be suspended if they are found to be in breach of professional standards.

The SPDP membership selected as its first important task the creation of enforceable standards. And with this in mind, President Hamilton Armstrong pointed out, membership could not be thought of as just to be obtained by paying dues, but instead must be discretionary.

The society has also faced up to the problem of trying to have meaningful elections. Armstrong's answer here is also a novel one. He doesn't think biographies of potential candidates are enough. Nor does he think it is enough to provide space in the society newsletter to other candidates for office to make their sales pitches.

He argues that it is necessary for the ordinary member to see how the leadership differs in the emphasis it puts on subjects week by week and month by month so that when the elections come, the membership is already aware of how the candidates will react.

This type of development has some strong structural effects on the way the society has been designed. What is happening is that Armstrong's ideas – because he is the current president – are written up and sent in advance to other society leaders. Any member can get access to these just be agreeing to review them and return comments quickly.

Disagreements Aired

Then, when the newsletter comes out, it headlines not the Armstrong policies as such, but instead the differences between his policy as stated and the way the other leaders feel.

This way the members see the areas of disagreement or confusion, the attitudes of the various potentials, and only after they have the environment fairly well organized in their minds, can they understand the lengthy policy statements.

Nor is membership action finished at that point. A review form, together with the policy statements, goes out to members to have their views recorded on the major items.

Armstrong thinks these reviews are important because he feels membership control should be more than simply the selection of people. It should also be the selection of what areas are to be emphasized and which areas the membership doesn't want emphasized. "If they can't turn you off a subject, then they just don't have control," he said.

This means that certain areas, although generally agreed upon, may go back to the membership time and time again. At the moment one of the issues is about the problem of the classes of membership.

Two classes of membership have been suggested – one for people who could adopt the full professional code of ethics at this point, and one for people who (perhaps because of employer situations) could not adopt it until it became the industry's standard.

The solution currently being suggested is that the code be developed in two levels, instead of having two membership classes. One level would deal with the operations that must take place in any event, and the other ones which should not necessarily force the member to either forfeit good standing with the society or his position with his employer.

Another structural part of the society currently being reviewed by the membership is how to protect both the finances of the organization and also the ethics.

Separation of Powers?

Armstrong's suggestion is that there should be a form of separation of powers. He also said membership interests and votes should have some limitations. Membership voting should be somewhat limited, he said, where it involves a business decision which would force the society to abandon stated business objectives (such as building up a reserve fund with 10% of the membership dues) or else when a public interest item was shown to be impacted.

Armstrong said the structure is now ready to support meaningful elections, support enforceable standards and provide for the protection of public and business areas. The society is now ready to do what most societies would have done first – set up a constitution and bylaws.

The society is open only to members of the data processing profession or those teaching data processing. In its decision as to whether to go ahead with the constitution at this point, Armstrong is interested in hearing not only from SPDP members, but also from other community people. There is a box above to give your opinions on this way of developing a professional society.

How Do You Rate Society's Structure?

In order to ensure meaningful elections, the SPDP is proposing to air members' disagreements with executive policy and print them in its newsletter. Is this:

☐ Useful

☐ Dangerous

☐ Unimportant

Why?

In order to provide for enforceable standards, the SPDP is proposing to insist that members agree to accept suspension procedures, as well as other membership qualification (only DP practioners and teachers are accepted).
Is this:

☐ Useful

☐ Dangerous

☐ Unimportnat

Why?

In order to provide for financial stability and for the protection of the public interest, the SPDP is proposing to incorporate a "separation of powers" into its constitution. This will reserve certain power and resources to guardians of each of these areas, and certain power with the president and executive committee.
Is this:

☐ Useful

☐ Dangerous

☐ Unimportant

Why?

What other adviee would you give to the SPDP before its constitution is written?

Name
Professional Position
Address
Are you interested in joining SPDP ($20/year dues)? Yes/No

After completion, please return to SPDP c/o Alan Taylor. Computerworld, 797 Washington St., Newton, Mass. 02160.

Letters to the Editor

Equity Funding Scandal A Black Eye for DP

As a DP professional, I cannot understand Alan Taylor's attempts to whitewash the Equity Funding scandal as not being DP-related. In two separate articles [CW, April 25], Taylor attempted to convince us that DP was merely incidental in this affair. Unfortunately, such is not the case.

The question of whether report generators, test data generators or an IBM 360/30 are "sophisticated" is comparative and not really relevant. The important points are that the computer was used to run "simulation studies" that were needed for the fraud; a programmer did in fact program false reports; and the DP manager did not act ethically on his suspicions but instead hoped for a cover-up or a new job.

This scandal is one that DP must take on the chin, along with the accounting profession.

Martin H. Tillinger
Systems Consultant
MHT Services
Jersey City, N.J.

Communication Groups Listed

Do you have the addresses of the telecommunications associations which appeared on Page 40 and 41 in the April 25 issue?

Robert R. Korfhage
Dallas, Texas

Communications Systems
Management Association
1102 West St.
Wilmington, Del. 19801

International Communications
Association
c/o Frank T. Burns
3 M Co.
St. Paul, Minn. 55101

Association of College &
University Telecommunications
Administrators
Luther R. Robb, President
Pennsylvania State University
State College, Pa.

Telecommunications Association
c/o Roger Underwood
Kaiser Aluminum & Chemical Corp.
300 Lakeside Dr.
Oakland, Calif. 94604

Computers for All Banks!

In reference to the April 25 article entitled "Small Banks, Beware of DP!": to the uninformed and uninitiated this headline is particularly misleading as are the first and third paragraphs.

For those of us who sell computer services to banks the article has waved a red flag in front of our customers as they are being warned about automating their various banking functions.

In actuality Wille's message refers specifically to banks with under $25 million in deposits which have set up their own on-premise computer operations.

By far the majority of our correspondent bank customers has deposits considerably less than the figure mentioned, and all of them should have the opportunity of availing themselves of the many advantages of electronic data processing.

Robert G. Ziemer
Vice-President
EDP Sales and Service Div.
Northwestern National Bank
of Minneapolis
Minneapolis, Minn.

2260 DUCS 3270

We are pleased to announce the availability of DUCS-V (Display Unit Control System · Version 5). DUCS-V will concurrently support both the IBM 2260 Display Unit as well as the IBM 3270 Display Station in a local environment. The 3270 Display Stations are simulated in 2260 mode with no alteration necessary to the user's programs. The basic DUCS-V Program (2260 support only) is a licensed program product available from C F S. INC. for a monthly lease fee of $25.00. The DUCS-V 3270 simulator feature is also a licensed program product available for an additional $15.00 per month. The 3270 Simulator may be added to any DUCS-V System subsequent to the initial installation of DUCS-V without user reassembly or linkage editing.

DUCS-VI will be available during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goren.

RPG, or Running Circles Around a Cobol Programmer

By Tom Crenshaw
Special to Computerworld

Viewpoint

The response to the battle between RPG and Cobol has been most interesting.

I have been in the data processing business for 24 years, more than half of my life. During that time I have seen the advent of the computer and its impact on business and everything else. I have seen the passing of machine language programming and the beginning of symbolic programming, whatever name you want to give to a compiler or an assembler.

I have used 1401 SPS, RPG and Fargo; 1410/1401 Autocoder; 360/20 RPG and extensions; 360/20 PLI; Honeywell RPG and Cobol C; to mention a few. My first love (and don't we all have one) is Autocoder.

The main reason for Cobol in the first place (if memory serves me right) was not to solve all data processing problems with one sophisticated language, but to have a common language that could be applied to all manufacturers' computers with a minimum of reprogramming when an outfit changed to a different vendor. It has been enhanced many times since it first came out and can now be used to solve nearly any business problem.

Steady Progression

The original 1401 RPG was strictly a step to the computer from tab equipment and really didn't do any computer-type processing. The RPG that came out with the 360/20 didn't resemble the 1401 RPG, except in name only. That gave us an RPG that could handle most business data processing needs. I say "most" because there are certainly many jobs for which an assembler is needed.

I have recently written a program in Cobol for an invoicing routine. It took nearly 1,000 statements. A similar program that has been used for quite sometime and written in RPG takes less than half as many statements. Both do the required job. It took several hours to flowchart the Cobol program and many hours (I don't know just how long, but a long time) to write the program. Then it took a long time to keypunch and verify the program cards.

With the RPG program, no flowchart was necessary, only notes showing what needed to be done. The keypunching and verifying of the program cards did not take nearly as long as the Cobol program because there were so many less cards to do. (By the way, I used the RPG listing to flowchart for Cobol.)

Then came debugging after finally getting a good compile. With Cobol, each statement has to be read to see where a certain name is used that is causing a particular problem. With RPG the factors or result field can be scanned rather rapidly to see where the name is used.

Some say that RPG cannot be flowcharted. That is not true; it can be. But many times you don't need one because the program listing is so easy to follow.

The RPGs currently available allow complete freedom to process any file type in any sequence necessary. Lines can be printed anytime desired, subroutines used, debugging, tables, switches, arrays, totals, matching-records, chaining, branching and all arithmetic, compare and move operations. Table lookup in RPG is far simpler than in Cobol. And how about matching records!

I'm sure there are many complex jobs that RPG cannot handle efficiently, especially on a large system, but I have yet to see a business-type application in which a good RPG programmer couldn't run circles around a good Cobol programmer and have time left over.

I believe that all the computer manufacturers realize that RPG is the language for business applications. All of the major vendors have one, and they are relatively compatible, maybe even more so than Cobol.

Tom Crenshaw is head of data processing at Visador Co., Jasper, Texas.

Letters to the Editor

RPG and Cobol? But What About Alternatives!

Along with Reginald D. Gates [Viewpoint, CW, May 9], I've been interested in the exchange of letters over RPG II. I received my original 360 training in Assembler, Cobol and RPG. Since then, I've used all three of the above and two others: PL/I and Adpac.

I've found it extremely interesting to note that the letters have become almost Cobol versus RPG II. What about the other alternatives?

I've found both PL/I and Adpac to be preferable to either. My personal preference for business applications is Adpac. Since Gates has pointed out the weaknesses of RPG, perhaps those of Cobol should also be aired.

If the Archilles heel of RPG may be that it doesn't readily lend itself to being maintained by a programmer other than the author, that of Cobol (or just about any language) is that it doesn't either.

Granted, Cobol's weakness is that it isn't written well generally, but that effectively kills the "self-documenting" aspect of Cobol. Adpac, on the other hand, is a "structured" language which has some predefined logic.

Because of this, it is self-documenting in a way that no unstructured language can be without the enforcement of good standards. And, as with any language, good standards followed during writing and modification greatly aid future modifications.

Cobol is also inefficient both in core utilization and speed. Adpac requires less core and time to execute both the compiler and the problem program.

Both Cobol and Adpac are relatively easy to debug and transfer from DOS to OS. They are also both able to be used for modular and conversational programming. Adpac, however, generates completely self-relocating code on the DOS level. This can be extremely useful to the multiprogramming user who chooses to take advantage of the 360 series price reductions and the lower overhead of DOS.

An Adpac program can also be written and running in less time than Cobol. And, as opposed to RPG, it comes with several documentation and programming tools. Uncode produces documentation; Libra provides a much more generalized method of updating IBM Source Libraries; and, finally, for those who want the availability of "industry standard" coding, Polypac converts Adpac into extremely good ANS Cobol.

Martin L. Stahl
Silver Spring, Md.

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FAST BECOMING THE STANDARD

Johnson Systems, inc.

[illegible]

Random Notes

Smaller Distributors Gain H200/2000 Inventory System

WALTHAM, Mass. – Small to medium-sized distributors can handle stock status reporting, forecasting and replenishment applications on 24K H-200/2000 series CPUs with the Inventory Management System/I package now available from Honeywell.

Distributed without charge to appropriate users, the new software is compatible with Inventory Management System/II, previously announced for larger firms. It can also be used in conjunction with other applications of Honeywell's Management Information for Distributors (Midis) family of packages, a spokesman noted.

Multi-File Matching Ability Added to Cullinane Systems

BOSTON – The report generator systems from Cullinane Corp. have been enhanced to include support for multiple file matching. "Any number of files can be input," a spokesman explained, provided the sum of all the record lengths does not exceed 8,100 bytes.

The new features does not affect special file-read routines and even a mix of conventional and unusual files can be handled in a single match run. The multi-file matching is available free to new users and to those who have acquired one of the Cullinane systems, at current prices, the spokesman said. Cullinane is at One Boston Place, 02108.

Com-Share Installs 'Fasplt'

ANN ARBOR, Mich. – A conversational version of Fasplt, a plotting software system capable of producing point, line, bar and step function graphics, is now available on Com-Share's time-sharing network.

The software interacts with the user through a series of decision prompts and simple inputs. It also accepts plot data input from fixed or free-form symbolic files, paper tapes and remote terminal keyboards. The firm is based at 2395 Huron Parkway, 48106.

'LIS' Eases Compiler Building

CLEVELAND – Compiler builders developing languages for several different CPUs can avoid inconsistent results and repetitious coding tasks by utilizing the Language Implementation System (LIS) package from Chi Corp.

LIS includes the parser, optimizer, language for the target machine, and the code generator. On the other hand, the syntax description, semantics generation routines, the scanner and the target machine description are written by the implementor or by Chi as a separate effort. The basic LIS is available from 11000 Cedar Ave., 44106.

Current Manuals Rapped

JCL Called 'Too Complex' for User

By Don Leavitt
Of the CW Staff

MAIDENHEAD, England – There is no coding method currently available for converting standard system flowcharts into job descriptions and that, according to H.J. Weegenaar of Centraal Beheer, is why Job Control languages are so poorly utilized today.

Writing in the latest *Infotech State of the Art Report* (No. 14), Weegenaar recognizes that almost all of the job control functions required by non-programming users can be found in existing JCLs. But, he adds, most JCL manuals are so involved in the detail of specific JCL entries they miss the overview the user so badly needs.

He cited lack of structuring around the main purposes of a JCL as one of the reasons for its poor applicability today. Other problems exist, he said, because JCLs are specified as low-level programming languages "rather like assembly," and JCLs are so complex that "only highly experienced programmers can understand them."

Weegenaar served on the original American National Standards ad hoc group that studied the feasibility and justification for standardizing JCLs across hardware lines.

In the current paper, he urged moving forward on the positive recommendations of the old study group, apparently writing before the announced reactivation of that group [CW, March 28].

He also noted that a Dutch group – of which he was also a member – has added useful definitions of the broad-brush job control functions that have been needed in order to bring JCL down to the non-programmer user level. This group has, in addition, devised a function matrix to clarify the interaction of the functions with the operations and resources that have to be controlled by the JCL.

In Weegenaar's view, the simply structured JCL has three control functions. Declaration control permits – indeed requires – the name of the job, the start and stop points, and subdivision into sub-jobs to be specified. Execution control provides the interface between the computer operator and the operating system, to get the declared jobs done.

The allocation control function provides a means of specifying resources to be used and assigning symbolic device names and file names. It is this area in particular that needs improvement, the author suggests.

Peripheral Descriptions

Current practice, he explained, requires peripheral descriptions in each program provided through facilities of the programming language.

Execution sequence and run-time changes in devices can be controlled by the operator, but substantive changes require program revision. Improved JCL should relieve both areas of much work, Weegenaar said.

Even without knowledge of the renewed ANS study group, Weegenaar appeared generally optimistic. He noted that Ifip Working Group 2.1 has recommended establishment of a subcommittee on Operating Systems and Conversational Languages and a Working Conference on Command Languages organized by Ifip Technical Committee 2, is to be held in April 1974.

Infotech's 560-page Report No. 14 covers a broad range of topics related to operating systems, and is available for $95 from Infotech, at Nicholson House, High St., here in Maidenhead.

OS, Disks, Programs All Checked With Four-Way 'Monitor System'

OMAHA, Neb. – OS/360-370 users have still another means of measuring the effectiveness of their operations with the announced availability of the Monitor System package from Computer Software Inc.

The complete system is made up of four individual monitoring tools which can be used alone or together.

The Operating System Monitor (OSM) is used to measure activity within IBM's OS. It has the advantage over other monitors, the vendor said, because it gives moment-by-moment reporting of activity, rather than average activity over time.

As its name implies, the OS DASD Monitor subsystem is used to monitor the seek activity of 2311, 2314, 2319 or 3330 disk packs. Data about as many as 99 units can be collected at one time

The OS PDS/Monitor subsystem is designed to measure the efficiency of partitioned data set activity on a user's disk drives. This part of the package was written, the vendor explained, to find out why there is so much seeking within the SYS1.SVCLIB section of the operating system.

Finally, the OS Problem Program Monitor (PPM) reports the high CPU usage areas within a user's application program. Programs under study may be up to 400K bytes long, and several application programs can be monitored concurrently. The monitor runs in a separate region or partition from the subject programs and no JCL changes need to be made.

Several of the programs within these monitoring subsystems require as much as 80K bytes to operate but the normal memory load isn't much more than 20K. None of the systems modify IBM's OS coding.

The four-sided monitor system and miscellaneous supporting programs are available in object form for $4,980. Source code is available for those users who wish to maintain or modify the system.

Computer Software is at 3242 Pedersen Drive, 68144.

Payables Package Runs in 128K

LOS ANGELES – 360/370 users can begin to move toward a fully integrated management accounting and information system with the installation of an accounts payable package from Unicorn Systems Co.

Related packages to handle general ledger, accounts receivable and other aspects of a company's financial status should be available later this year, the company said.

The Payables system supports cash requirements forecasting, single-entry for recurring vouchers, voucher balancing, and calculation of vendor discounts, as well as discount allocation and the handling of vendor credit memos.

It also aids in payable forecasting and aging of past due accounts, and special treatment, if required, for permanent and transient vendors.

Check-writing cycles are dynamically user-controlled and include check registers, payment registers and year-end 1099 forms in addition to the checks themselves. The system also works with multiple payees and non-pay vouchers.

To keep management aware of things to come, the software produces a planned expenditure report. But it also generates an outstanding purchase order report and all appropriate general ledger and job cost journals, adjusted journals and work sheets so that a company knows where it has been.

Once shaped to the user's needs, the package includes comprehensive, multi-level diagnostic analysis and reporting features, tempered with error correction and default options to cope with many of the obvious types of errors that can creep into the input data.

Written in ANS Cobol, the system is operational on 360s and 370s with minimum available partitions of 128K bytes, under DOS, OS or virtual storage.

The system can be leased on a licensing basis for up to five years. Cost will be between $5,000 and $10,000, depending on options required, a spokesman said.

The firm is at 3807 Wilshire Blvd., 90010.

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Tapes Save Core, Time

ST. LOUIS – Users who feel disk-based files are best for every application should probably look at what McDonnell Douglas Automation Co. has done in developing version II of its Automated Shareholder Record System (ASRS-II).

ASRS handles most aspects of the processing of stockholder records, including payment of dividends, withholding of taxes and mailing of notices, proxies and ennual reports. By changing master file storage from disk to tape, the vendor claims to have cut processing time under ASRS-II by up to 50%, and core requirements by as much as 20%.

Records Merged

Records to be updated are temporarily loaded from tape to Isam-type disk files, a spokesman admitted, but after processing, the updated records are merged back into the tape masters for storage.

The minimum hardware configuration required to run ASRS-II is an IBM 360/40 with 160K bytes of available core, three 9-track tape drives and one 2314 or 3330 disk facility. The system functions in an OS environment.

Source Codes

ASRS-II costs $30,000 which includes ANS Cobol source code, documentation and 20 man-days of system support, which can include consultation, training, procedural development, management orientation or program modification to fit user needs.

Interfacing with the basic system but available separately are a stock transfer module for $6,000; a module for printing checks and tax statements at the same time for $5,000; and a dividend reinvestment module for $1,500.

McDonnell Douglas Automation Co. is at Box 516, 63166.

'Simsnips' Debuts

LOS ANGELES – *Simsnips*, a free newsletter published quarterly by Consolidated Analysis Centers, Inc. (Caci), features three- or four-line descriptions of simulation models under development.

"Subscription" requests or copy for the newsletter should be addressed to J.S. Annino at Caci, Suite 350, 12011 San Vicente Blvd., 90049.

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IEEE Meeting Hears
Software Reliability Can Be Modeled

By Levi J. Carey

Special to Computerworld

NEW YORK – Practical tools and techniques to insure improved software quality are clearly needed, but progress is being made in meeting that need, Dr. Milton J. Minneman said in keynoting the recent IEEE Symposium on Computer Software Reliability.

The bulk of the presentations in this year's symposium, held earlier this month, centered around creation of workable reliability models and the test and development tools needed for their support.

Mathematical models can be devised to forecast how reliable a software system will be, several researchers agreed, but what factors should be in these models was not part of their agreement.

Other tools, techniques, data and solutions representing what some observers consider significant steps toward improved software reliability were spread throughout the 26 papers and many discussions that accented the three-day meeting.

Magnitude of the reliability problem was dramatically demonstrated by S. Bloom of Bell Laboratories who pointed out that for the Bell System's No. 1 Electronic Switching System, with more than five million instructions, software quality assurance administration alone required an annual budget of $750,000.

This did not include original programming costs, test designing costs or supporting activities for executing quality assurance procedures, Bloom noted.

Programming productivity of 10,000 lines of source code per man-year in the development of large, nearly error-free programs is not only possible, but also practical, according to Harlen D. Mills of IBM, a long-time exponent of improved programming methodology.

Programmer Power

Language design can encourage programmers to write good programs, but some programmers can achieve good style – good use of a language's features – even when they have to work with poor languages, B.W. Kernigham of Bell Labs told the same session on methodology. Actual programs illustrated each point as he made them.

Startling to some who had been to last year's symposium was the total absence of papers on software programming proofs – an analytical approach to proving software correctness by analysis that was widely discussed in 1972. This probably stems – one observer suggested – from the fact that this method has only been found applicable to small programs (up to 300 instructions).

In summary, the symposium produced a feeling that software reliability is coming of age – the use of the term "reliability" expresses a confidence that was lacking when people simply spoke of "quality assurance." The models are beginning to look plausible and the test measurement tools now have utility. Further, progress is being made in understanding the art of programming so that performance can be drastically improved.

Copies of the proceedings are available from IEEE, 345 E. 47th St., 10017.

Carey is president of Computer Software Analysts, Inc., a Los Angeles-based firm working in the development of automated tools for verifying the operational quality of software.

Merchants Use IUP To Track Products

WHITE PLAINS, N.Y. – Large-scale retailers can coordinate all their operations around a single on-line integrated data base with the Twin Fair Merchandise Processing System, scheduled to be available from IBM in August. The program functions as an application under IBM's Customer Information Control System (CICS).

An Installed User Program (IUP), the software controls many of the major resources of the retailer, including stores, warehouses and distribution centers and his inventories and capital. It utilizes IBM 3270 information display systems as I/O devices for a centralized 370.

Developed originally by Twin Fair, Inc., Buffalo, N.Y., this IUP accepts order entry information, then tracks incoming merchandise through the receiving process at the warehouse, distribution center and store levels. It also supports the accounts receivable function.

Written in Cobol and Assembler, the package will operate under CICS on a DOS-oriented 370 with 128K bytes of main memory available. As an IUP rather than an IBM-developed Program Product, this software has minimal, newsletter-type support for error correction.

It will be available by the end of the summer under a license agreement for $1,750/mo. These charges are waived after the first 12 consecutive months of payments.

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Data Briefs

1,200 Bit/Sec Unit Added To Collins Modem Family

NEWPORT BEACH, Calif. – Collins Radio Co. has added a 1,200 bit/sec unit to its line of data modems.

The TE-1200 is a frequency-shift-keyed (FSK) modulator-demodulator that accepts digital data from the terminal equipment and converts it to frequency shift-keyed audio tones for transmission over telephone circuits.

The TE-1200 provides asynchronous data transmissions over dial circuits or unconditioned 3002-type circuits. It is compatible with the Western Electric 202C, D and E.

The TE-1200 includes built-in test features that can be used to isolate faults to the modem itself or the data terminal equipment.

The standard TE-1200 costs $475, with quantity discounts available. Delivery will be from stock from Mail Station 503-110, 4311 Jamboree Road, 92663.

Adds 9,600 Bit/Sec CRT Replaces Teletypewriters

HAUPPAUGE, N.Y. – Applied Digital Data Systems Inc. (Adds) is offering a Teletype-compatible CRT display terminal.

The Consul 580 displays 24 lines of data with 80 char./line.

Standard equipment includes cursor controls, scrolling, a printer interface and transmission speeds up to 9,600 bit/sec.

Prices for the Consul 580 start at $1,795.

Delivery is 60 days from 100 Marcus Blvd., 11787.

Calculator-Type Keyboard Added to Univac DCT Units

SANTA MONICA, Calif. – A desk calculator-style keyboard designed to operate with the Univac DCT 500 and DCT 1000 remote data terminals is available from TTS.

The ANK-16U operates on-line or in local mode at whatever speed the terminal is set to operate.

Carriage return, line feed, comma, period (decimal), minus and space keys are normally included.

The unit is priced at $150 from 2928 Nebraska Ave., 90404.

7K Storage Model Added to Sycor Terminal

ANN ARBOR, Mich. – Sycor's Model 340 intelligent communications terminals are now available with up to 7K bytes of programmable memory.

The lease price of the Sycor terminals with the 7K memory option will be $83/mo including maintenance on a one-year lease. Purchase price is $2,400 from 100 Phoenix Drive, 48104.

'Conscious Effort'

Johnson Claims FCC Stifles News Flow

The seven-year term of FCC Commissioner Nicholas Johnson expires in June. Johnson has been one of the most outspoken members of the FCC and has often been cast in the role of the dissenting minority in major FCC decisions. In this interview, he explains his views about the commission.

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – "There is an affirmative effort [on the part of government agencies] to keep information from the public," according to Nicholas Johnson, commissioner of the Federal Communications Commission.

"A government agency has a responsibility to inform the public, but in an age when these agencies tend to be run as subsidiaries of large corporations perhaps it is asking too much to have them rat on themselves," Johnson said.

Nicholas Johnson

Speaking specifically about the FCC, Johnson said, "Major decisions involving the Bell Telephone companies have been released on Thanksgiving eve, on Christmas Eve, and a recent one prior to Mother's Day."

"It is pretty hard to believe that this is not a conscious effort, when major anti-consumer items are deliberately released on late Friday afternoons, knowing everyone is gone for the weekend and the only coverage will be in the thin Saturday papers."

"The best quality general newspapers in the country simply do not cover the FCC regularly with the degree of time and attention that the trade press does. There's a scandal a day here to be uncovered if there was only a reporter here to write about it," he said.

'Less Hesitant' Users

Asked whether greater user paricipation in regulatory issues would help, Johnson said these groups should be "less hesitant" about speaking out. "The more participants there are the better it is," he said.

"Out of a diversity of interests that represents the American business community comes the best possible public policy," he said.

But he cautioned that "problems arise when you tend to have disproportionate influence. Generally an agency like the FCC tends to give priority to the interests of the most powerful industries first.

"In this regard the commission is no different from other government agencies like the executive branch agencies such as we have seen in the recent Watergate scandal," Johnson said.

Recognizing that he was not painting a very rosy picture, Johnson said he was merely trying to be "candid and honest."

FCC Liberalizing?

Asked whether he believed that decisions such as Carterfone had established a more liberal FCC trend, Johnson said, "We don't sit at the commission and decide what the next trend is going to be, we decide one case at a time. Sometimes you can get the votes, and sometimes you can't."

Elaborating on Johnson's statement, Bob Thorpe, the commissioner's assistant said, "You can look at Carterfone, at the specialized common carrier decision and those kinds of cases and say some progress did take place.

"But the first MCI decision was a four to three vote and that is the closet [to a no vote] that you can get," Thorpe continued.

Asked if he could predict how long it would take the FCC to resolve an issue like the application of Packet Communications, Inc. for a packet-switched data network, Thorpe said, "It depends how the forces line up. It looks like Bell will line up in favor of PCI and that will be a big help."

Johnson said he did not want to speculate on the most important FCC decisions that had been handed down during this term on the commission. Asked if there was any possibility of him being renominated for another seven-year term, the commissioner said, "There is less likelihood of my being reappointed than there is of Richard Nixon being impeached."

In-House Consultant Role Seen Complex, Changeable for Manager

BOSTON – The role of the data communications manager is complex and subject to frequent changes.

This was the conclusion of several seminar sessions at the annual International Communications Association (ICA) conference that explored the proper way to manage a company's communications facilities.

The data communications manager must have the "unqualified support of the executive suite" in order to be successful within his company, according to Richard A. Kuehn of RAK Associates, a consulting firm. "Today, communications is more than a bill from the carrier or [for] equipment. It is the movement of information," Kuehn told the users.

Urging users to be "the most sophisticated of system analysts," Kuehn said the manager must be the "wisest of seers in order to foretell and meet the changes of both the marketplace and his environment.

"By being privy to long-range corporate planning, having effective alternate solutions with recommendations available before the questions are asked, and maintaining a large profile, most problems will never arise," he said. To implement this type of approach, the manager becomes an "in-house consultant," he added.

The rise of competition in both the communications carrier and equipment areas has made it virtually impossible" for the communications manager to depend on anyone for valid input on the operation and capability of available equipment. Most sales personnel are paid on commission so their interest is in having the user switch to their equipment, Kuehn implied.

He also chastised the "disconnect salesman" or percentage-of-savings consultants who he said often work "hand in glove" with the salesman. To counteract this situation, the attendees were urged to keep abreast of new developments through trade journals and user organizations.

Know Regulatory Affairs

The attendees were also advised to be more involved with regulatory affairs. Business provides "over 50% of the carriers' revenue" but is virtually nonexistent in rate case proceedings, he said. But to ignore applications for rate increases can be very expensive for the user if higher charges are approved.

At the very least, Kuehn suggested that users write letters to the proper regulatory commission to make their positions known. He also urged organizations such as ICA to become "active intervenors" in regulatory affairs.

ICA members attending a seminar on the responsibilities of the communications manager said the equipment controlled by their departments varies from company to company. One manager said he controls all equipment up to the modem, after which the DP manager has responsibility for the equipment up to the mainframe.

Another user said his authority went past the modem and included everything up to the communications front end or line controller.

A third user said his communications responsibility included only the line facilities supplied by the phone company and all equipment was selected and controlled by the DP department.

But most users agreed that regardless of the interface point, the implementation of an effective communications network requires close cooperation between the communications and DP departments.

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Most Set for Service Soon

Specialized Carriers Begin to Interconnect Networks

By Ronald A. Frank

Of the CW Staff

BOSTON – Two of the specialized common carriers have agreed to standardize their transmission protocols so users can be served by both networks.

The agreement between United Video, Inc. and CPI Communications could be the start of a third interconnected specialized carrier network comprised of the smaller firms which plan to provide data and other services to users [CW, April 25].

Most of the specialized carriers were represented at the recent International Communications Association conference here, and prospective users did not have to look far to get quotes on proposed rates and services.

In addition to its agreement with United Video, CPI said it will utilize facilities at the Dallas domestic satellite earth station being planned by American Satellite Corp.

Such a linkup would take CPI out of the regional specialized carrier category and allow the company to provide service to other portions of the country.

American Satellite said it had signed agreements to lease up to four transponders, each of which has a capacity of 480 full-duplex voice-grade circuits, on the Canadian Anik 2 satellite. The firm expects to begin domestic operations by "late fall" of 1973 with earth stations at New York, Chicago, Dallas and Los Angeles.

Initial rates for a New York-to-Los Angeles voice-grade channel will cost $1,200, exclusive of local loops, the company said.

Satellite transmission apparently is also being considered by Data Transmission Co. (Datran). At least one network configuration being shown by Datran officials at the ICA conference did not include a terrestrial link between the West Coast and Texas portions of the firm's system.

The company is considering other technologies to implement this expensive portion of the network, a Datran spokesman said. If Datran decides to use satellite facilities, it would have to lease those facilities from outside suppliers since the firm has not applied with the FCC for its own satellite system. And if the ground-based link is not built, the construction permits for that portion of the network would go unused.

CPI said it would interconnect with United Video in Dallas, where it would also share earth station facilities with American Satellite. CPI said it planned to charge about $1/mile/mo for a "Telpak-type circuit" compared with $1.25/mile now being charged by Southwest Bell on intrastate routes within Texas.

A voice-grade line will cost about $2/mile/mo for full-duplex service compared with $3.30 from Southwest Bell, a CPI spokesman said. The firm expects to begin data service before the end of the year.

Southern Pacific Communications Corp. said it plans to file an intrastate tariff in California by the end of May at a proposed rate of 95 cents/mile/mo for a voice-grade full-duplex channel. Interstate rates will probably be the same, a spokesman said. Southern Pacific plans to hook up its first data customer in late summer of this year.

United Video plans to offer three-year operating-type lease plans to users. One-, two- and three-year lease plans will be available, each providing prospective users with a 10% additional discount compared with month-to-month agreements.

A customer signing up for the full three years would receive a 30% discount on his monthly rates for a 4kHz channel, a spokesman said. A proposed charge between New York and Dallas would be $890/mo for a voice-grade channel and $630/mo for the same facilities under the three-year agreement. This would not include local loops.

United Video also announced that a former communications manager for one of the largest networks in the country, American Express, will become vice-president for operations.

Herbert Granger, past president of the ICA, will be responsible for the United Video facilities between New York and Dallas.

Nebraska Consolidated Communications Corp., which calls itself N-Triple-C, said it is ready to begin data service between Omaha and Chicago within several weeks.

The company plans to charge about 80 cents/mile/mo for a 4kHz channel. An additional termination charge per channel end of $5 will be included in the N-Triple-C rates. The firm presently operates a microwave system for the State of Nebraska.

If your company has an IBM 370 computer system on order or is considering ordering one in the near future, explore the leasing terms available from DPF.

Consider what DPF Inc., the largest independent System 360 computer lessor in the United States, can do for you:

Time-Tailored Leases. DPF offers both short-term (as short as three years) operating leases and long-term (as long as ten years) full-payout leases. We help you choose the term that best fits your requirements.

Flexibility. All DPF leases contain provisions which permit you to change your arrangement should your data processing requirements change at any time during the term of the lease.

Full Service. DPF doesn't forget you once your hardware is in place. From its vast resources and experience (almost a quarter of a billion dollars of 360 computer inventory presently installed) DPF provides you with continuing hardware and software support throughout the term of your lease.

Peripherals, Too. DPF leases cover your complete data processing system, including non-IBM peripherals you may select.

Competitive Costs. Compare the cost of leasing 370 equipment from DPF with any other figures you may have. You'll be delighted.

So, you see, the short-term operating lease did not die with the advent of the 370. It is alive and well at DPF. Why not get the full details by contacting Mike Swords, our National 370 Sales Manager at Hartsdale, or one of our five Regional Managers: Bill Drew, Chicago, (312) 297-4620; Mac McDaniel, Houston, (713) 783-5641; Harry Carr, Los Angeles, (213) 641-5370; Tony Pintauro, New York, (212) 688-7601; Bill McDermott, Washington, (202) 833-2065.

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Michael J. Creedon,
Executive Vice President

When they say you can't get a 3-year operating lease on a 370,

tell them about DPF

Interdata Expands Model 50 Processor Into Message Switch

OCEANPORT, N.J. – Interdata, Inc. has unveiled a store-and-forward message-switching system, the MS-5.

A typical system configuration includes the Interdata Model 50 communications processor with 32K bytes of directly addressable core memory, 5M-byte on-line disk storage subsystem, magnetic tape unit, card reader, TTY and a 30-line telecommunications subsystem module.

This configuration forms a turnkey system operating under the Real-Time Telecommunications Executive (RTEX), which acts as the operating system intermediary between hardware and application-level software.

Good Mix?

This hardware-software mix offers users capabilities for receipt and transmission of messages, station identification, routing retrieval and code conversion and management of message traffic – including store-and-forward capability for a network of remote terminals, the firm's spokesman said.

The MS-5 system is designed to operate either as a free-standing switching center running the network of remote terminals or, alternatively, as part of a network controlled by several regional message-switching systems with computer-to-computer communications.

In the later application, control of the network can be shifted from one region message-switching system to another as traffic requirements dictate.

A typical system costs about $190,000 from 2 Crescent Place, 07757.

These Data General sales engineers got their training at DEC, Varian, Honeywell, XDS, Interdata, Hewlett-Packard and IBM.

If you're a computer professional who wants to switch to selling for the winner, contact Gus Ashton, our National Sales Manager. Write, or call (617) 481-5160.

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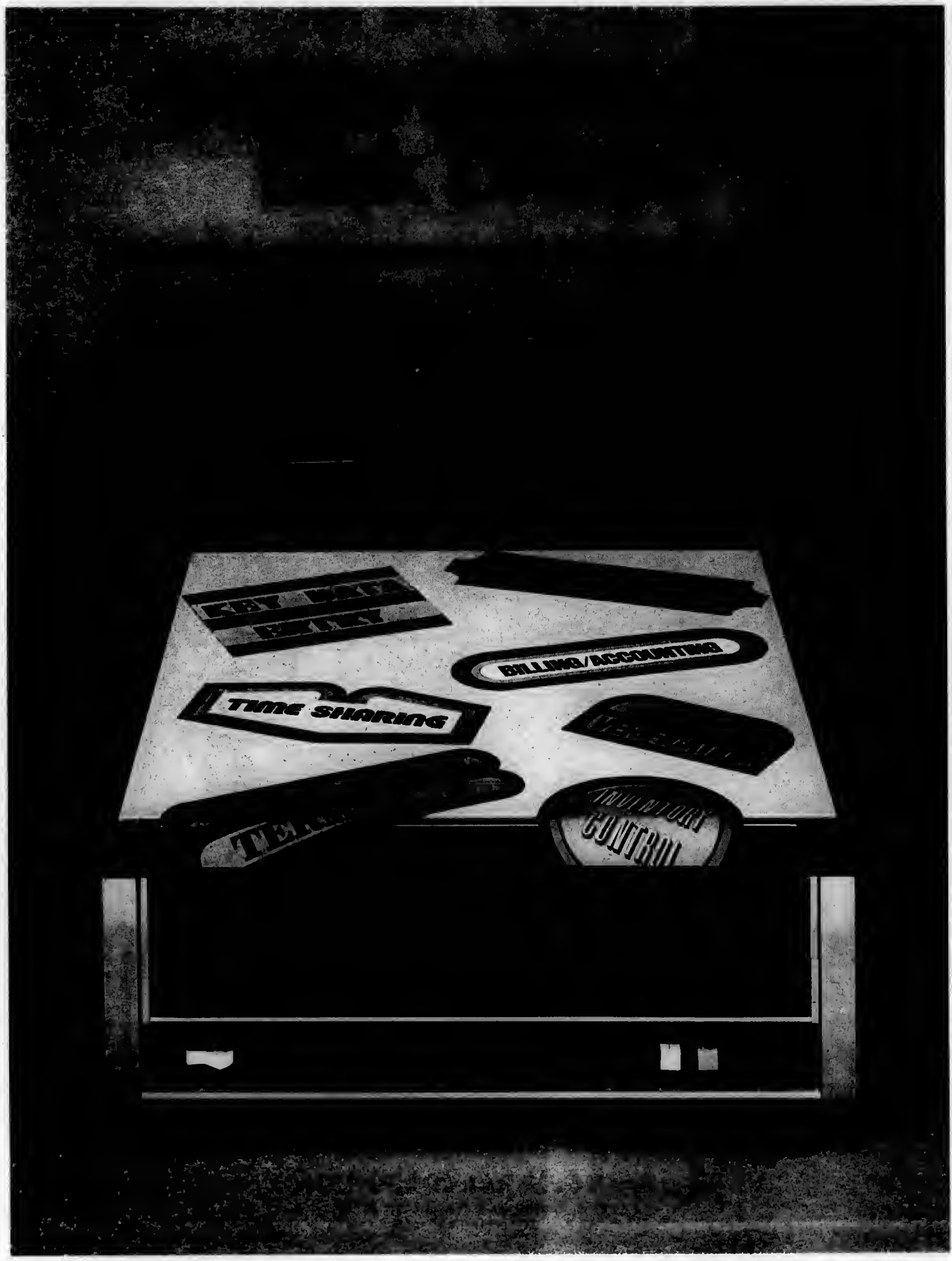

See us at the National Computer Conference - Booth 2243

Bits & Pieces

Minis Get Floppy Disk, Stores 262K Char./Drive

PALO ALTO, Calif. – A floppy disk storage system is being offered to minicomputer users by Advanced Electronics Design, Inc.

The disk subsystem comes complete with one drive, controller electronics, computer interface and software package.

Storage capacity is 262K char./drive with a transfer rate of 31K char./sec.

Price is around $3,000 for a one drive system with optional extra drives at $1,000 each from the firm at 3197 Park Blvd., 94306.

Smart Mod II Add-On Memory Relaces Core on Large 360s

FORT LAUDERDALE, Fla. – Users of IBM/360 Models 65, 67 and 75 can have 8M bytes of core memory from Standard Memories, Inc. (SMI) for less cost than 1M byte of core memory from IBM, a company spokesman said.

The savings is realized through SMI's recently announced Smart Model 2365 Mod II plug-to-plug maincore memory expansion – a reworked version of the firm's Smart 2365 Mod I.

Purchase price for the maximum SMI configuration is $1,384,000, which compares to the IBM purchase price for 1M byte of around $1,500,000, the spokesman said. One megabyte of SMI core memory costs $190,000.

Rental plans are also available with 8M bytes renting for $16,000/mo on a two-year lease from 2801 E. Oakland Park Blvd., 33306.

More Core for PDP-8s and PDP-11s

MINNEAPOLIS – PDP-8 and PDP-11 minicomputer users can obtain add-on core memory for their systems from Fabri-Tek.

The Model 8 is designed to provide PDP-8 users the ability to add 24K words to their present memory storage.

Model 11 adds 8K to 128K words to PDP-11 minicomputers. Cost depends on the size and model used with prices ranging up to 35% less than comparable core memory from Digital Equipment, according to the firm located at 4010 W. 65th St., 55435.

Verifier/Editor Adds Options

NORRISTOWN, Pa. – Two product enhancements – addition of 51-column and 600-card/min equipment options – are available for the Verimatic 70 automatic verifier/editor.

These options will be made available with the Verimatic 70's existing 80-column, 300 card/min capability of the current model.

Purchase price of the unit is $14,850 with a rental cost of $395, exclusive of maintenance from 203 E. Main St., 19401.

GTE Becomes Another Source

Key/Disk System Permits Networking

MOUNT LAUREL, N.J. – GTE Information Systems is moving into an area of expanding user interest – key-to-disk systems – with the IS/1511 and IS/1514 Shared Processor key-to-disk data entry systems.

The basic IS/1511 system can control from four to 32 input stations. The heart of the system is the IS/1500 Processor that accepts input directly from video screen data entry stations and displays the input format on the screens.

As data is keyed in, the processor statistically verifies records at random; checks for illegal characters and boundary or field errors, and displays four types of warning notices before errors can be transferred to tape.

The processor has 750 nsec memory cycle time; up to 64K words (16-bit word) of memory and 102 operational instructions.

With additional operating software and hardware, the IS/1500 can become a remote batch processor that will emulate the communications of IBM 2780 or 3780 remote high-speed terminals to transmit data at line speeds up to 9,600 bit/sec.

Additionally, the IS/1500 has the capability to perform as a small peripheral processor that can communicate with an IBM System/3, 360/20 through 195, 370/125 through 195 or equivalent machines.

These communications applications are possible through the addition of a communications module to the basic IS/1511 – turning the system into an IS/1514 – which permits asynchronous or bisynchronous data transmission.

An application of the communications capability might be in using the system for distributed data base management with direct inquiry and response to a local disk-operated data base or with a central computer over a communications link.

Peripherals to the central processor include a disk subsystem, video display key station, card equipment and tape unit.

The disk subsystem has a minimum capacity of 18K 120-char. records expandable to a maximum of 288K records.

The video displays incorporate a 12-in. screen that can expand from the standard 240 characters to 480 and a keyboard compatible with the IBM 029.

A unique feature of the GTE system is that input from the keyboard is translated by ROM memory located between the station and the CPU.

For users this means that they can change the keyboard and key positions by merely inserting different ROMs.

The associated tape system can be any speed or standard density the user requests (e.g., 7- or 9-track and up to 1600 byte/in. density).

The 165 char./sec dot matrix printer and card equipment are optional features.

Optional software is available for monitoring operator performance. This program will display or print out elements as the number of records and keystrokes, keystroke errors and elapsed time.

Monthly rental on a basic IS/1511 system including maintenance starts at $650. Purchase price for the same system is $30,350. Prices include processor with 16K bytes of memory, disk subsystem (3K bytes), tape transport (800 byte/in., 7- or 9-track), and four key stations. Additional keystations are about $75 each.

Rental for the IS/1514 (communication model) starts at $700/mo. including maintenance, with purchase set at $30,850.

These prices cover the same configuration as the four-station IS/1500 with the addition of the asynchronous/bisynchronous communications capability.

GTE Information Systems Is located at Central Ave. & E. Park Drive, 08057.

MOS Memory Unveiled for 9700

By Michael Weinstein
Of the CW Staff

BLUE BELL, Pa. – In keeping with an apparent objective of making semiconductor memory standard across the product line, Univac has announced it will soon begin delivery of semiconductor memory for the 9700.

For users this move to MOS will result in cost savings on 9700 system rental ranging from about $400/mo on the smaller systems to over $10,000/mo on the largest configurations.

Operationally, the newer MOS memories will offer no additional speed or compute capabilities as their internal speed – 600 nsec – is identical with the older plated wire memories.

As an added advantage to new users of the 9700, floating point will be incorated as a standard feature, a spokesman said. This feature was an extra cost option on the older central processors with wire plated memory.

Memory sizes for the 9700 – wire plated and MOS – range from 131K bytes to 1M byte. Memory is expanded in 65K-byte modules from 131K bytes to 262K bytes. From 262K bytes memory is expanded to the maximum of 1M byte in modules of 131K bytes each.

Cost Comparisons

Comparing cost at the low end, a user would pay $11,055/mo and $10,625/mo for central processor with wire plated memory and central processor with MOS memory respectively. At the high end central processor with 1M byte of memory, these figures would be $34,655/mo and $21,275/mo respectively.

Purchase price figures also follow a similar pattern with a potential savings of $350,000 for users purchasing the 1M byte maximum.

For present 9700 users, their systems are field adaptable to the newer MOS memories, the spokesman said.

The boxes containing the memory modules are the same size for both wire plated and MOS so that for users wishing to convert it is merely a matter of plug-in and run, he added.

Another capability is to mix memories in one system – for example, have the first 131K in wire plated memory and the rest MOS.

Who Would Benefit?

This capability might be of advantage to users who have purchased initial amounts of wire plated memory and now want to add more memory. By having the added modules in MOS semiconductor they would save money over the cost of comparable wire plated modules.

The announcement of MOS memory for the 9700 is the second release in recent months which made semiconductor memory available on a Univac system. (The first was the March announcement of the 9480 medium-scale computer.

Interface for Interdata Use

MILWAUKEE – Users of Interdata models 3, 4, 5, 70, 74 and 80 computers can utilize Potter line printers and/or Kennedy System magnetic tape drives with an interface and software from Marquette Electronics, Inc.

The Kennedy System 8000 magnetic tape subsystem or the Potter LP3000/3300 line printers can be interfaced through one 10-inch printed circuit card on either the MUX or Selch bus.

Prices are $2,395 for the Kennedy I/F and $1,295 for the Potter L/F from 3712 W. Elm St., 53209.

Tape Security Device Thwarts Illicit Use

PARK RIDGE, Ill. – Data Lock is a security device designed to prevent the mounting of restricted computer tapes.

Operationally, the device is composed of an upper and lower plastic interlocking jaw with teeth that is inserted into the tape's mounting hub and turned to lock with a key.

Once in place, it is impossible to mount the locked reel onto a tape drive, according to the firm.

Base price for the Data Lock begins at $6.50 from the firm at 1550 Northeast Highway, 60068.

IT TAKES A SMART DP MANAGER TO PICK AN INTELLIGENT TERMINAL.

And the reason is surprisingly simple.

Once you lease a communications terminal for a specific job, you'll be asked to use it for other applications, as well.

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Our intelligent Sycor 340 has 8K bytes of programmable memory that gives you the flexibility to accept those additional tasks. Simple, non-intelligent terminals don't.

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And there are other reasons to choose our 340.

Like an additional 8K bytes of firmware to get you started right away.

Like sophisticated binary synchronous communications procedures to catch transmission errors and retransmit data automatically.

The advantage of unattended communications. To let you send, process and receive data overnight.

And a wide choice of peripheral equipment, including a selection of printers from 30 cps to 300 lpm.

So before you lease a terminal, check with Sycor. We already have more than 6,000 intelligent terminals in use in 33 countries.

You'll see why the smart money's on Sycor. SYCOR

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Survey Indicates Non-IBM Disk Users Happy

MOORESTOWN, N.J. – Nine out of 10 users of IBM-compatible disk drives rate the overall performance of these devices as "good" or "excellent" and better than eight out of 10 users assign similar high ratings to the drives' reliability and the vendors' maintenance service, according to a user survey conducted by Datapro Research Corp.

The survey covered 145 users with a total of 1,743 non-IBM drives installed. Each user was asked to rate his equipment on overall performance, ease of operation, hardware reliability and maintenance services.

A synopsis of their findings is shown in the chart.

Figures in the chart represent the composite rating of 26 disk subsystems from 11 separate vendors: Calcomp, Memorex, Mohawk, Potter, Singer, Telex, Tracor, Ampex, Control Data, IBM and Peripherals General.

Other results in the Datapro survey indicate that 19% of the respondents encountered difficulties during the installation of their IBM-compatible disk drives, and that 25% have encountered difficulties in diagnosing problems and obtaining service. Also 8% of the users expressed specific complaints about a lack of trained maintenance personnel.

	Excellent	Good	Fair	Poor
Overall Performance	56%	34%	10%	0%
Ease Of Operation	69%	30%	1%	0%
Hardware Reliability	48%	34%	13%	5%
Maintenance Service	51%	32%	10%	7%

Users evaluate non-IBM disk equipment.

Conversely, little evidence was found of the widely feared problem of "finger pointing" between independent and IBM personnel.

A full copy of the survey is presented in *All About Compatible Disk Drives*, a 20-page report for $10 available from One Corporate Center, Route 38, 08057.

In addition to the survey, *All About Plug-Compatible Disk Drives* analyzes the pros and cons of acquiring disk equipment from sources other than IBM, presents the specifications of 31 subsystems from 11 vendors, and summarizes the results of the user survey.

Replacement Plan

Included is a "three-point replacement plan" that offers views on what steps the user should take when investigating a source of disk subsystems.

The three major steps, according to the study, relate to evaluating the present system, determining the conversion costs and investigating the alternatives.

But the study does not claim to have any definitive answers and points out several variables users must always keep in mind.

The study is intended to act as a guide with the final decision, as always, resting with the user and his unique requirements.

OEM Products

While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users. Further, while some of this equipment is not presently available to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.

Mini Offered at $990

IRVINE, Calif. – Computer Automation has unveiled a new member of the firm's Naked Mini family: a 16-bit MOS/LSI minicomputer priced at $990.

This price is about 50% the previous price for the Naked Mini.

Also announced is a companion machine, the Alpha/LSI, which incorporates the new minicomputer in a covered chassis and includes power supply and a push button control console, at a price of $1,990.

Both of these new offerings are upward compatible with previous Computer Automation hardware and software but feature an expanded instruction set.

The basis MOS/LSI minicomputer incorporates a seven-chip MOS processor, 4K words of memory and direct memory access (DMA) hardware on one printed circuit board.

This basic configuration can be expanded to a maximum of 256K words. Cycle time is 1.6 μsec.

A full line of software including operating systems and language compilers is also available from the firm at 18651 Von Karman, 92664.

Build Your Own Modular Mini

NATICK, Mass. – An LSI/MOS general-purpose do-it-yourself mini-computer system called the L-500 Series is available from Control Logic, Inc.

The minimum system – selling for around $400 – consists of an 8-bit processor, I/O control and memory address buffer.

Other modules available include a 512 by 8-bit Prom, 256 by 8-bit RAM and a universal asynchronous receiver/transmitter. Packaging accessories, including pre-bussed card racks are available.

The L series system is expandable to 16K bytes of memory and can control display, keyboards, printers and act as the logic units for intelligent terminals.

Higher level software in the form of tapes, listings and preprogrammed Prom's is available at additional cost from Nine Tech Circle, 01760.

. . . Another Japanese Keyboard

SPOKANE, Wash. – Key Tronic Corp. has announced Kata Kana (Japanese character) keyboards.

The keyboards feature N-key rollover, selective repeat functions, and selective inhibit functions. Non-logically paired 10-bit output code in four modes with up to 90 coded keys is available.

Price is $200 in quantities of one to 10 with this price dropping to $95 each in 1,000 lots from the firm at Bldg. 14, Spokane Industrial Park, 99216.

Quelling a Misconception

The correct price for a rack mounted CRT and keyboard unit – from Car-Mel Electronics, Inc. – is $1,850, dropping to $1,000 in 100 lots.

3M Unveils Cartridge Drive

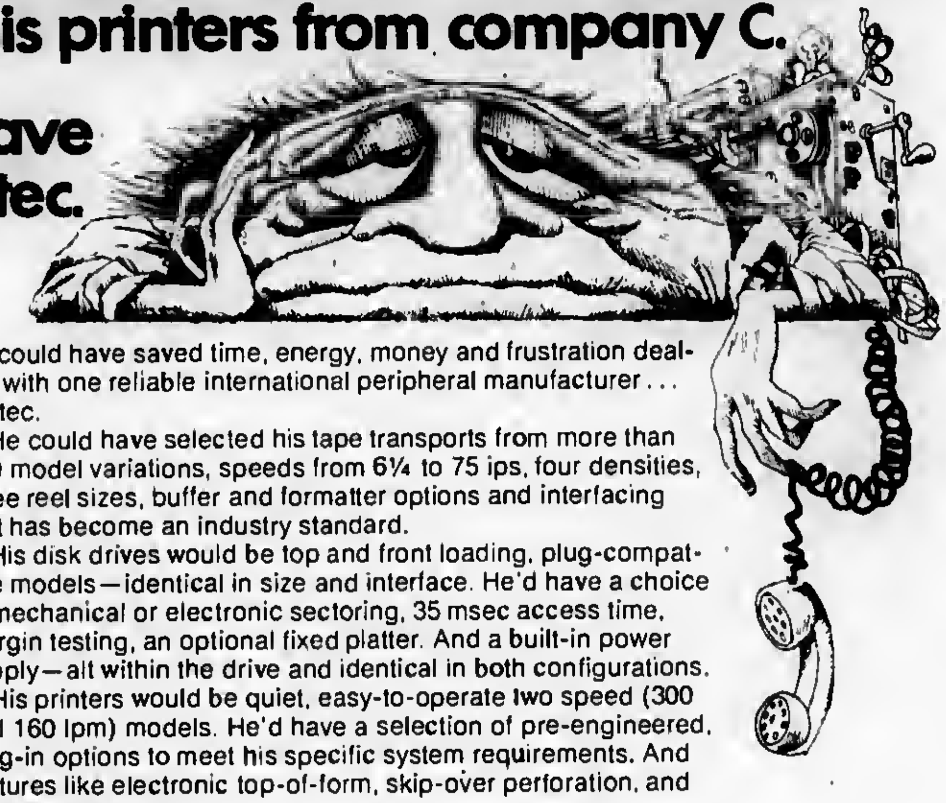
ST. PAUL, Minn. – 3M Co. has introduced a data cartridge drive for the Scotch brand DC300A data cartridge.

Available with one-, two- or four-track read-while-write heads, the DCD-3 drive has 1,600 bit/in. recording density, 48K bit/sec transfer rate, 30 in./sec bidirectional read/write speed and 90 in./sec bidirectional shuttle speed.

In OEM quantities the DCD-3 with a single channel read-while-write head costs about $330 from P.O. Box 33600, 55133.

He bought his tape transports from company A.
He bought his disk drives from company B.
He bought his printers from company C.

He should have talked to Pertec.



He could have saved time, energy, money and frustration dealing with one reliable international peripheral manufacturer . . . Pertec.

He could have selected his tape transports from more than 400 model variations, speeds from 6¼ to 75 ips, four densities, three reel sizes, buffer and formatter options and interfacing that has become an industry standard.

His disk drives would be top and front loading, plug-compatible models—identical in size and interface. He'd have a choice of mechanical or electronic sectoring, 35 msec access time, margin testing, an optional fixed platter. And a built-in power supply—all within the drive and identical in both configurations.

His printers would be quiet, easy-to-operate two speed (300 and 160 lpm) models. He'd have a selection of pre-engineered, plug-in options to meet his specific system requirements. And features like electronic top-of-form, skip-over perforation, and full fault protection.

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Off-Line Print/Plot System Designed for Large Users

CUPERTINO, Calif. – Three off-line electrostatic printer/plotter systems designed primarily for users of large computer systems have been introduced by Versatec Inc.

The matrix print/plot systems, known as Mapps, are designed for use with IBM-compatible tapes. They are stand-alone units which operate with any of Versatec's matric hard-copy output devices.

Operationally, the Mapps controller accepts data from the tape and transmits it to the matrix unit after observing signal and timing requirements for the raster scan plotting and printing, the firm ex-

Mapps provides eight operational control functions and indicators located on the system control panel. Among these are file select, permitting search and selectivity of any file or file group on the tape; and number of copies, which allows the user to have repetitive printing performed by the matrix unit on any file selected.

For plotting applications, the systems are available with a Fortran package called Versaplot.

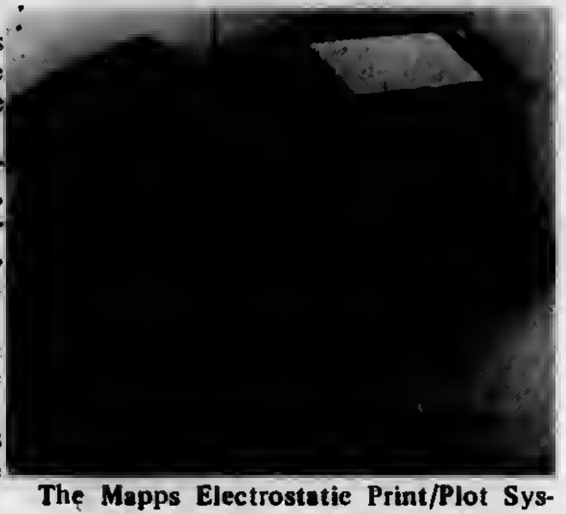
To effect the actual printing and/or plotting this and other programs control the voltage applied to a stationary, linear array of conducting nibs in the matrix unit. These conducting nibs, when clectrically charged, transfer the charge directly onto the surface of diclectrically coated paper.

This charge is developed by a liquid toner to produce a visible dot. An incremental paper drive stepper motor moves the paper the same vertical distance as the distance between any two nibs on the horizontal axis.

This permits square aspect ratio plotting, a company spokesman said. Further, as each line of dots is printed independent of the previous or following lines, any error which occurs in one scan is not carried forward to successive scans.

Pricc for the 7- or 9-track NRZI configuration is $8,500 and $11,000 for the 9-track phase-encoded configuration.

Matrix units which operate with Mapps are priced separately, as are software packages for use with differcnt computers. Versatec is at 10100 Bubb Road, 95014.



The Mapps Electrostatic Print/Plot System allows large system users to perform printing and plotting applications off-line.

Add-On Replaces PDP-11 Memory

SUNNYVALE, Calif. – Advanced Memory Systems, Inc. (AMS) is offering PDP-11 uscrs a series of plug-compatible solid-state memories designed specifically to replace the standard Digital Equipment Corp. mcmory on the PDP-11/15 and PDP-11/20.

Basic 4K or 8K by 16- or 18-bit memory boards have an associated driver/control/power supply board, incorporated into a fully compatible connector block.

System throughput can be enhanced up to 20% by the new AMS memories because of the higher speed of the monolithic add-ons – 375 nsec access time, 600 nsec cycle time (processor limited), a spokesman said.

Price for thc units depends on size and numbcr of add-ons ordered, from 1276 Hammerwood Ave., 94086.

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The CDI 1030 is a lightweight, quiet, reliable terminal using a thermal printing technique. It operates at 10, 15 or 30-characters per second and is perfect for time-sharers on the go.

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United Video, Inc., is a new and important entry in the specialized common carrier field. We will provide a competitive alternative to standard telephone service for point-to-point direct line voice and data communications throughout much of the United States. As such, we offer major operating and economic benefits to communications users who in the past have had to take standard Bell direct communications service or leave it.

United Video is not a newcomer to the communications field. For a number of years we've carried television signals for CATV franchises in cooperation with our parent organization, LVO Cable, and are making arrangements to provide transmission services for network television signals in a major southeastern routing. All told, the company currently operates 1300 miles of microwave routes, and has filed applications with the FCC for an additional 5000 miles.

At the same time, we've been constructing a 700-mile Dallas to St. Louis data transmission network utilizing the most advanced microwave technology which is scheduled for service in Fall, 1973. This network will form the basis for the company's communications capability through much of Mid-America. Application for additional routes has also been filed. This specialized common carrier service is designed both for companies located in the midwest and south and for those in other regions of the country wishing "pass along" services on message traffic going from coast to coast.

In offering these services, United Video looks to best the competition, old and new, in two key areas: 1) *cost*—For long term users standard UVI tariffs will be approximately 30% below the recently filed new Bell tariff and only half of the current Bell charge—and 2) *responsiveness*—unlike the telephone company, the direct line user will be our primary revenue source and we aim to do everything possible in our power to make sure he's getting premium, trouble-free service.

Our abilities to deliver in these key areas are among the reasons why we think you'll want to take a closer look at this new alternative to your present approach to direct line service. There are more, but these should give you the general idea. For further information on United Video's capability in data and voice communications, call collect to (918) 587-1171 or write: United Video, Inc. Att: Marketing Department, P.O. Box 2686, Tulsa, Oklahoma 74101.

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No More Paper, No More Books

Insurance Firm Saves $200,000/Yr by Moving to COM

DETROIT – The Automobile Club of Michigan and its sister organization, the Detroit Automobile Inter-Insurance Exchange, expect to save $200,000/yr by replacing a conventional hardcopy computer output filing system with a computer output microfilm (COM) system.

The COM system controls the microfilming, filing and retrieval of individual policy-related documents which were formerly handled by conventional computer printout. Previously this printout was hand-filed and retrieved in hard-copy form from a huge central folder file.

Now when a new automobile insurance policy is written or an existing one renewed, the computer system still prints the appropriate document.

Computer runs print about 11,000 of these documents per day. But here similarity to the old method ends, for as the hard copy is being printed, the same document is stored on a magnetic disk for formatting, David Henning, systems analyst for the firm, said.

The COM records are then sorted by policy number. Subsequent programs write the sorted images onto COM-compatible magnetic tape for processing and update the microfilm index file.

The COM tapes are forwarded daily to an independent service bureau serving AAA, where microfiche is produced containing 42X reduction micro images of the original documents.

The daily total of 11,000 documents is contained on 16 fiche; each fiche contains a maximum of 777 documents.

In addition to the original fiche, 14 diazo copies are made. The magnetic tapes and fiche are transported to and from the service bureau (Computer Micro Service) by AAA trucks on their regularly scheduled runs.

Duplicate copies of the completed fiche are distributed to 13 clerical units within the Collections Department and the Member and Policyholder Service Department. The original goes into a permanent central file and one duplicate copy is saved in a remote vault for fire protection.

Each clerical unit keeps a complete fiche file for one year. The file consists of a desk-top card tray. There is no merging required, Henning said.

"Each day's microfiche is placed in the tray behind the preceding day. As the new fiche is added, the fiche for the same day of the prior year is discarded from the front of the tray," he added.

Prior to the COM system the 11,000 forms were burst, sorted and hand-filed into one million policy folders.

These folder files were housed in open racks covering the entire tenth floor of the company's downtown headquarters. In that environment, Henning stated, nine days were required after printing before any document could be found in a folder for referencing.

The yearly savings with the COM system are estimated at around $200,000 in materials and clerical costs alone. Additional benefits are the major reduction in space allocation and an overall improvement in the availability of data and the efficiency of referencing, Henning said.

Four Units Unveiled For Microfiche Users

SAN DIEGO – Stromberg Datagraphix, Inc., a subsidiary of General Dynamics, has announced four new products including a duplicator, film processor and microfiche viewers.

Free-standing and moveable, the Model 73 Duplicator accepts 105mm master microfiche and produces copies at a throughput rate up to 1,000/hr.

Producing cut-card duplicates, the same size as the master and with no waste, the duplicator can be loaded with a second master microfiche while the first one is being duplicated. Duplicates are the same size as the master and no film is wasted, a spokesman said. Cost is $14,000.

The Model 155 Film Processor, designed for non-reversal processing, can handle 16mm, 35mm and 105mm silver halide film. Cost is $6,750.

4-Inch Microfiche

The Model 1401 Microfiche Viewer accepts 4-inch microfiche up to 12 inches long. Included as standard are a non-glare acrylic screen and blowback magnification. An optional extended screen is available. Cost is $195.

The Model 1451, an expanded version of the 1401, accepts a single 12-inch fiche or two 6-inch fiche. It also has a larger screen-size, capable of displaying an image 7% larger than the original document. Cost is $295.

Standard lease is available for all four products. The firm is at P.O. Box 2449, 92112.

Element-ary

A Harris Fototronic-CRT electronic typesetter, processing camera-ready copy at the rate of 4 page/min, produced the 12-pound, 1,700-page "CRC Atlas of Spectral Data and Physical Constants for Organic Compounds."

Data Tablet Uses Stylus, Cursor

FAIRFIELD, Conn. – Scriptographics has unveiled, primarily for the OEM user, a data tablet, usable with both inking stylus and free cursor.

Features include a resolution of ±0.005 in. (100 line/in.).

Coding is either in binary or BCD with the data tablet generating absolute coordinates in both point and stream modes at repetition rates variable up to 200 coordinate pair/sec.

Priced at $2,000 in small quantities, special discounts are offered to OEM buyers from 398 Kings Highway, 06430.

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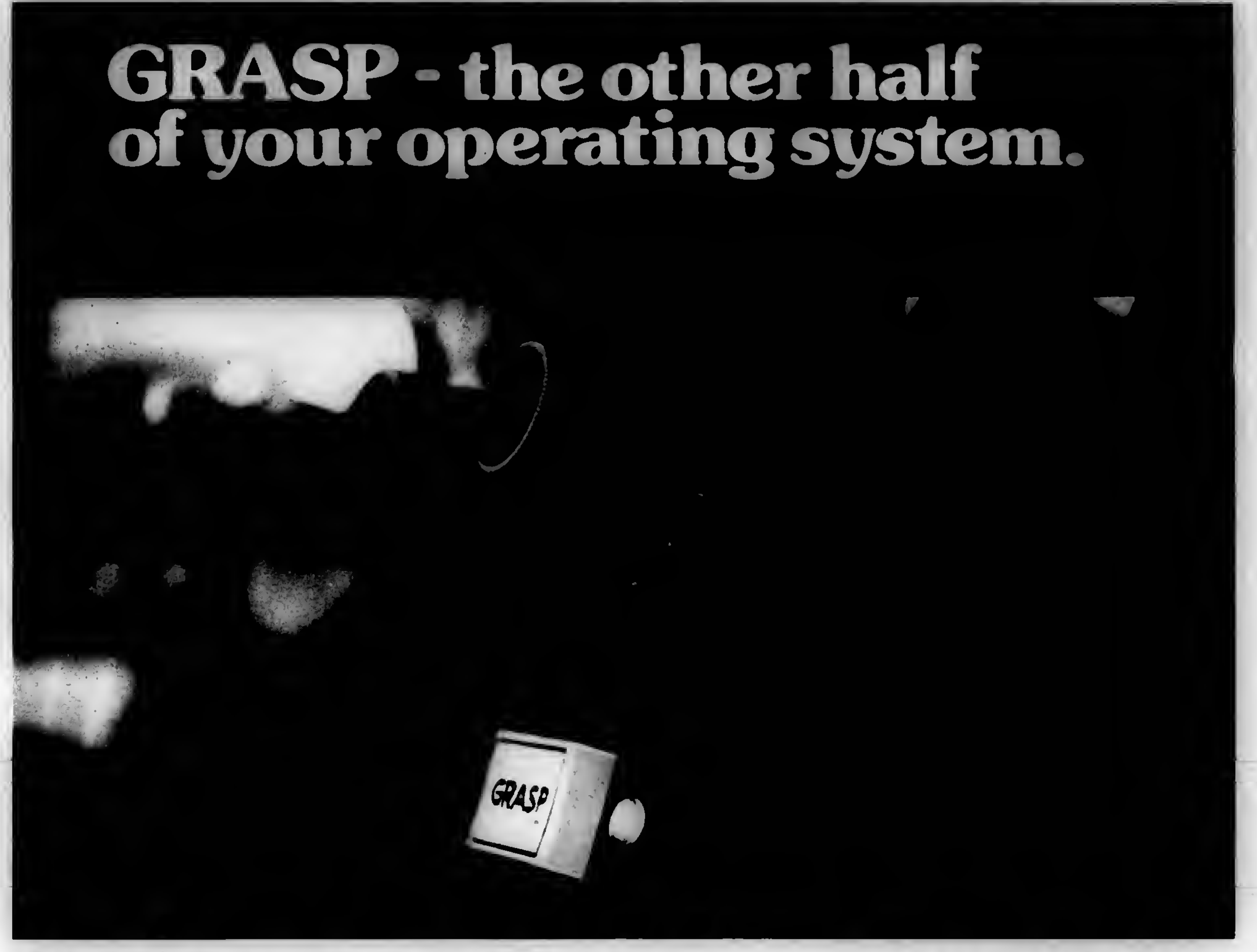
"The men who know their business get their computer equipment from CLC."

Here's good news for DOS 360/370 users!

GRASP - the other half of your operating system.



GRASP is the most effective DOS systems software available today. It's providing dramatic dollar savings to over a thousand installations around the world. Here are some of the reasons why.

WRAPAROUND SPOOLING: Faster than IBM spooling and much easier to install and operate. Requires much less core and disk space.

COMPLETE JOB ACCOUNTING: Consumes about one percent of CPU time for accounting. IBM's uses about ten percent. Statistics collected are far more meaningful and comprehensive.

SELF-RELOCATABILITY: One copy of all programs means reduced maintenance costs, reduced disk requirements for libraries. Speeds execution of overlaid programs—like SORT.

PARTITION BALANCING: A completely transparent priority dispatcher that increases throughput 8 to 12 percent per partition.

FOURTH PARTITION: Adds a complete, storage protected partition for GRASP's residence. IBM spooling takes one of DOS' partitions.

AUTOMATIC VOLUME RECOGNITION: More usability for tapes and disk. More fluid multi-programming.

RESIDENT TRANSIENTS: Especially for the ISAM user, phenomenal reductions in run times.

PCI FETCH—CATALOGUED PROCEDURES—TAPE SPOOLING—are among many more time and dollar saving features of GRASP.

GRASP can be installed in just 15 minutes, with no change to existing programs or procedures. The savings start immediately.

GRASP is a product of Software Design, Inc., the performance leaders in DOS systems software, and supported by a worldwide organization of specialists whose only business is DOS systems software. Send for your GRASP button today, and the other half of your operating system.

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Now all the advantages of complex key entry systems with punched card flexibility and simplicity!

Exclusive Tab Electronic Punch-Verifier Performance Features:

- **Automatic, completely flexible, program control for up to 31 program levels.**
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For complete information, write: Tab Products Company
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See it all at the National Computer Conference Booth #2042.

TAB
PRODUCTS CO.

230 Exhibitors Estimated

Peripheral Products, OEM Gear Set for NCC Viewing

By Edward J. Bride
Of the CW Staff

NEW YORK – "We plan to introduce a revolutionary new minicomputer. No details at present."

"Nothing new."

". . . for process control applications and '?' "

These comments highlight the range of "newness" and applicability to be found in the products on display at the National Computer Conference and Exposition (NCC), which opens here June 4 at the New York Coliseum.

Nearly 100 of the estimated 230 exhibitors replied to a questionnaire from the American Federation of Information-Processing Societies (Afips), sponsor of the annual conference.

Many of the remaining companies were known to be planning new product announcements, and thus were hesitant to disclose any particulars on the Afips questionnaire..

The exhibit guide is more closely guarded until the opening of the show, Afips noted.

Besides the replies listed above, other companies claimed to be "introducing" products announced in April or May.

NCC
1973

All Type of Products

Virtually every corner of the computer industry will be represented in the NCC exhibit hall, including hardware, software, services, publications and personnel development/education facilities.

The mainframers, noticeably absent since RCA sang its swan song (Spring Joint Computer Conference, 1971), have returned. While complete details were not available, IBM, Control Data Corp., Digital Equipment Corp. and other "large mini makers" were listed in Afips materials.

As in the recent past, communications devices, terminals and modems, and peripherals for other equipment manufacturers will be prevalent.

Add-on and replacement memory makers are fewer in number, but users who might be interested in their gear have increased: independent memory is now available for many minicomputers and for large mainframes other than IBM.

The most generally applicable description of products being exhibited probably comes from a key-disk maker, which replied in the Afips questionnaire: "No new products *per se*," but "a number of subtle improvements in software."

This approach has marked most product announcements in the past several Joint Computer Conferences, the semi-annual affairs that have been replaced by the NCC.

But the change in name has also provided an opportunity to play "word games." Many of the exhibiting companies are touting their exhibit as "first time at National Computer Conference," an obvious truism.

But with all the problems of mass marketing taken into consideration, NCC does provide the year's largest exhibit of computer and related equipment, the "biggest computer show on earth," according to Afips.

While much is already "proven" in the field, and two-thirds of the gear is intended for other computer-equipment manufacturers, users interested in seeing equipment that represents savings for already-installed systems will find much in the coliseum.

With the addition of a few mainframes on the floor and the opportunity to run benchmarks of some systems, the exhibit could take on added meaning.

Fees Outlined for Five-Day Show

NEW YORK – There are several different fee schedules applicable to various portions of the NCC. The simplest is the most widely used: exhibits-only.

To attend the exposition only, attendees pay $15 for all five days and $5 for a single day. Exhibitor guests pay nothing.

For the conference sessions, all attendees pay $60 for the five days, with a single-day registration available for $20; students pay $5. A $10 reduction was available to members of Afips' constituent societies, if those members registered in advance.

Special activities slated for NCC week include the two luncheons, each priced at $12. (Wednesday, the address will be by Dr. Lewis Branscomb, IBM vice-president; the Thursday speech is by Edward N. Cole, president of General Motors.)

There is also a special two-day seminar (June 7-8) on managing the impact of generalized data bases; this program is available only to full conference registrants, who must pay an additional $40.

Is Computer Artistic?

NEW YORK – For those who think art and science are completely unrelated, a full day devoted to computer arts may help change their minds.

This special NCC program, in the Regent Room of the New York Hilton Hotel, Tuesday, June 5, consists of five sessions exploring the use of computers as they relate to the many art forms.

The first session, at 8:45 a.m., will explore the state of computer-generated music, and will include a live demonstration.

Another session will consist of a discussion among four editors, with the focus on "divergent opinions" on the interaction of computers with the arts, according to a conference announcement.

The computer arts program concludes in the evening, with a discussion and showing of computer-generated films.

Four papers on the computer/art/man interface will be presented at a second session and a panel of mathematicians and representatives of the arts will explore technology as an art form at another session.

Exhibit Hours

NEW YORK – With an estimated 230 companies occupying 650 booths in the New York Coliseum, attendees will need a good portion of the 35 available hours to view the exhibits.

For those who prefer to "shop" after work, Monday will be the best day, as exhibit hours are noon to 8 p.m.

Tuesday-Thursday, the exhibits will be open 10 a.m. – 6 p.m.

Friday is the last chance, with hours from 9 a.m. to noon.

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You can get more than just data entry, too. Line and Serial Printing, fully formatted, On- and Off-Line Communications for local or remote locations, and advanced 1600 BPI Phase Encoded tape output for high performance tape transports.

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INFOREX

Talk to us at NCC Booth 2537.

Data Disc Planning 'Colorful' Exhibit Of Graphic Displays

NEW YORK – Data Disc will show color CRT displays with its Anagraph graphic display system.

The Anagraph System, designed as a multiterminal clustered display system for IBM 360/370s includes: head-per-track disk memories, digital graphic displays and Bright Industries' IBM-compatible magnetic tape drives.

NCC Terminals

The built-in minicomputer of the Anagraph System features 16K bytes of memory and has an executive program called GOS (Graphic Operating System). The system operates either stand-alone or as an IBM 360/370 peripheral system emulating IBM 2260 or 3270 displays.

Data Disc will be at booths 1629, 1631 and 1633.

Infoton Displays Vistar/GT CRT

NEW YORK – Infoton, Inc. will introduce a CRT display terminal known as the Vistar/GT.

Priced at $1,595 the GT offers an 80-char. by 24-line screen presentation on a 12-in. rectangular monitor. Character generation is accomplished using a 5 by 7 dot matrix. Each unit contains a keyboard, control and refresh electronics, power supply and both an RS232C and current loop interface.

Switch-selectable data rates range from 75 to 9,600 bit/sec and an external setting allows a data rate of up to 18 kbit/sec with timing derived from an external TTL-compatible pulse source.

Infoton will be at booths 2027 and 2132.

Infoton Vistar/GT

Information Displays Shows Computer Graphics System

NEW YORK – Information Displays, Inc. will exhibit its $7,000 computer graphics systems, the Idigraf.

Idigraf is a buffered, refreshed CRT for producing graphic displays with combinations of vectors and alphanumerics. The Idigraf has stroke-writing hardware character and vector generators, 17 in. CRT, MOS refresh memory, two intensity levels, blink and two character sizes.

Keyboards with hardwired programmable function keys (for hardware editing, text and graphics and cursor control), multiple monochromatic or color displays, light pens, 21 in. CRT, direct parallel computer or serial interfaces are among the optional features.

Information Displays will be at booth 2812.

Information Displays' Idigraf Graphic Display System.

Four-Phase Systems' System IV/40 Remote Intelligent Terminal

Four-Phase Unit Makes Debut

NEW YORK – Four-Phase Systems, Inc. will give its System IV/40 remote intelligent terminal system its first public showing.

The IV/40 has 1,920- char. dual intensity displays, integrated cartridge disk drive and printer. It features a 72K byte LSI processing unit.

The system supports up to 16 video terminals and 16 printers. A typical system including three video terminals, 24K byte processor, 2.5M byte cartridge disk drive and communications controller costs $573/mo including maintenance.

Four Phase Systems will also show its System IV/70 intelligent terminal system at booth 1101.

Data 100 Brings Batch System

NEW YORK – Data 100 Corp. will be showing two new products at NCC in booths 2548, 2550 and 2551.

The model 75 Print Utility Station includes a 9-track, 800- or 1600 bit/in. magnetic tape device; a 1,000 line/min printer. a CRT operator console; an optional card reader; and a terminal control unit containing 12K bytes of controller memory.

Data 100's model 88-6 batch terminal features IBM 2780 compatibility, 2,000- or 2,400 bit/sec transmission capability, two- or four-wire phone line support, auto-answer capability and transparency.

Other units included are 150 card/min reader with 600-card hopper and stacker, and 60 line/min printer with 132 char./line or an optional 124 line/min, 132 char./line capability.

Mini-Based Graphics on Stage

NEW YORK – Imlac Corp. will be showing the PDS-1D graphics display system.

Standard features of the system include: 4K 16-bit word general-purpose minicomputer; 1.8 msec cycle time; display processor; CRT monitor; alphanumeric keyboard with additional function keys; asynchronous serial interface for either modem or teletypewriter unit; backplane wiring to allow an additional 4K of core memory; internal interrupt system; parallel interface and external interrupt; and escape character look-ahead which allows approximately 1,450 characters to be presented at 40 frame/sec on the display surface.

Imlac will be at booths 2822, 2824 and 2826.

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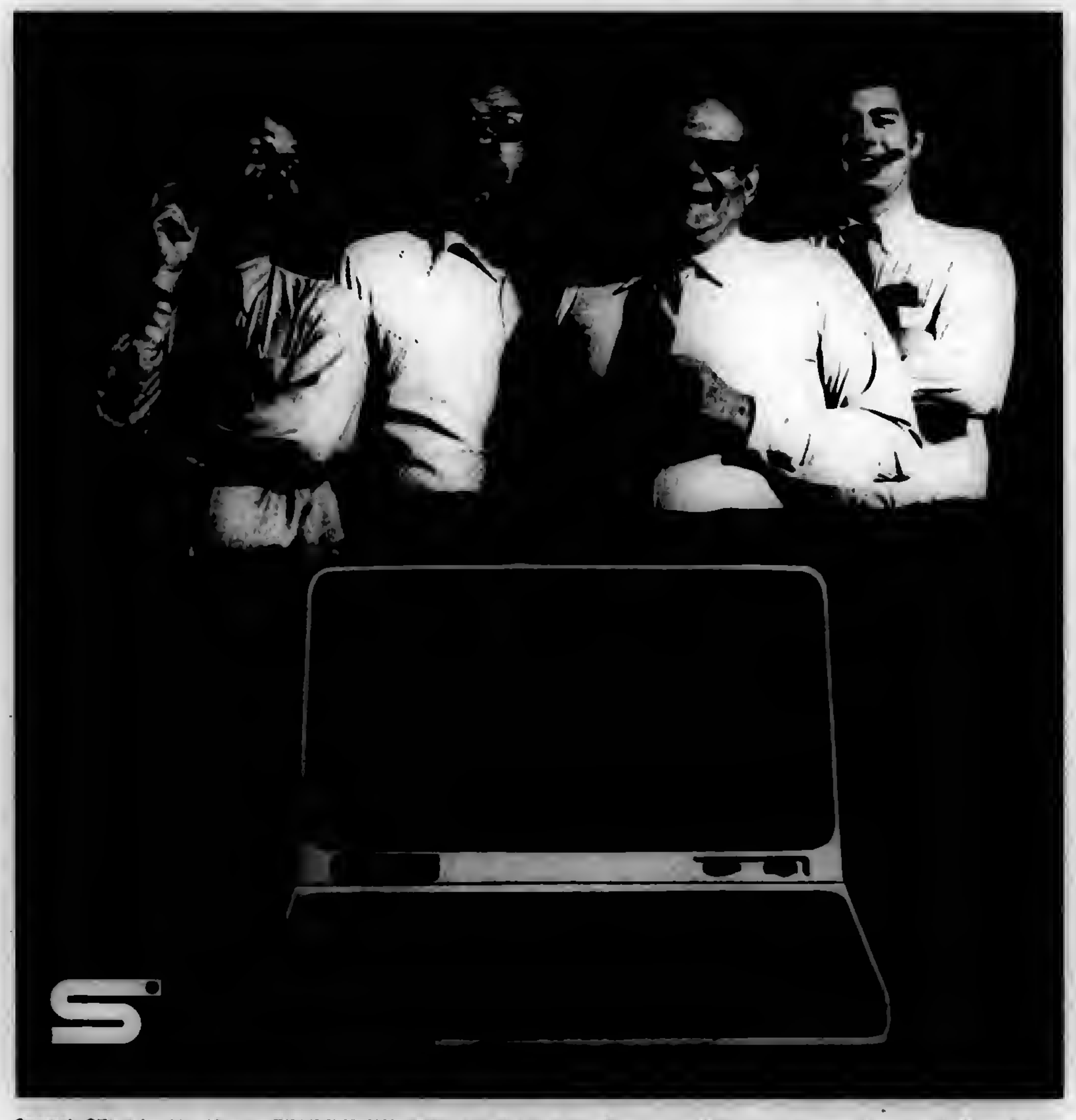

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Warren G-V Displays Auto Calling Unit, Accepts BCD Code

NEW YORK – Warren G-V Communications will show its Automatic Telephone Line Connect System and its Bell 801-equivalent Automatic Calling Unit.

The two systems are designed to automatically dial a telephone number, answer at the called station, exchange acknowledgement signals and then transfer the telephone line to the user's equipment.

The ATLC system will operate over regular voice-grade telephone lines and can be used with terminal equipment that can provide a contact closure or EIA Logic to initiate the dialing sequence.

The Automatic Calling Unit will perform all functions of an ATLC control unit and will also accept BCD code and convert it to serial digits for dialing.

The ACU operates with standard data transmission units and will accept standard data verification tone from the modem at the called station.

Warren G-V Communications Automatic Line Control Unit

Warren G-V Communications will be at booth 2623.

Cassette, TTY Come Together

NEW YORK – Western Union Data Services Co. will show its EDT 33 MSR, an integrated package of a Teletype Model 33 with a 120 char./sec magnetic tape cassette buffer.

The magnetic tape buffer interfaces with Bell System 103 modems for asynchronous speeds up to 30 char./sec or a Bell System 202 series data sets or equivalent for speeds up to 120 char./sec.

Data search can be performed manually or by stop codes, and a backspacing capability permits editing and error correction of data on tape during any local or remote mode of operation.

The EDT 33 MSR will be offered in two configurations: ASR and keyboard send and receive.

Excluding the modem, prices for the EDT 33 MSR are $108/mo on a one-year lease for the KSR model and $121/mo for the ASR model.

Western Union Data Services will be at booths 2806 and 2808.

Medium-Speed Units Dominate

NEW YORK – Northern Telecom will display medium-speed (up to 9,600 bit/sec) data equipment.

STE, LRR and OLR units are full-duplex and data transparent, the firm said.

Logic 16 and 256 are combination data input and telephone sets. Logic 16 has a 16-digit memory and LED readout. Logic 256 has a 256-digit memory, 16-digit readout and automatic dialing of six preselected numbers.

Northern Telecom will be at booths 1606 and 1608.

Multiplexer, Modems Share Codex Spotlight

NEW YORK – Codex will be displaying its line of data communications products, featuring the Codex Model 8000 Wideband Time Division Multiplexer. This TDM multiplexes up to 20 channels of synchronous data for wideband circuits of 40.8-, 48-, 50- and 56 kbit/sec.

Also featured is the Codex Voice-Grade Communication System which utilizes the 296 biplexer. This system provides computer grade traffic at 19.2 kbit/sec over voice-grade lines.

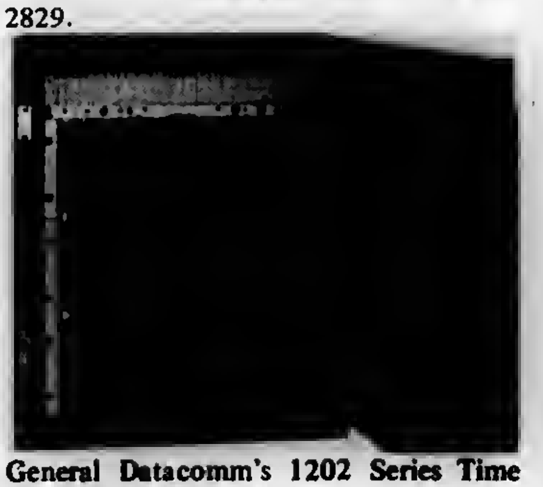
Also shown at booths 2339 and 2438 will be the Codex 4800 Dial Modem, which provides 4,800 bit/sec transmission over dial-up circuits, and the Codex 9600 Dial Modem.

NCC Communications

General Datacomm Features Data Line

NEW YORK – General Datacomm will feature its line of data communications equipment at the NCC including: 1202 series frequency division multiplexers; 1300 series speech-plus terminals; 201 series 2400 bit/sec modems; 100,200 and 400 series low/medium speed modems; and data couplers.

The firm will be at booths 2827 and 2829.



General Datacomm's 1202 Series Time Division Multiplexer

Modems Main Attraction At ICC/Milgo Exhibit

NEW YORK – ICC/Milgo will display a line of data communication products, including modems for data transmission over dial-up phone lines or leased data lines.

Modems operate at data rates from 2,000 bit/sec to 9,600 bit/sec. LSI modems for 2,000 bit/sec and 2,400 bit/sec data communication will also be shown.

ICC will also display data communication test equipment and accessories at booth 2115.

Comdata Unit Expanded

NEW YORK – Comdata Corp. is showing an expanded version of its Series 330 rack-mounted modems.

The 330 cabinet provides space for up to 16 modems and 16 associated Model CBS or CBT Data Access Arrangements, plus a display panel indicating the status of four control and two data functions.

Other data communications equipment on display at booth 2016 will include modems, acoustic couplers, multiplexers and terminals.

ON-LINE TERMINAL
OFF-LINE TERMINAL AND
INTELLIGENT "3270."

INTRODUCING THE SYCOR 250.
It's our new intelligent on-line terminal that's lower priced than IBM's 3270* and compatible in both hardware and software.

In fact, you can just plug it into any IBM network and let it go to work.

But, unlike the 3270, our Sycor® 250 has many of the intelligent features that have made our Model 340 remote batch terminal so popular.

Features that let the 250 check branch office key entry field-by-field instantly, providing clean data to the computer and significantly improving operator efficiency.

What goes into the computer goes in clean (at up to 4800 baud) —and you spend less time on the line. So, you can install more terminals per line, and probably end up needing fewer lines and ports.

NEW DUAL TRACTOR PRINTER
The 250 has some pretty impressive optional equipment, too. It's available with a badge reader, a light pen and a family of versatile printers.

The printers are our new 2580 series, with 40, 80 or 165 cps speeds. They feature dual tractors that handle two independent continuous forms simultaneously. So now you can combine your forms printing and administrative message traffic on one printer.

HOOK A SYCOR 250 INTO YOUR 3270 NETWORK
See what our 250's intelligence can do for you. We think it's the best in the industry.

And we're the people who invented intelligent terminals in the first place.

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Our big computers have a lot more of the things that make us big in little computers.

If you know our minicomputers you know what makes us the world's leading maker of minicomputers.

Things like advanced architecture. All those peripherals. All that software. All the different levels of computer power we offer. Their flexibility. Compatibility. Easy interconnections. Interaction. On-line, real-time program preparation and debugging. Applications expertise drawn from 20,000 installations.

But you may not know as much as you should about our big computer that has them all and much more. DECsystem-10. It has such things as Dynamic Resource Allocation. A software technique that makes the computer actually sense the demands being put on it, and handle those demands in the most efficient way. Believe it or not, most computers spend less than 50% of their time on useful work. DECsystem-10 usually works on work more than 80% of the time.

And if you think about that for a minute, you'll realize it means you can get more work out of your computer. That's the real reason why we use it. So you can get a DECsystem-10 to do your job for usually half what it will cost from other companies.

DECsystem-10 has the other things you've come to expect from us, too.

It has all the options available with our minis, plus many of its own. All the interfaces you need to hook them up. All the software you'll need. COBOL, FORTRAN, BASIC, ALGOL, APL, TENFOR, SNOBOL, LISP, AID, BLISS. There's even simulators that'll let you use the DECsystem-10 to write, edit, assemble and debug programs for all our other computers.

And yes, it works just beautifully with our minis. Anyway you want. You can come to us and talk about networks, hierarchical systems, distributive data systems or raw computer power. We'll recommend what you need to do the job right. And for the same reason why we can do that with our minis. We have everything you need to do the job. Whatever the job.

You see, what makes our minis so great is what makes our big computers even better.

Write the DECsystem-10 Group, Digital Equipment Corporation, Maynard, Mass. 01754. (617) 897-5111. European headquarters: 81 route de l'Aire, 1211 Geneva 26. Tel: 42 79 50. Digital Equipment of Canada Ltd., P.O. Box 11500, Ottawa, Ontario, K2H 8K8. (613) 592-5111.

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DECsystem-10: It'll give you everything you expect of Digital. Only more of it.

Oktronics Shows Readers, Encoders

NEW. YORK – Oktronics Data will be showing its line of circular magnetic readers and encoders plus a paper tape reader.

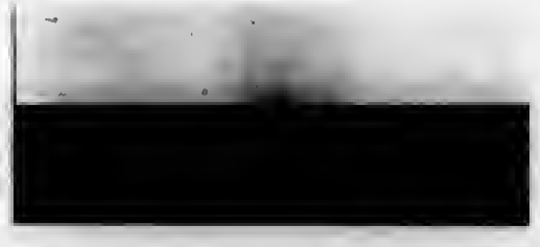
The electromechanical MRA-001 reader is designed to read magnetically coded unit records at the point of action.

The MWA-001/002 reader/writer can be used as a circular magnetic encoding station for inclusion on media-handling devices, or as a terminal assembly to read unit records, alter the encoded data and reverify it.

The MME-001 magnetic media encoder can be used with a teletypewriter or computer through a current or RS232C interface. The unit can encode in 8-bit Ascii with 32 char./magnetic patch.

Oktronics' TR930F paper tape reader, with 225-ft fan fold capacity, features stop on character, no buffer, companion handlers for all readers utilizing d-c servo motors and high-speed bidirectional rewind.

Oktronics Data will be at booth 1820.



Oktronics' TR930F Paper Tape Reader

Science Accessories Brings Graf/Pen

NEW YORK – In its exhibit, Science Accessories Corp. will demonstrate its Graf/Pen sonic digitizer plus a cursor offered as an alternative to the standard pen-type stylus.

The Graf/Pen is used to convert graphic information into digital form for data storage, processing or transmission. It can also be used to enter alphanumeric information or programming instructions by assigning specific meanings to dedicated locations on its tablet.

NCC Input/Output

The cursor employs a piezoelectric crystal to generate sound waves, rather than a spark gap as is used in the standard pen, the firm said. This makes the Graf/Pen suitable for use in hazardous atmospheres and also reduces audible sounds, the firm added.

The firm will be at booths 1632 and 1634.

Terminal Equipment Features Printer

NEW YORK – An interface printer for use with Digital Equipment Corp.'s PDP-8 computer and an acoustic coupler compatible with the Bell 103A modem will be exhibited by Terminal Equipment Corp. at booth 1114.

The computer interface – Holmes Tycom Model CSR-8E – is a plug-to-plug hard-copy printer. It provides full upper and lower case characters and interchangeable type font.

The Tycom Model 920 originate-only acoustic coupler will also be on display. The unit is compatible with the Bell 103A modem and operates at rates up to 300 bit/sec. It can automatically switch between data and acoustic operations and full- and half-duplex mode, and can be used with any terminal having an EIA RS232 connector.

Gould Data Systems Sets Up Printer/Plotter Display

NEW YORK – An electrostatic printer/plotter for the minicomputer market will be shown at the Gould Data Systems exhibit.

The Gould 5000 prints alphanumeric data at 1,200 line/min and plots graphic material at three in./sec. It generates 132 char./line and has a resolution of 100 dot/in. vertically and horizontally.

The company will also exhibit the Gould 4800 electrostatic printer/plotter, which operates at speeds up to 4,000 line/min.

Both units can be seen at the Gould booths 2006 and 2008.

Versatec Unveils Plotters

NEW YORK – Versatec will demonstrate two new products – a 20-in. raster scan plotter and a 20-in. combination printer/plotter.

The Matrix Model 2000 Plotter and Matrix Model 2000A Printer/Plotter both use 20-in. wide paper in 500-ft rolls and are designed for operation with computer systems of all types, the firm said.

The Model 2000 costs $8,900 and the Model 2000A is priced at $10,900.

Versatec will be at booths 1815 and 1817.

While one operator keys data into Decision Data's 9610 Interpreting Data Recorder that punches and verifies 96-column cards, another sorts previously punched cards on the 9620 Alphanumeric Sorter.

Decision Data Recorder Ready

NEW YORK – Decision Data Computer Corp. will display units from its line of 96-column peripherals and data preparation equipment.

The exhibit will feature the 9660 Sorting Data Recorder for the System/3, which, in addition to functioning off-line as a 96-column keypunch/verifier/sorter, can also be used on-line via an interface as an input reader and output printing punch, the firm said.

The unit sorts at 300 card/min and gang punches at 60- to 120 card/min.

Decision Data will be at booths 2719, 2721 and 2723.

A money-saving idea that IBM doesn't like to talk about.

It was probably someone at IBM who invented the term "mass memory" a decade or so ago to describe their tape drives, disc drives and drums. Maybe they were "mass" storage back then. But in light of today's data storage requirements, they really have to be considered "mini memories."

And as you've probably noticed as your storage requirement has grown, so have the costs of your growing stable of discs and tapes.

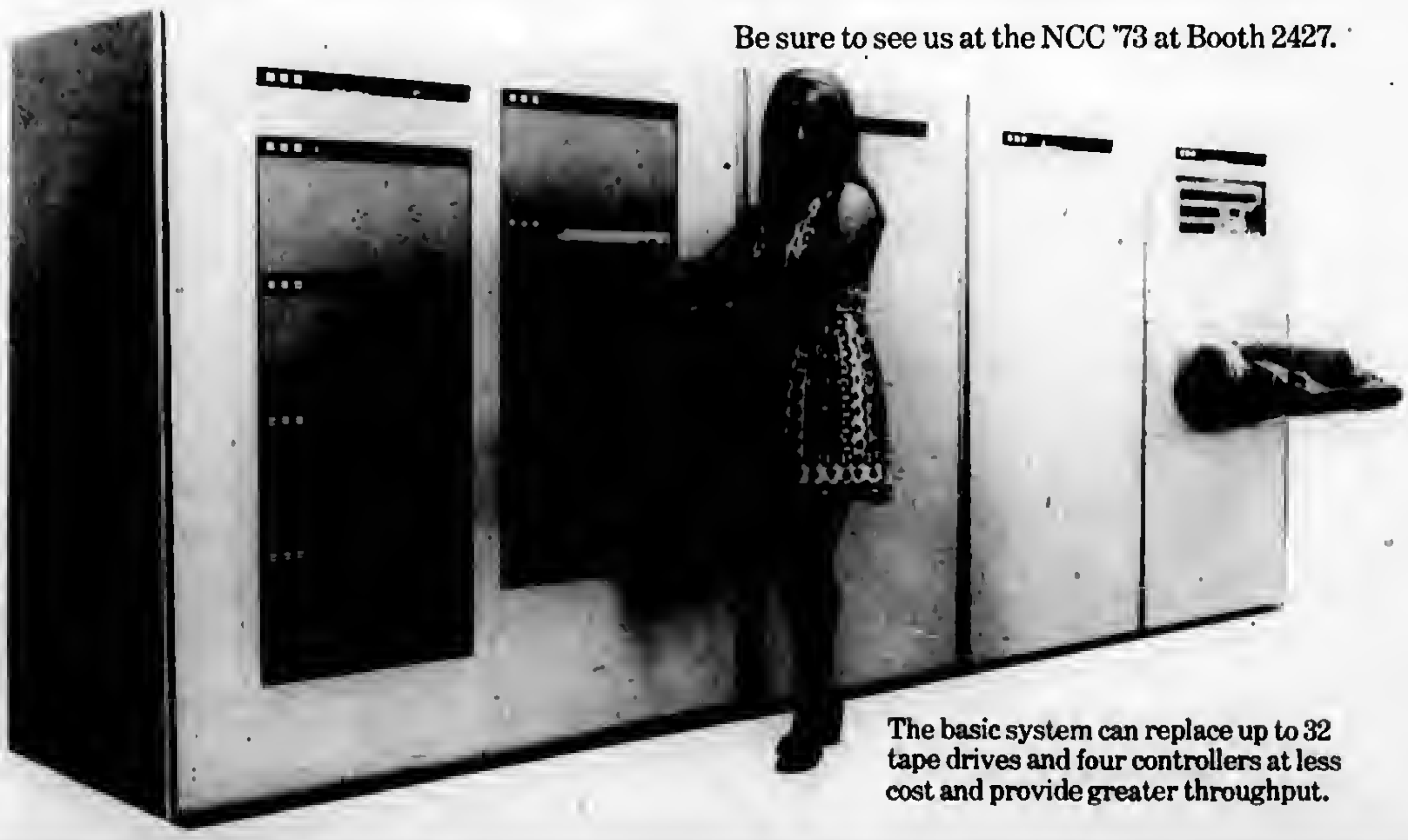
While IBM keeps on grinding out the tapes and discs, we started thinking of ways to cut costs, cut down handling and put more data on-line in a real mass memory system.

Enter MASSTAPE.™

We introduced the result of this thinking. We called it MASSTAPE, the first commercial on-line mass memory system.

By using a high density data storage system we developed during the Apollo program, we were able to find a way to put your active tape library on-line.

Be sure to see us at the NCC '73 at Booth 2427.



The basic system can replace up to 32 tape drives and four controllers at less cost and provide greater throughput.

Interdata Model 85 Shines

NEW YORK – Highlighting the Interdata exhibit will be the New Series Model 85 processor, featuring a user-alterable dynamic control store which contains 1K words of 60 nsec bipolar read/write memory.

With 16K bytes of LSI-MOS memory, built-in teletype interface and dynamic control store, the processor carries a single unit price of $22,800 and will be available for delivery in June.

Also on display at the Interdata booth will be the Model 70 and 74 processors featuring 16K bytes of core memory on a single 15-in. printed circuit board.

Additionally, Interdata will show new data communications systems and modules, plus a line of peripherals that interface with the company's New Series family of compatible processors.

Interdata will be at booth 2345.

Interdata Model 85 Processor

Grumman Data Systems' Masstape

Grumman Focuses on Masstape

NEW YORK – Grumman Data Systems will feature Masstape, a memory on-line storage system.

Masstape is designed for 360 and 370 systems running under OS. Designed on the modular principle, Masstape units can be added as the dcmand increases, with a storage capability of up to one trillion bits. Data rates go up to 1.2M byte/sec, and the system has up to 32-device addressability per computer interface.

Purchase price for a basic system, including an interface unit, data buffer unit, system control unit and one storage unit with a capacity of 14 billion bytes, is under $356,000. The same system can be rented for approximately $11,800/mo, including maintenance.

Grumman will be at booth 2427.

Datacraft's Slash 5 Operates With Disk

NEW YORK – The Datacraft exhibit will be highlighted by a Slash 5 computer system operating under the Disk Monitor System (DMS). Included in the Slash 5 system are four terminals, disk, line printer, card reader and real-time interface equipment.

NCC Minis and Memories

The Slash 5 computer is one of a line of five program-compatible computers which feature a 24-bit word and memory speeds varying from 600 nsec to 1 nsec. In addition to DMS, three other operating systems are available. All systems provide for operation of six languages and seven support software packages, the firm said.

Datacraft will be at booth 2433.

Disk 'Sings' Out At Librascope Booth

NEW YORK – Singer Librascope will feature its line of L107 disk memories at NCC booths 1724 and 1726. Librascope will also display operating models of its trackball and joystick interactive controls.

The latest addition to Librascope's mini-memory line, model L107B, provides up to 18M bits of storage on 256 tracks within a 14.7 in. by 9 in. package.

The company's model L107A and militarized L107MA offer up to 7M bits storage capacity.

Modcomp IV Introduced, Features 32-Bit Bus

NEW YORK – Modular Computer Systems, Inc. will introduce the Modcomp IV, a 16-bit word machine which features a 32-bit bus. Prices start at between $15,000 and $20,000 for a 16K version with expansion up to 256K words.

MAX III, a real-time multiprogramming executive, will also be featured performing remote job entry to an IBM/360.

Modular Computer Systems will be showing its products at booths 2240 and 2242.

Datum Shows Its Wares — Controllers, Cassettes

NEW YORK – Datum Inc.'s display at booths 2740 and 2742 will include minicomputer peripheral equipment, magnetic tape controllers, disk controllers, magnetic tape input systems, digital cassette recorders, universal data systems, mass memory systems and timing instrumentation.

The smallest MASSTAPE storage system puts the equivalent of 5,000 tape files on line... 14 billion bytes.

The system's data staging provides 32 device addresses. It bursts data to and from your computer at over a million bytes per second, saving hours of costly computer time each day.

This twin-computer center with a 28-billion-byte MASSTAPE system can result in a saving of over $400,000 per year over current methods.

The basic MASSTAPE system rents for less than the tape and disc drives it replaces.

Save up to $1 million a year.

What's more, with any MASSTAPE system, your cost of on-line data storage drops from $7-15 per million bytes per month to less than $1.00.

In a large multi-computer center MASSTAPE can save up to a million dollars a year. And that's including all costs of MASSTAPE.

In a typical twin 360 or 370 installation, you can save over $400,000 a year in hardware and labor savings.

(We will be glad to document this in your own computer center.)

The system is compatible with 360/370 systems under OS without costly reprogramming. And we'll be glad to discuss adapting it for users of other large systems.

MASSTAPE is installed at Grumman Data Systems' own computer center. And it's in production for several top Fortune 500 companies.

If you're interested in saving money, please contact our sales office nearest you or Grumman Data Systems Corporation, 711 Stewart Avenue, Garden City, L.I., N.Y. 11530. (516) 575-3034.

MASSTAPE by Grumman Data Systems

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Datashare

A New Equation
in Computer Systems

1=8

Datashare from Datapoint Corporation constitutes an important innovation in the use of computer systems for business administrative and management applications. Through Datashare, the full capability of a *single* Datapoint 2200 computer system is made available simultaneously at as many as *eight* remote user stations on terminal units as various and as inexpensive as Datapoint 3300's, Datapoint 3360's and standard teletypewriter machines.

With well over two thousand Datapoint 2200 systems currently in use, this versatile low cost system has established an enviable reputation as an all purpose business computer. Now through the Datashare programming package, as many as eight remotely located users can utilize a Datapoint 2200 system as though it were their own on-site computer for on-line data input tasks and other general business applications. But with these key differences: this access is achieved (1) at *just a fraction* of the already low cost (prices begin at $6,040) of the 2200, and (2) *without* the *waiting* and *inconvenience* often associated with the usage of an on-site computer.

Through Datashare, business and commercial computer users can enjoy the full benefits of the many recent advances in computer and data communications technology incorporated into Datapoint equipment. Through the combination of the Datashare system and the Databus programming language, users can readily create application packages for most general management and administrative needs such as real-time inventory control, parts replenishment, production scheduling, labor distribution and other dynamic applications involving volume data input from multi-locations and associated production of reports.

Each remote user on a Datashare system accesses the central Datapoint 2200 independently from his own terminal unit, for his own application needs. For users in close physical proximity to the 2200 as in the same facility or building complex, communications with the central computer is obtained through direct wiring. For cross-city or cross-country users, linkage can be provided through standard telephone service.

The central Datapoint 2200 system used with Datashare can incorporate from one to four disc file units each capable of storing 2.4 million characters of information in replaceable cartridges for user data files and programs, and a high speed printer. For "Off-line" use as a standard 2200 system, the configuration can also include a card reader, 7- and 9-channel magnetic tape units and other Datapoint peripherals as well as the disk units and printer.

Datashare delivers a new kind of dispersed data processing capability for organizations whose operations are decentralized but who want to enjoy the economies and the management advantages of centralized data processing. For present and prospective business computer and computer service users, Datashare presents an optimum approach to securing new efficiencies and new economies in data conversion and entry, data transmission and data processing. For further information on Datashare and how it can help your business, contact the Datapoint sales office nearest you, or write or call:

Datapoint Corporation
9725 Datapoint Drive,
San Antonio, Texas 78284
(512) 696-4520

Datapoint

Home Office: 9725 Datapoint Drive / San Antonio, Texas 78284 / (512) 696-4520 • **Direct Sales Offices:** Chicago (312) 671-5310 • Detroit (313) 557-6092 • Los Angeles (213) 645-5400 • Minneapolis (812) 854-4054 • New York (212) 759-4656 • Orlando (305) 671-4500 • Phoenix (602) 265-3909 • Portland (503) 244-0101 • San Francisco (408) 732-9953 **Sales Representatives:** Albuquerque (505) 255-0120 • Boston (617) 237-2090 • Cocoa Beach, Fla. (305) 727-3205 • Dalles (817) 265-7745 • Darien, Conn. (203) 655-4800 • Denver (303) 771-0140 • Houston (713) 626-0010 • Liberty, Mo. (816) 781-0400 • Philadelphia (215) 272-1444 • Salt Lake City (801) 272-3681 • Washington, D.C. (301) 937-2215
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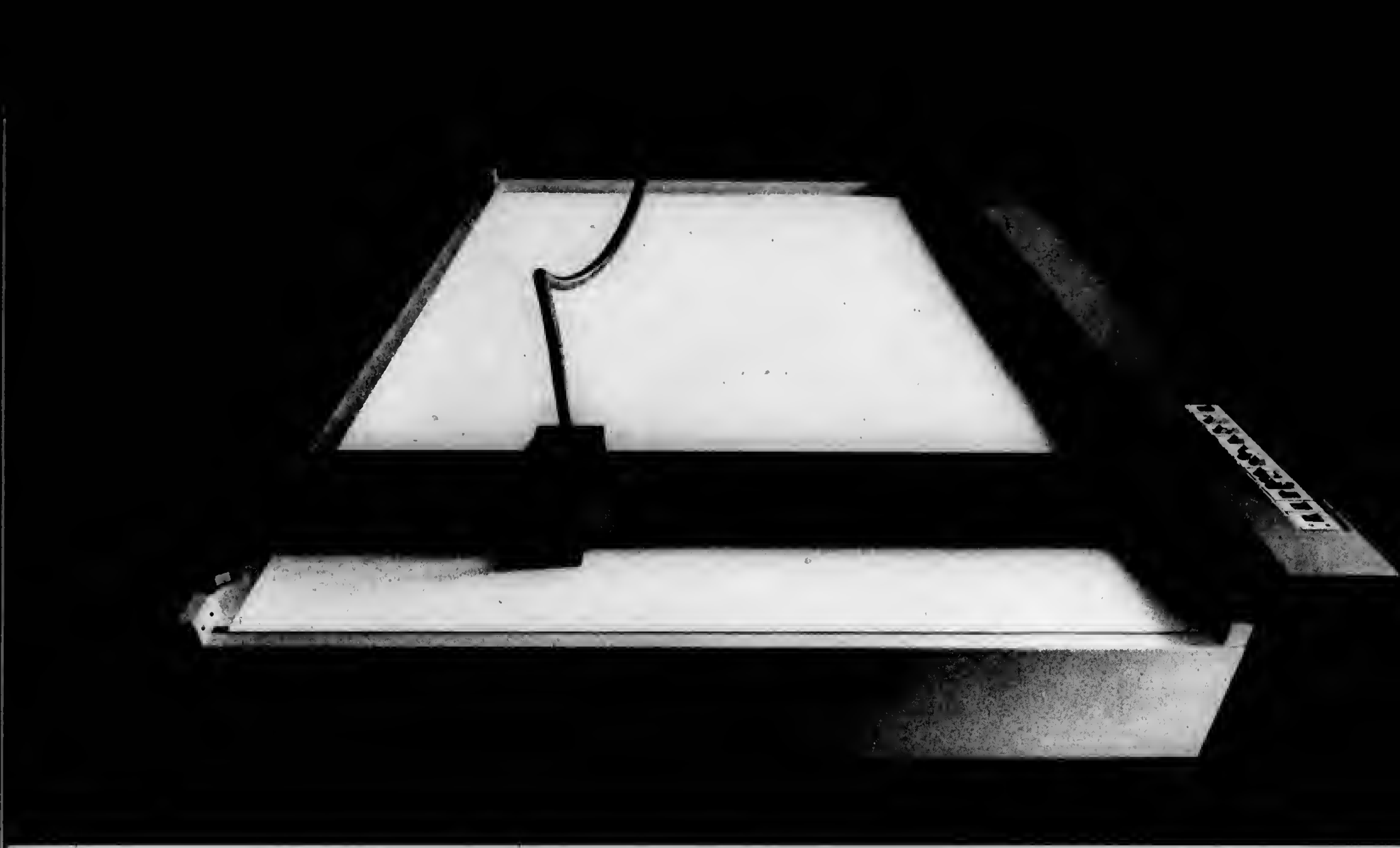


The four-fingered fast-drawing kid is coming to town.

We call it the 748. It's big. And it's fast.

Its 4 inking pens move at speeds over 40 inches a second. That's faster than ink flows, so we had to figure out a pressure inking system that lets the ink catch up to the pens.

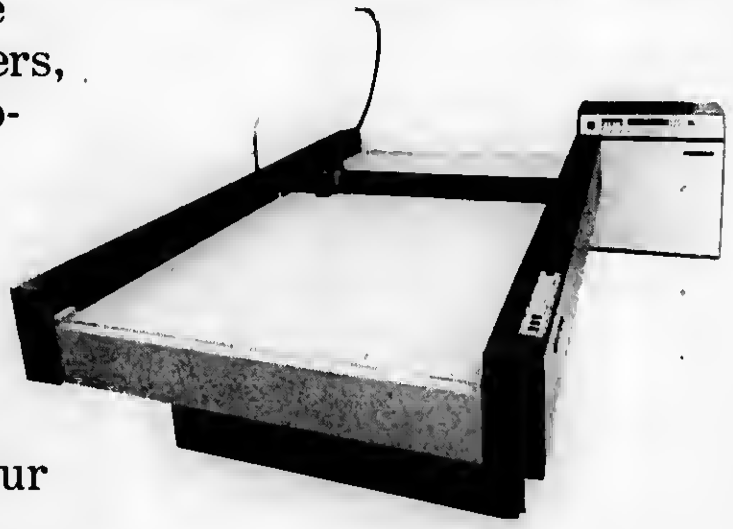
If you make integrated circuits or maps. Or if you have precision drafting needs, this is the new tool.

The 748's plotting area is 48″ x 82″. It can scribe coated materials and cut strippable film. At peak speeds!

The quality of its line is not impaired by its incredible speed. And like all CalComp flatbed plotters, the new 748 offers easy-to-use software for most computers.

We service it in 29 countries. But the way we've made it, you won't be calling us very often.

Do call us to see it. Our number is (714) 821-2011. Or write California Computer Products, Inc., CW-M5-73, 2411 West La Palma Avenue, Anaheim, California 92801.



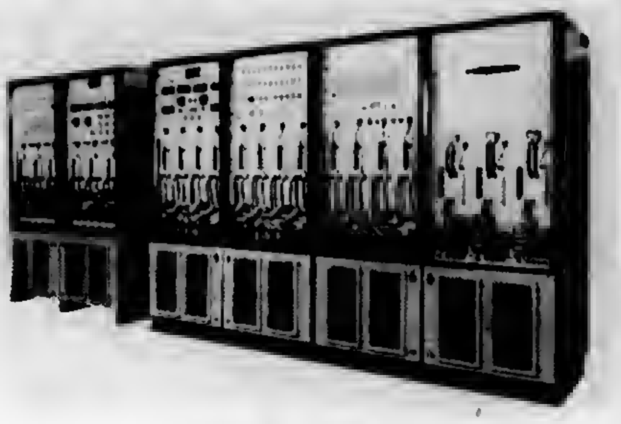
CALCOMP

Exide Features UPS Systems Inverter

NEW YORK – A stepped wave inverter for battery-backed uninterruptible power supply (UPS) systems will be shown by Exide Power Systems Division of ESB Inc.

The "Superguardian" uses a digitally controlled stepped wave inverter with subcycle current control. It is available in ratings of either 200 kVA or 125 kVA at 0.5 to 1.0 power factor. Its overload capacity is stated at 125% of rated kVA for 10 minutes, to as high as 250% line to neutral current for 10 cycles. Transient recovery is accomplished within 50 msec for complete recovery to within plus/minus one percent band, the firm said.

Exide Power Systems will be at booth 1423.



SuperGuardian

Data Test Unveils Circuit Analyzers

NEW YORK – A family of circuit analyzers for testing circuit board assemblies and a ground tester will be introduced by Data Test Corp.

The Datatester 5700 series will handle large analog/digital circuit board assemblies and will also have a number of computer-enhanced testing capabilities, the firm said. The stand-alone systems will combine a mag-tape cassette, test head and test control unit.

Data Test's AC ground tester for detecting wiring problems will cost about $300 in quantity.

Data Test will be showing its products at booths 2633 and 2635.

Nortronics Brings Magnetic Head Line

NEW YORK – Nortronics Co., Inc., will display its line of magnetic heads, including read-after-write heads, cassette read-after-write heads and floppy disk system heads.

NCC
OEM Products

The 1/4" line of digital heads is available with one track for serial mode recording, or with two or four independent tracks. Selective track piggy-back erase heads are also available for each track configuration.

The cassette read-after-write heads were designed for applications in .150 in. tape systems, the firm said.

The firm stated the mini-digital heads utilize technology that reduces crossfeed between the write and the read gaps to under 5% at a tape speed of 10 in./sec.

The cassette heads operate at a minimum resolution of 85%, at a ratio of recording densities of 1,600/1,800 flux reversal/in., and are available in multi-channel configurations.

The firm's display will also include its floppy disk series FD, including read-after-write, wide write/narrow read, read-only heads and read/write straddle erase heads.

These heads are designed for operation in IBM-compatible, read-only mode, and in 32- and 64 track/in. at a density of 1,600 bit/in.

Nortronics will be at booth 1311.

Memories, Microcomputers Intel Exhibit Leaders

NEW YORK – Intel will display a line of memory and microcomputer systems, featuring add-on memory systems for the Nova 1200 and IBM 370/155, 165 and 145 computers. Also on display will be a line of semiconductor memory systems that are available in both basic card form or complete systems with power supplies.

The firm will feature the in-26 RAM with a basic capacity 4K by 8 expandable to 16K by 8.

The in-50 Memory System with a cycle time of 100 nsec will be exhibited. The in-50 is a 1K by 10 bit system on one 6 in. by 8 in. PC card and is designed for use in high speed applications, Intel said.

Also being displayed will be a line of microprocessors called the MM4 and 8. These minicomputers will be available by mid-summer and will come as a basic card set or packaged for mounting in a 19 in. relay rack with an operator's display panel. The basic card set will include a CPU board, memory board, ROM board and I/O board for use with a tetetypewriter machine.

Intel will be at booths 2802 and 2804.

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Our software offers you something far more precious than money.

Time.

Not only computer time Your time. The extra margin you need to plan, to organize, and to build your future.

Certainly, we'll save your company money. To the challenges that the speed and automation of OS creates, we'll deliver tested and proven solutions offering greater control, better efficiency and quicker corrections.

Of course we're less expensive than developing the same programs on your own.

But the greatest promise University Computing Utility Company software offers you is the chance to escape from an endless repetition of today. In a word: Leadership.

UCC ONE (TMS). Vital tape management software for OS. It protects data from accidental destruction, provides automatic control over your tapes, tape status and tape library, even no-label tapes. Call on it!

UCC TWO (DUO 360/370). A unique package that lets you run DOS under OS without reprogramming. Over 170 in use. The savings in morale, time, mixed-job shop chaos are beautiful.

UCC TEN (Data Dictionary/Manager). It centralizes and controls data definitions, provides powerful cross-reference features, automatically generates data base control statements, and facilitates new systems design. Write for the facts on this new software.

UCC FOURTEEN. Permits you to run your unmodified 1400 programs on any 360/370 OS system. Reduce stand-alone hardware and standardize on OS without inefficient simulation!

UCC FIFTEEN. The new restart program you've been hearing about. A simple answer to the complex OS problem of restarting production jobs, it skips unwanted steps, automatically uncatalogs and scratches data sets to be recreated.

This is just the beginning.

Let us give you the facts on getting ahead. Write or call 214/637-5010, extension 3422 and ask for the Special Products Marketing Group.

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UCC leadership software

in one year it became the industry's matchmaker

the 844 universal controller*

AND PERIPHERAL SYSTEMS

TM

See it at the NCC — BOOTH #2032-2034

*Patent Pending

the programmable controller

A year ago PGI introduced the 844 Universal Controller and made it possible to mate different main frames and peripherals merely by changing circuit cards. Today that basic controller is part of disc and tape systems for the CPUs of three computer manufacturers. How about expanding the effectiveness of your CPU or peripherals? You may find we have all or most of the solution already on cards. These other people did.

PGI

360/370 users

The PGI 844 disc systems are 360/370 compatible and range from 29 Mbytes (entire system in one cabinet) to 466 Mbytes (9 drives and controller in 5 cabinets)—with advantages over the 2319 in space, capacity, speed, maintenance and price. They feature linear motor actuators and more comprehensive diagnostics. They employ 2316 type disc packs with 203 and 406 tracks. Average access time is 29 ms, and average latency is 12.5 ms.

PGI

Leasing Companies

The PGI 844-L universal controller provides a practical solution to one of the most perplexing problems facing leasing companies and computer brokers—what to do with the remaining drives after you have split a 2314 disc system. For a modest cost, the 844-L will allow a complete disc storage system to be made with the remaining drives that is compatible—both hardware and software—with 360 and 370 systems.

PGI

GE/Honeywell users

The PGI Model 844-1 directly replaces the Honeywell 160, 167 and 180 disc systems in the 400, 600 and 6000 computers. It features double spindle design; double density, 20 surface disc packs, and linear motor positioning.

This means 20% to 100% more storage; 25% to 50% less floor space; 15% to 100% faster access; greater reliability; simpler maintenance and $750 to $2,000 a month lower rental.

PGI

3803 tape users

The PGI Model 844-T controller is a lower cost direct replacement for the IBM controller in the 3803 tape systems. The 844-T also makes the system plug-to-plug compatible with GE/Honeywell CPUs. This means that these computers now have a 7/9 treck, all density, all speed, nine drive tape capability with automatic off-line features.

PGI

CHERRY HILL INDUSTRIAL PARK, CHERRY HILL, NEW JERSEY 08003 (609) 424-2008

Interdyne Tape Drives in Town

NEW YORK – Interdyne Co. will exhibit its 2500 family of digital cassette tape drives at the NCC. The IC 2500 features a single, servo-controlled capstan motor and a pair of individual reel motors to control tape velocity and tension.

Data can be recorded synchronously, by record, at rates up to 16 kbit/sec, or incrementally, by character, up to 30 char./sec. Corresponding read/write speeds are 2 in./sec to 20 in./sec, bidirectionally, with capstan control search speed of 40 in./sec.

Configurations are available with 1-, 2- or 4-track, single or dual gap heads, with independent read/write amplifiers.

Interdyne will be at booth 2725.

Interdyne Tape Drive

Di-An Demonstrates 9030 Teleprinter

NEW YORK – Di-An Controls, Inc. will introduce its Model 9030 teleprinter, which uses a matrix impact printhead with operator-selectable speeds of 10-, 15- and 20 char./sec. It offers 132-column print capacity; full Ascii upper- and lower-case codes; form-feed tractors that adjust from two to 16 inches; half- and full-duplex or local operation; add, even or no parity error detection; the ability to handle six-part copy; and an RS232C interface.

NCC OEM Products

The terminal includes an integral power supply, electronics, keyboard and printer assemblies and costs $1,955 in OEM quantities.

Di-An will also demonstrate its line of computer-driven ticket, tag and label printers. Various models can print both large and small alphanumeric characters, OCR fonts and bar codes at 1,200 line/min.

The company will be at booth 1332.

Di-An Controls 9030 Teleprinter

Pertec Packs Printer

NEW YORK – Pertec Corp.'s P7330 Line Printer will be shown at booths 2002 and 2004.

The medium-speed impact printer operates at 300 line/min with a full 64-character set in a 132-column format.

Standard features include two-speed print control; vertical spacing selection of 6- or 8 line/in.; full fault protection; and forms handling and adjusting capabilities.

The printer's interface is standard Demand/Response, seven-bit Ascii with TTL/DTL levels.

A code conversion option uses a read-only memory to convert any incoming code to the Ascii equivalent.

Price of the Pertec P7330 in OEM quantities is $3,990.

Pertec P7330 Line Printer

Circuit Packaging Presented

NEW YORK – Scanbe Manufacturing Corp. will display its line of integrated circuit packaging, which includes socket cards, socket card files, socket panels and socket panel drawers at the NCC.

Scanbe will be at booths 1107 and 1109.

Wangco Mod 1200 Tape Drive

Wangco Shows Drive

NEW YORK – A vacuum column tape drive, with automatic tape loading, will be introduced by Wangco, Inc. at booths 2718, 2720 and 2722.

The Mod 1200 offers tape speeds from 25- to 75 in./sec with vacuum columns, single capstan drive and IBM head guide spacing.

Transfer rates are up to 120 kbyte/sec, with data densities to 800 char./in. NRZI, 1,600 phase encoded, or 800/1,600 dual-density combination.

IDS Disk Memories For Minicomputers Set for IDS Exhibit

NEW YORK – Information Data Systems, Inc., will show its family of fixed-head disk memories for OEM minicomputer applications.

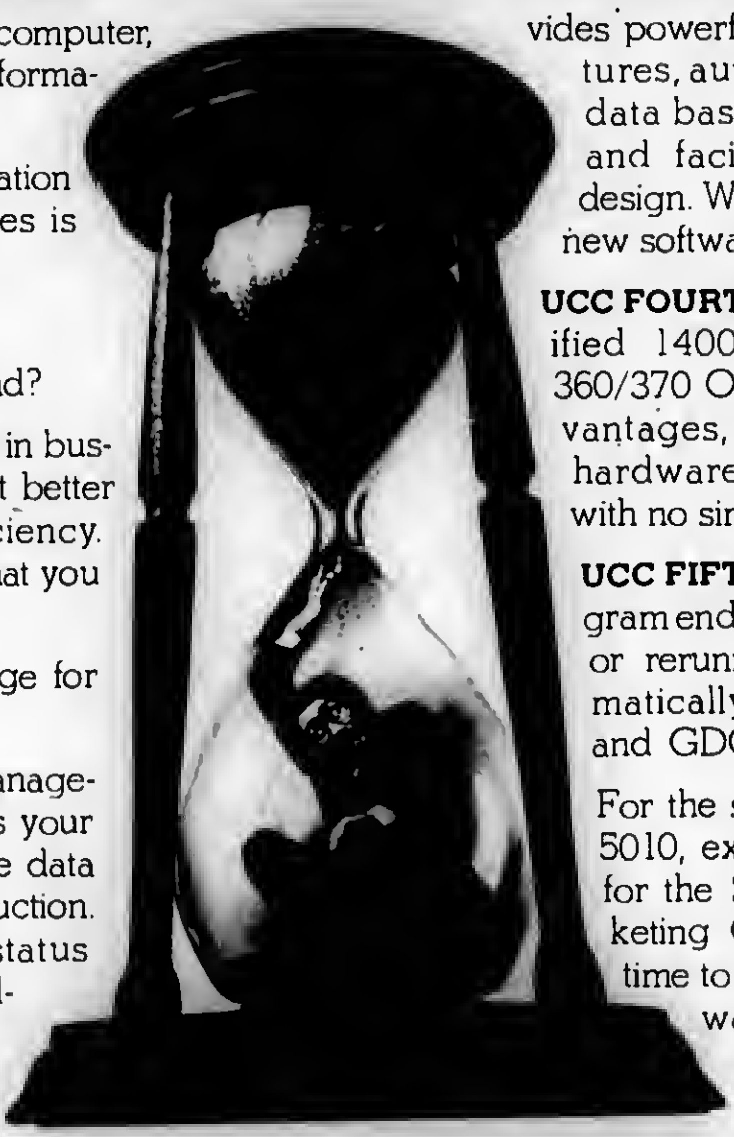
The memories provide up to 12.8M bit storage capacity at a reduction in cost/bit over earlier models, the firm said.

The 6000 Series Disk Memory includes double-density phase-modulated recording and non-contact flying heads. Units are available in eight- to 128-track configurations, with memory capacity of 100K/track.

Alternately, 4K 16-bit word/track can be accomodated, providing up to 512K word capacity.

Packing density is nominally 2,700 bit/in. Access time is 8.3 msec at 3,600 rpm, and bit-serial transfer rate is 6 MHz. Interface is at TTL level.

The units are priced at about $7,000 for quantities of 100. The firm will be at booth 1116.



Some day, between the clock and the work load, you may be buried alive.

With the new role of the computer, management demand for information is going up.

With the speed and automation of OS, margin for mistakes is going down.

And you're in between.

How can you take command?

That's precisely what we're in business to help you do. Call it better control. Smoother efficiency. Quicker recovery. Call it what you want to.

It adds up to one advantage for you. Leadership. Look.

UCC ONE (TMS). Tape management software that controls your tapes and protects valuable data against an accidental destruction. Provides real-time tape status information, eliminates handwritten records.

UCC TWO (DUO 360/370). Lets you run DOS under OS without conversion! Proven in use, now over 170 in the field. Ends chaos, frees programmers.

UCC TEN (Data Dictionary/Manager). It centralizes and controls data definitions, provides powerful cross-reference features, automatically generates data base control statements, and facilitates new systems design. Write for the facts on this new software.

UCC FOURTEEN. Now run unmodified 1400 programs on any 360/370 OS system. Get OS advantages, reduce stand-alone hardware. Standardize on OS with no simulator overhead.

UCC FIFTEEN. This unique program ends difficulty of restarting or rerunning under OS, automatically corrects OS catalog and GDG biases, saves hours.

For the specifics, call 214/637-5010, extension 3422 and ask for the Special Products Marketing Group. We'll take the time to tell you everything you want to know.

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Please send me more information on:
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If you design software for end users, we have the system they need:

Lockheed System III

Why stop at selling or leasing just your application software to end users? Now you can offer them a complete minicomputer package system.

This way they can get everything they need from you. And you get everything you need from us.

Meet Lockheed System III. A basic configuration of 16K bytes of memory, decimal arithmetic processor, CRT, keyboard plus a 10 key pad and 8 function controls, an IBM 5440 compatible 5 million byte capacity disk, and 100 cps line printer. Housed in an attractive desk enclosure.

Software you need. To make your programming burden lighter we offer a full set of software tools: beginning with an RPG II that is 98% compatible with the industry standard. Then a System Program Package of editors, sort/merge, an assembler and link loader. Control them with a Disk Operating System which includes operator communication programs and utilities. That's real ease of programming. And we're the only minicomputer company we know of that unconditionally warrants all our software for a full year.

Peripherals and expansion. The Lockheed System III has a full line of peripherals plus core memory expansion up to 62K bytes. Add 3 more disk drives, punched card and paper tape devices, magnetic tapes or cassettes, or line printers up to 600 lpm. Just what your customer needs. And when his needs change, so can the system. Easily. Anytime.

Economical. Bundled to save you money, the basic hardware configuration with software is competitively priced. Quantity discounts are available, of course.

Maintenance too. We'll handle any and all problems your customers might have, promptly and expertly, anywhere in the U.S. And we'll do it by contract or on call, either way you want it.

We also offer training classes in maintenance as well as in programming.

Add it up. So what you'll have is a more salable package to offer an end user. Everything he'll ever want or need in a minicomputer system, right down to the enclosures. Everything ready and working from the minute it's wheeled in his door.

And you'll be dealing with an established, reputable company, well-known for product reliability. A company that you can count on.

Let's talk. Call the number below, collect, or write us at 6201 E. Randolph Street,
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Dallas 231-6163 • Houston 682-2617 • San Francisco (408) 257-3357
See it at the NCC, Booth 2831.

NCC Other Products

5 British Firms To Demonstrate Their Products

NEW YORK – Five British companies will be showing hardware and software products.

The Shadow system to be shown by Altergo Ltd. provides teleprocessing and multitask monitoring and is capable of supporting both local and remote devices under the IBM 360/370 disk operating system, the firm said.

The Modular One, a range of independent modules, processors, stores and peripherals which can be combined to provide a custom system will be shown by Computer Technology Ltd.

The system features multiprogramming and, under the overall control of the executive software, each user program is given access to its own segments in store.

Computer Co-operatives Ltd. will show its Simulation Program – Speed (Simulation Program for Efficient Evaluation of Dynamics).

A range of magnetic disk memories reportedly designed to operate in harsh environments will be introduced by Process Peripherals Ltd.

The company's Series 100 disk designed as a backup store, will be on view.

Mastertape (Magnetic) Ltd. will show its disk packs and disk cartridges which are compatible with IBM interface requirements.

The British exhibit will be at booths 1122, 1125, 1126, 1128, 1131 and 1132.

CMC to Display "Keyprocessing"

NEW YORK – Computer Machinery Corp. will demonstrate two of its Keyprocessing systems.

The expanded CMC 5 system handles up to 16 keystation keyboard units and stores up to 480 formats and 18K records. It lease for $570/mo plus $70 for each keystation.

CMC will also display its Dataprint off-line printing system at booth 2227.

Two DP Directories List Sites, Suppliers

NEW YORK – The *Official Directory of Data Processing* will show the summer 1973 edition of the *Eastern & Western Computer Users Directories* at the NCC. The listings contain information pertinent to over 27,000 DP sites.

The *EDP Vendors Guide* will also make its debut. This directory contains a complete listing of suppliers to the computer field, and is arranged in 26 categories of suppliers, such as hardware, software, consulting, etc., for each geographic region of the country.

They will be at booth 2811.

Computer-Link Reveals New Tape Cleaner Kits

NEW YORK – Computer-Link Corp. will introduce three new products at NCC's booth 1716, including increased capabilities for its Series 1000 Magnetic Tape Evaluator/Cleaner.

Also shown for the first time will be the Model 111 Cassette Tape Cleaner/Rewinder.

In addition, the firm will introduce a new line of cleaning kits for tape drives and CRT terminals, and free samples will be available at the booth.

Firefighters Here!

NEW YORK – The Ansul Co. will be exhibiting its line of Halon 1301 fire control systems at booths 1414 and 1416.

Process Peripherals Ltd. Disk Memory

Tally Exhibits Line Printer

NEW YORK – The Tally Corp. exhibit will feature the Series 2000 line printer and the Tally Datascribe remote batch terminal, plus a line of paper tape peripherals.

The printer will be shown in both 125 line/min and 200 line/min versions and is available in a range of interface configurations.

Price is in the $5,500 to $6,500 range depending on the model and interface configuration.

Both printer models are offered as options to the Tally Datascribe terminal product line which will also be on display at booths 1203, 1205, 1207 and 1209.

Tally Line Printer

Auerbach DP Manual Introduced

NEW YORK – Auerbach Publishers will introduce its *Data Processing Manual* at the NCC. The manual is designed to help data processing managers attack their daily problems and is available at a special convention combination discount price, according to the firm.

Initial subscribers will receive more than 20 sections and each month new reports will be added. The service is tab-indexed for easy reference into six primary subject areas: general management; DP administration; systems development; standards, practices and documentation; operations; and technology.

Individual portfolios within these areas span the entire scope of problems the manager faces every day – from selecting and motivating people to preparing budgets to properly making system design tradeoffs, according to the firm.

Auerbach will be at booth 2017.

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Identimat Security Systems Set

NEW YORK – Identimation Corp.'s display will feature two on-line security systems.

The Identimat 2000H protects data, files or programs stored in the computer and only releases this information when the authorized person is physically present at a terminal, the firm said.

The unit identifies persons by their hand geometry characteristics, the firm added and so requires no magnetic striped identity card.

The firm will also show its Identimat 2000D time clock for automated payroll applications, its 2000S and C units for high security access control and a line of lower security Identimat card readers. The firm will be at booth 1412.

Employee signs in using Identimation's Identimat security system.

Scriptographics Has Tablets, Digitizer

NEW YORK – Scriptographics Corp. will be showing its line of data tablets and digitizers, which include such features as absolute coordinates and the use of stylus or cursor.

The units use either binary or BCD and have a resolution of 100 line/in. There are four selectable operating modes for updating coordinates – point, stream, switch stream and remote.

The units have an active area of 11 in. by 11 in. and are priced at $2,000.

The firm will be exhibiting at booth 1120.

Odec Line Printer

Odec Offers Printers

NEW YORK – Odec Computer Systems, Inc. exhibit will feature the firm's impact line printers.

The machines have print speeds from 100- to 250 line/min, with 48-, 64- and 96-char. sets, 80 and 132 print columns and two and 12 channel formatting.

Odec will also display its "Quiet Cabinet" line printer models at booths 2867 and 2869.

Timesharing System Makes Time

NEW YORK – Basic Timesharing, Inc. will show its Model 3000 Interactive Timesharing System at booths 2726 and 2728.

The system's central processor is a 16-bit computer with hardware floating point arithmetic and 48K bytes of 980 nsec core memory.

Bulk storage is available in increments of 2.4M and 49M bytes respectively in the models 3150 and 3250 disk drives. Up to 80 3250 disk drives may be employed on a single system.

The system supports up to 16 interactive terminals operating at individually selected data rates from 100 to 2,500 hit/sec over standard telephone lines or by direct connection to the system.

NCC
Other Products

Dupont Devotes Exhibit To Fire Extinguishing System

NEW YORK – Du Pont's exhibit will be devoted entirely to Halon 1301 fire extinguishing agent.

Demonstrations of the flame extinguishant, together with discussions of the properties of Halon 1301, will be conducted several times a day in a see-through plastic booth within the exhibit area at booths 2110 and 2112.

Data Concentrator, Modems Coming To Timeplex Booths

NEW YORK – At NCC, Timeplex Inc. will feature its C-32 data channel concentrator which allows up to 32 calling terminals to contend for up to 16 computer ports. Shown for the first time will be Timeplex's line of 103/113/202 equivalent modems in card only, desk top or multiplexer channel versions. These modems feature digital receiver and transmitter circuits.

The firm will also display its line of voiceband and wideband time division multiplexers for asynchronous, synchronous and isochronous data, its automatic linebacker which restores communications after line failure and its dual interface automatic calling unit which can be used as an 801 replacement.

Timeplex will be at booths 2817 and 2815.

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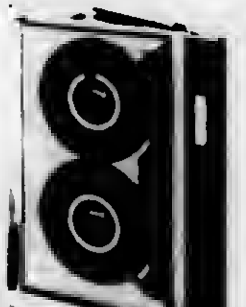

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Net of Exchanges a Boon to UK Brokers

By E.M. Hargreaves
Special to Computerworld

LONDON – A computer system now operating in Manchester offers all stockbrokers in the UK and Wales – except in London – a full service of bargain reporting, accounting and control stock payment.

The $1 million installation is the result of a data processing system first adopted by the Manchester Stock Exchange in 1967 when punched cards were used for bargain reporting and matching, settlement lists and differences settlements.

In 1969 the system, which was used by all provincial exchanges, was transferred to an ICL 1905F computer system run jointly by International Computers Ltd., and Barclays Bank Ltd.

Early in 1972 the United Stock Exchange decided to run its own system and a new company, N.M.W. Computers Ltd., was formed.

The new company took over all the systems, about 80 in all, including installed hard-copy data stations in Stock Exchange Centers and individual brokers' offices.

The new system selected was an ICL 1904A with 32K words of memory. Also included were eight EDS8 exchangeable disks with a total capacity of over 64M characters; eight 7020 communications terminals; four 9-track magnetic tape decks at 1,600 bit/in., 80 kchar./sec; two paper tape readers at 1 kchar./sec, five paper punches at 300 char./sec; two line printers at 1,350 in./min and one card reader. An EDS 60 system (with four transports on two controls and a total capacity of 240M characters) will be installed later this year.

There is also available to brokers, and to jobbers – firms which do not have an equivalent in the U.S., and which operate as virtual stock wholesalers, specializing in certain stocks and buying and selling for their own accounts – a daily bargain reporting service, full accounting systems and central stock payment.

Network of Exchanges

The bargain reporting process is effected through ICL 7020 communications terminals located at nine stock exchange centers and brokers' offices throughout the region, which are linked with similar terminals at the computer center's Link Room.

Details of bargains are stored on the computer files and each evening details are compared and matched to ensure that parties to each deal are agreed.

Lists of matched bargains and unmatched reports are prepared and collected overnight by a security organization for delivery so each member firm has full details of the previous day's trading by 9 a.m.

The British Stock Exchange system is unlike the American in that it does not have "over-the-counter" deals, and stock certificates are non-negotiable. The system operates on a two-weekly account period plan, and at the end of each stock exchange accounting period the computer provides various other printouts for members – including "full settlement" lists showing all agreed deals struck with "calculated midpoint settlement prices."

Some 60% of dealers in the region use the full accounting services offered, and this accounts for about 80% of N.M.W. Computers' total business.

Each dealer has at least one Olivetti TC308 hard-copy data station which is used to enter details of bargains onto 8-track punched paper tape. In all, there are 48 remote 7020 terminals and 130 Olivetti TC308 terminals. On establishment of a link between the broker's ICL 7020 terminal and the center, data on the paper tape is transferred at 1,200 baud between the two terminals. The center's 7020 then produces identical punched paper tape.

This is read to disk and after reference to appropriate files the computer produces a contract note for valid deals notified. This is relayed back to the broker, again by punched paper tape.

At the end of each 14-day account period all clients' ledgers and other files are updated, matched deals are pieced together and brokers receive settlement lists giving full details of all stocks dealt in. Payment lists also show the net amount each member must pay or receive from the Inspector of Clearing Account.

Changing the Spool UK-Style

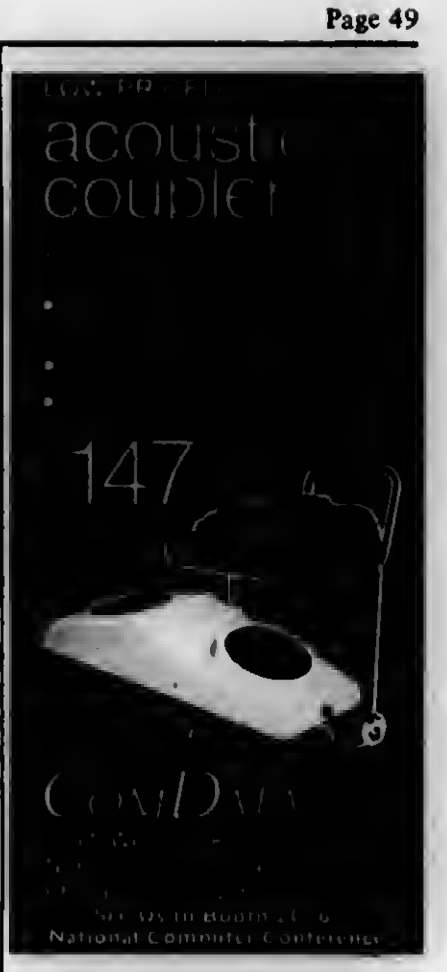
...Long Live Ribbons

NEW YORK – Three models of the Teda XRL/100 extended ribbon life system will be shown at NCC by Jersey Tab Card Corp.

The accessory re-inks printer ribbons on-site in a computer installation.

In addition to the XRL system, the exhibit will display other supplies and accessories, including XRL long life ribbons and a line counter for the IBM 1403 printer.

JTC will be located at booth 1712.



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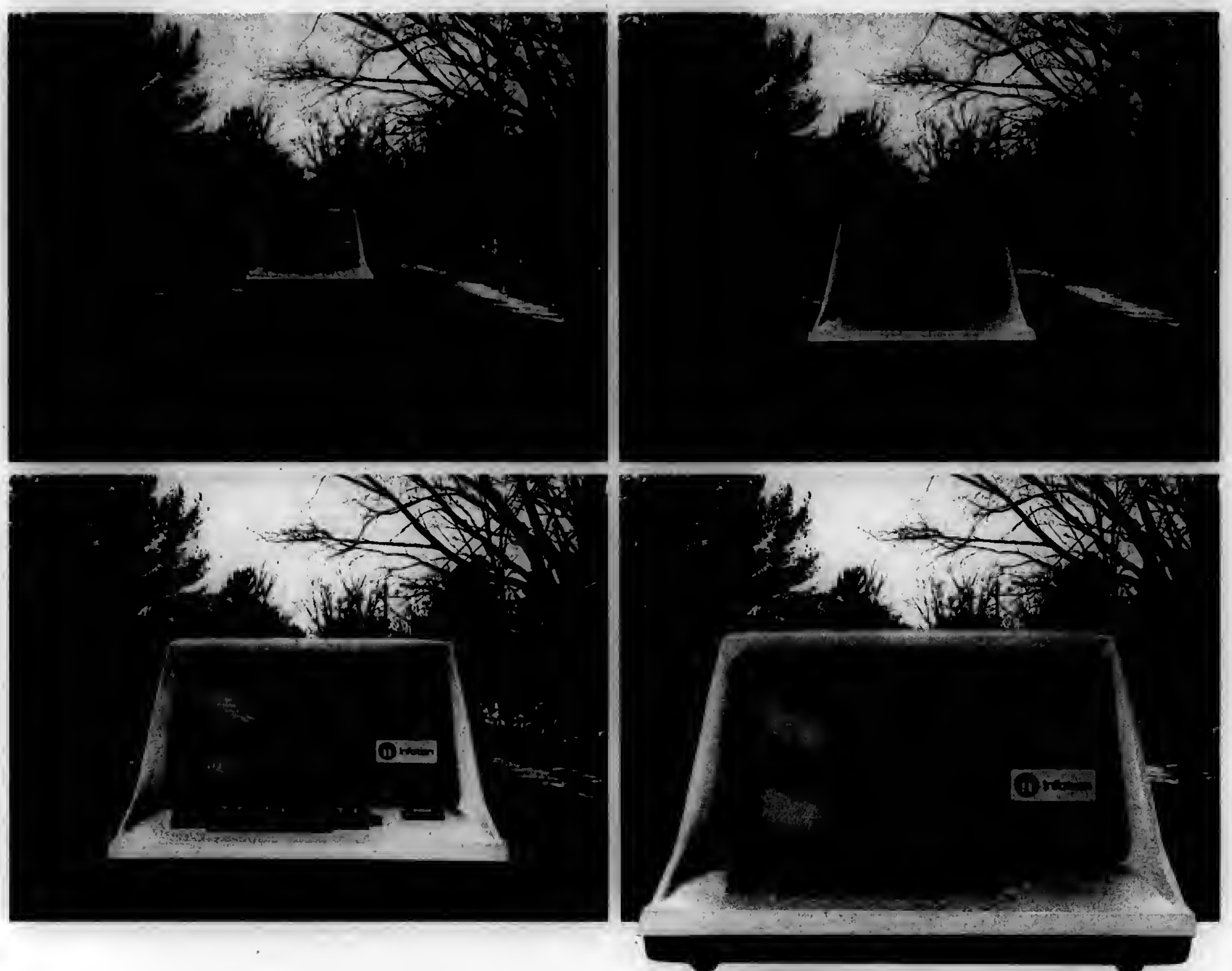

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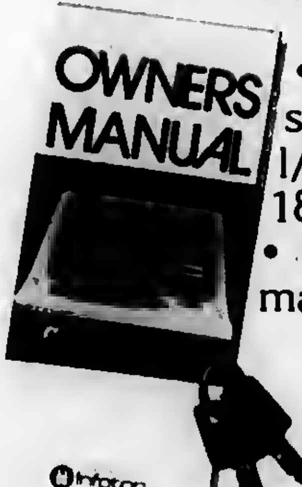

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CI Notes

Univac Lands Army Pact

WASHINGTON, D.C. – Sperry Univac has received a $30 million contract from the General Services Administration for equipment to consolidate the Army's worldwide personnel accounting functions.

The contract calls for 15 Univac 1108s, with seven multiprocessors and one unit processor. More than 130 remote units, including 9200s, Uniscope 100s and DCT-500 terminals, will be tied to the central system. CPU deliveries are set to begin in August. The systems are under a lease agreement and the Army has a purchase option after one year.

Stockholder Slaps UCC With Suit

WILMINGTON, Del. – University Computing Co. has been charged with the distribution of unlawful proxy materials in a class action suit filed in a federal court here by W. Henry du Pont.

The suit charged the firm with failing to alert holders to the charges brought against it in one of du Pont's earlier suits [CW, May 2] and with alleged irregularities in the solicitation procedure.

A UCC spokesman said: "When the first class action was filed on April 19, the proxy materials were thoroughly reviewed by outside counsel, and no deficiencies were found."

SBC Consolidates Offices

NEW YORK – The Service Bureau Corp, recently made a subsidiary of Control Data Corp., will consolidate its New York City and Harrison, N.Y., headquarters groups into a single operation in Greenwich, Conn.

SBC's Development Laboratory in San Jose, Calif., will move into a new building in Campbell, Calif.

Supershorts

Inforex has delivered its 2,000th key-to-disk system to Montgomery Ward.

– – –

Computer Machinery Corp. has established Computer Machinery Canada Ltd., a Canadian subsidiary.

– – –

The Data Communications Division of International Trading Corp. will act as Digi-Log Systems, Inc.'s exclusive European sales representative.

– – –

Supreme Equipment & Systems Corp. has named Diebold, Inc. as a distributor of various automated electronic storage and retrieval systems. The agreement between the two firms covers a three-year period, with minimum purchases of $300,000 in the first year.

– – –

Xerox Corp. has established a computer marketing and technical support unit to increase the service to OEM markets.

Decision-Making Detailed

Independents, Not Users, IBM Worry

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – When IBM was considering how to soften the penetration of the peripheral equipment market by other manufacturers, the pros and cons of all planned moves were carefully charted and the worry was apparently more over the reactions of other manufacturers than users. The deliberations were revealed in IBM documents made public in the Telex/IBM trial.

In fact, almost all of the reasons given for or against any particular move are presented in terms of the reactions of other manufacturers, and except in a very few cases the customer reaction is hardly considered.

In the area of "technical escalation," for example, the IBM researchers found that the positive results of improving the price/performance of its products would be that such improvements would "increase OEM [other equipment manufacturers] lead time to copy" would cause the OEMs to spend development dollars and thereby reduce their profits; would reduce the overall market for the independents and shorten their rental lives; and finally that it would force them to "discount prices earlier and deeper."

Negative Effects

On the negative side such technical escalation would shorten the life of the IBM rental product and would serve to force the independents to develop a research and development capability, they said.

In addition, IBM noted that too much technical escalation "usually requires customer conversion which is resisted," and that some users "will trade off improved function and performance for lower price."

But in the area of architectural changes to slow the independent growth, IBM found that including more functions in its control units would make it more difficult for plug-compatible manufacturers to develop systems and would reduce the size of their market for a particular box.

The IBM planners, however, found that such moves might call for major changes in operating systems and might add to the product cost. Another disadvantage, IBM found, was that "government standards people may object."

If IBM were to go the native attachment route and have a different native attachment for each system, the planners predicted this would "reduce the size of the market for OEM, by box" and it would "make service for OEM more difficult."

Plan Could Backfire

They found that such a scheme might increase the product costs and increase the service cost for IBM. In addition, the planners said that the scheme "may result in increased system downtime."

Another alternative open to the IBM planners was to integrate hard logic, micro code logic, with software device support "in such a way that it would be difficult for OEM" to offer plug-compatible products.

This move, the planners said, would have the advantages of making it difficult for the independents to copy and would fractionate the IBM market by boxes.

The disadvantages would be that it would probably eliminate standard selector and multiplexer channels and would present problems for present and future software products from IBM.

In addition, the independents "would probably follow us in firmware approach," the IBM planners said.

Packaged Software and Services Market Seen Doubling by 1975

NEW YORK – The market for packaged computer software and services will double by 1975 and exceed $2 billion by 1982, according to a study by Frost and Sullivan, Inc., market researchers here.

From the current base of $770 million in 1972 for the two fields, the market will climb to $1.5 billion by 1975, the report noted.

Sales of software packages alone reached $135 million in 1972 and are expected to leap to $410 million by 1977 reaching $540 million by 1982, the study said.

A Definition

"Software package" is defined as a complete plug-in program able to perform a specific system, application or utility function.

The market for packaged computer services, which reached $635 million in 1972, is projected to climb to $1.2 billion by 1977 and to exceed $1.5 billion by 1982, according to the firm.

Packaged services are dominated by offerings in payroll/accounting, credit-verification and other finance-oriented services. "Strong growth is evident as well in the use of software packaged services by the wholesale-distribution business and hospital administrative processing," the study added.

The trend of time-sharing firms offering customers comprehensive processing services "has been found by T/S entrepreneurs to be the key to survival, growth and profitability," according to the report.

An average of $30,000 annually was spent on the purchase of software packages, with some firms reporting expenditures of $300,000, the survey indicated.

Fast-Growing Areas

Frost and Sullivan is "optimistic about the future of both software packages and packaged services" and noted that the banking and health care processing will be "among the fastest growing user groups."

Of the four major types of packaged software – total, systems, standard and applications – only standard software is singled out as a "downbeat component."

"Near saturation has been reached in some areas, while others are approaching maturity. Downward pricing pressures are very evident among some types of packages," the report indicated.

The fastest growing submarket is for "total" applications-oriented packages, which the report defines as "completely integrated programming systems which operate by virtue of their own dedicated computers."

Among the characteristics that have led to favorable opportunities for independents in the field, the report observed, is that IBM and AT&T "have both been precluded from selling computer services as the result of government antitrust actions."

Software also tends to be value priced, or sold according to its potential benefits for users, as opposed to what products actually cost to develop and market.

Univac Drops Bid For Calif. Center

CW West Coast Bureau

SACRAMENTO, Calif. – The number of potential bidders for a controversial $25 million plus contract for a consolidated state EDP center dwindled to three last week as Univac dropped out with a protest.

Only Control Data Corp., IBM and Honeywell have said they intend to bid for the Stephen P. Teale center, which will serve 35 state agencies.

Bids are due July 30.

Univac had indicated it would bid only if written answers to questions were different from verbal answers the state had given regarding the bidding at a recent vendors' conference.

In a letter received by the state last week, Malcolm Hill, Univac branch manager in Sacramento, said the invitation to bid process "severely circumscribes Univac's ability to satisfy the stated requirements in a truly competitive and cost-effective manner."

The letter also asserted the selection process is contrary to the state's administrative manual and the intent of the legislature.

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Documents Detail Memory Strategy

158s, 168s Designed to Stop Competition

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – One of the advantages of putting a new type of memory on the 370/158 and 168 systems was that the new memory would not be as exposed to competition as was the memory on the 155 and 165, internal IBM documents filed in the Telex/IBM suit revealed.

Because technical considerations would make it harder for the independents to attach memory to the new systems, the price for the new memory would not have to be reduced, one memo asserted.

The memo noted that the "memory on the 155, 165 and 195 is clearly exposed to competition. PCM [plug compatible manufacturers] have the capability to design an equivalent or better performing ferrite product and price it under our $12K slope.

"The physical and electrical attachment job is relatively easy, since they can design the box to our M-9 interface as they have done in similar situation on System/360," the memo added.

"However," it continued, "as we move to the FET c/p design (1K bits per chip) on Olympus [158], Pisces [168] and Phoenix [195II], a different situation exists. We judge the ability for competition to add to our minimum FET memory configurations is a very large and maybe even an impossible task."

The document contained a technical study of the different ways the independents might add memory to the IBM systems and concluded that "although no single requirement of interfacing may prove insurmountable in itself, the combined requirements that must all be met to insure a compatible attachment at viable cost and performance may well prove to be very difficult."

"In short we may be overreacting in our [original] assumption to reduce the $12K slope," it concluded.

Japanese Study Liberalization

TOKYO – Foreigners may be able to assume larger shares of ownership in Japanese computer and components firms, if a recent recommendation by the Japanese Foreign Investment Council is enacted.

The recommendation calls for almost all Japanese industry to be opened in principle to 100% foreign ownership.

However, stricter guidelines were applied to some segments of the computer industry. The report called for 50% foreign ownership of firms engaged in the manufacture, sale or leasing of computers by Aug. 4, 1974 and 100% by Dec. 1, 1975.

Firms in the software field would be allowed 50% ownership by Dec. 1, 1974 and 100% by April 1, 1976.

Currently, any single foreign institution is prohibited from acquiring more than 10% of the shares of any one Japanese firm, and groups of foreign investors are generally barred from owning more than 25% of any single firm.

Although the move reduces the limitations on foreign ownership in principle, in practice each firm will determine what percent of its shares it will allow foreigners to own.

International Video Begins MMR-1 Delivery

SUNNYVALE, Calif. – International Video Corp. has begun delivery of its MMR-1 mass memory recorder unit.

Orders for 20 systems, valued at over $1 million, have been received for the system, the firm said.

Texas Instruments Co. has ordered units for incorporation into a mass memory data storage and retrieval system to be used as a peripheral to the Advanced Scientific Computer.

Periphonics Realigns With 3 Divisions

BOHEMIA, N.Y. – Periphonics Corp., in restructuring the company's marketing organization, has created three divisions within the company to develop and produce the appropriate hardware and software for various segments of the data communications market.

The new units are the Communications Processor Division, the Data Terminal Division and the Communications Software Division.

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Corporate Headquarters

Reports 'Unhealthy Mental Situation'

IBM Hired Psychologist to Study Personnel Losses

By E. Drake Lundell Jr.

Of the CW Staff

TULSA, Okla. – Top management at IBM was disturbed in 1970 when a psychologist it had hired reported "an underlying and unhealthy mental situation throughout the corporation," according to minutes of a management committee meeting that turned up in the IBM documents filed in the Telex/IBM suit.

The psychologist was apparently brought in to study the situation for two reasons. First, the management committee was worried over the loss of a lot of middle management personnel, minutes of earlier meetings revealed, and secondly, a messy personnel situation resulted in the release of four people at the firm's Information Records Division (IRD) plant.

According to the notes of a Jan. 7, 1970 management committee meeting, the psychologist was called in to review the situation at the IRD installation, "why it was not previously reported and what [could] be learned from the experience to avoid similar problems in the future."

The doctor concluded, according to the minutes, "that our organization – i.e. hierarchy, motivation – i.e., reward and punishment, and management style – i.e. aggressive masculinity contribute to such situations."

Inconsistencies Noted

The management committee noted "a number of inconsistencies in the psychologist's discussion and in some instances, inaccurate facts, brought about by a lack of intimate knowledge of the IBM corporation," the minutes revealed.

"Nonetheless, the management committee was disturbed by [the] contention that there is an underlying and unhealthy mental situation throughout the corporation which is not understood or appreciated," the minutes indicated.

The psychologist indicated he had no immediate solution to the problems, the minutes noted, "other than that we challenge our basic motivation assumptions and that we actively study better ways of accomplishing tasks."

The committee handed the problem to the personnel department to determine if it believed "there is any truth to the . . . charge and if so, what we are doing about it," according to the notes.

It was suggested that the personnel department might want to contact other outside experts to "see whether the hierarchical organizational system . . . may be out of phase with rapid changes occurring in society."

ALOGY

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Control Data Corp. has signed an agreement with Lee Way Motor Freight, Inc. to develop and market a management information system designed specifically for the trucking industry.

MI^2 Data Systems, Inc. will provide $5.6 million worth of impact matrix teleprinters to Dedmon Industries, Inc.

Novation, Inc. will provide acoustic coupler assemblies for Texas Instruments' Model 725 Portable Data Terminal.

Computer Sciences Corp. has signed a $1.9 million contract with the Environmental Protection Agency to supply three clinical laboratories for studies of the health effects of environmental contaminants.

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Financial Woes 'Solvable' Could Drop MRX

Memorex President Optimistic

SANTA CLARA, Calif. – Memorex President Laurence L. Spitters told shareholders he thought the company could resolve its financial crisis, but did not divulge many specifics at a recent meeting here.

However, if the firm should have to cut back on its operations, the mainframe business will probably be eliminated, he said. As of the end of 1972, the firm had invested $22.6 million in its entry into the mainframe business, according to the annual report.

Memorex expects less than $4 million in 1973 from rentals of computer systems, he said, repeating that orders for the MRX systems are "lagging" [CW, May 23].

The company's operating plan for 1973 calls for $79 million in financing requirements, which Memorex originally planned to meet by a combination of new equity capital, additional loans and deferrals of existing debt maturities, Spitters explained in an earlier statement.

Its inability to sell stock and obtain appropriate debt financing forced the firm to borrow about $25 million since Dec. 31, 1972 from the Bank of America, he noted.

The bank's credits to Memorex and its subsidiaries total about $130 million, "including 1973 maturities and demand notes of $44 million, a portion of which represents borrowings to date in 1973 to meet current cash requirements," he said.

Failure to procure sufficient external funds will cause the company to reduce the scale of its current and planned operations, Spitters continued.

"We have not made such reductions to date because it is our belief that we shall be successful. But if we are not, such reductions would result in substantial writeoffs of amounts previously deferred, which would decrease or eliminate earnings for 1973, including first quarter earnings, and would require extension of maturities of existing debt as well as new loans, he concluded.

Earnings on Target

The results of the first quarter at Memorex were on target, according to Spitters.

Earnings for the three months reached $689,000 or 16 cents a share compared with $158,000 or 4 cents a share in the year-ago quarter.

Revenues during the period rose 20% to $41.9 million from $34.5 million a year ago.

Order rates for disk file and communications products are as planned, as are magnetic tape and disk pack revenues, Spitters said.

International orders for media products accounted for about 10% more volume than the U.S., he noted.

Combined audio and video volume substantially exceeded computer tape volume, he added.

The leasing equipment business amounted to $21.6 million or 52% of total revenues in the period.

"Memorex's business objectives emphasize building the base of equipment for lease, and the current operating plan for 1973 is aimed at increasing the lease base by approximately 40% from its size at year-end 1972," Spitters noted.

During the quarter, the firm said it reduced its intangibles by $1.2 million as the amount of previously deferred R&D costs and lease acquisition amortized during the first quarter exceeded amounts of such costs deferred during the quarter.

Sale of Equity?

As an alternative to securing equity and debt financing, Memorex is conducting discussions with other firms toward a sale of a substantial equity interest or other form of business combination.

"If Memorex successfully concludes such a sale or business combination, it is anticipated that there will be a substantial dilution in the equity interests of the company's present shareholders and that a majority interest may be acquired by the purchasing or acquiring party," Spitters conceded.

The Bank of America, which "has and is supporting" the company's 1973 operating plan, has informed Memorex it cannot "provide all the funds necessary to enable the company to implement fully its entire 1973 operating plan.

"The bank can terminate its credit support at any time, but has indicated that it will not do so as long as in the bank's opinion the company continues to make satisfactory progress toward solving its capital needs."

Spitters took aim at Wall Street and its attitude toward competitors of IBM. He attributed the firm's financial straits to Wall Street and the "monopolistic position" of IBM, noting the investment community has "failed in its role" of accumulating equity capital for firms such as Memorex. Wall Street has also discouraged investors from supporting competitors of IBM, he added.

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THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

New equipment end decreasing prices have made EDP feasible for hundreds of smaller businesses with gross revenues of $5 million or less. But EDP systems on this scale ere quite different from the systems in larger companies. Small businesses heve different needs end smaller budgets. And they often don't have in-house technical staffs. So many of their problems are different. And that's what our small systems expert, Ed Bride, will be looking at in our June 27th Small Business Systems Supplement.

Through the eyes of current small business users, we'll be examining some examples of successful use of computers, and some of the pitfalls you're likely to meet in attempting to install smaller EDP systems. We'll discuss the problems involved in selecting the right equipment, summarize what computers can be expected to do, and examine the technical problems of implementing a system. We'll also weigh the advantages of outside software, and go over the question of whether or not an in-house technical staff is necessary. We'll be getting part of this information directly from small business users who perticipated as panelists in the 1973 Computer Caravan. So you know it will be practically oriented, useful and timely.

If you use small EDP systems in your company—or if you're thinking of doing so—this June 27th Supplement is important reading. And if you're marketing small business systems equipment or services, your ad should be there. Close is June 8th.

For more information, contact the nearest *Computerworld* Representative.

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On June 27th, Computerworld takes a big look at small systems.

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NCR Appoints E.F. Shipman Vice-President

DAYTON, Ohio – E.F. Shipman has been named vice-president, domestic marketing, for NCR, succeeding C.L. Keenoy, who retired April 30.

Shipman joined NCR in 1947 as a salesman for the Tampa, Fla., branch office, and became manager of the Atlanta region in 1969. In 1971 he was named vice-president of that region.

Other Moves

- Fred T. Allen has been elected chairman of the board of Pitney Bowes and will continue as president and chief executive officer of the firm.

Executive Corner

- John L. Farley Jr. has been elected president and general manager of Boothe Computer Corp.
- Edward F. Horst Jr. has been named president of Comtech USA, Inc., a subsidiary of Comtech Group International Ltd. of Toronto, Canada.
- Dean O. Morton has been elected a vice-president of Hewlett-Packard. He is general manager of HP's Medical Electronics Division.
- Edward Sterris, formerly district manager for Comma Corp.'s L.A. office, has been named vice-president, western operations.
- David S. Fehr has been named vice-president and director of computer services for National CSS Inc.
- Herbert F. Trader has been elected vice-president, financial industry, for Control Data Corp.
- Stephen H. Clark has been elected vice-president for Intertel, Inc. He will retain his previous position of director of marketing.
- Nat P. Turner has been named vice-president and director of bank systems development for the Industry Services Division of University Computing Utility Co.
- Darrel G. McCollough has been elected a vice-president of California Computer Products Inc. and will head a newly created product management function.
- John A. DeVries has been elected a group vice-president of General Instrument Corp. and head of its data systems and services group.

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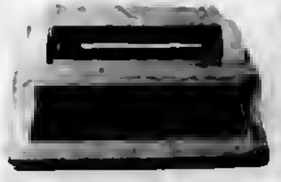

European Computer Fair Drawing Criticism; New Products Pushed

By a CW Staff Writer

HANNOVER, W. Germany – Many DP firms are not especially happy with results from the large international Hannover Fair here, although about 90 computer industry firms exhibited.

Leading German computer firms have decided not to endorse or participate in the Systems/73 Show in Munich in November, fearing their support might lead to a second international fair in Germany with results no more favorable than those of Hannover Fair.

Although the Hannover Fair attracts about 500,000 people during a 10-day period, and includes exhibits of almost every conceivable type of industrial and commercial equipment, leading DP exhibitors such as Honeywell, IBM, NCR and Burroughs have indicated they are not happy with the show.

Analysis

Time for New Products

However, despite the doubts about the value of a large international trade fair, several DP firms chose Hannover to introduce new products.

ICL showed its new 2903 CPU, while in the peripheral area Hazeltine launched a new range of CRTs, the Series 1000. Nixdorf showed a direct telephone-to-computer communications system.

Attendees come from throughout Europe, and with the crowds it is difficult for an exhibitor to discuss with an attendee specific applications of equipment to the attendee's industry.

Exhibitors pointed out that the requirement to discuss effectively the service and support aspects of their equipment's use in the local area makes the national or international fair-type exposition of limited value in achieving real sales results.

Several DP exhibitors at Hannover indicated they could not in fact justify their investment at the fair, but were committed to long-term leases on their booths. Generally a five-year commitment is required from an exhibitor.

Orders & Installations

Wisconsin Centrifugal, Inc. has purchased an AKI Series 70 system from Applied Kinetics, Inc. to be used for management reporting, real-time inventory control and charge design.

Ramada Inns, Inc. has ordered over 100 CRT display terminals and programmable line control units from Courier Terminal Systems for sales, reservations and accounting applications.

The Central Savings Bank, New York, has ordered 60 bank terminals from the Datasaab Division of Saab-Scania, Sweden. The terminals will be incorporated in an on-line, real-time system whose central unit will be an American-built computer.

Heritage Bank Corp., Chicago, is the first user of TRW's System 5000, which provides teller assistance, point-of-sale merchant authorization and on-line automatic teller services.

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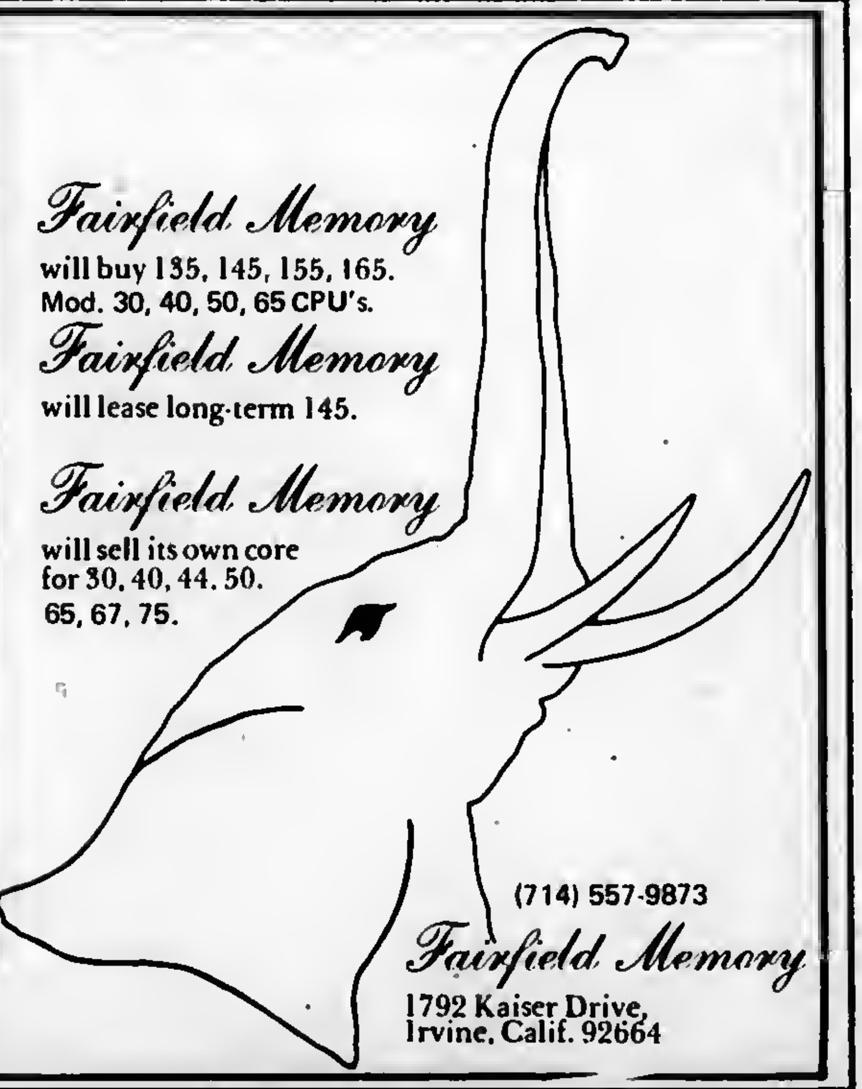

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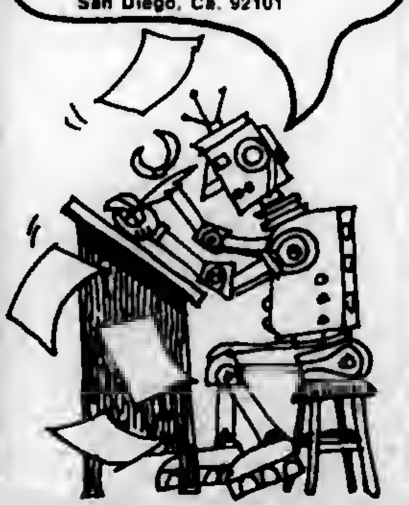

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CSC Turnaround Shows $367,000 for Year

LOS ANGELES – Computer Sciences Corp. reported a turnaround for the year ended March 30, with earnings totaling $367,000 or 3 cents a share compared with a loss of $35.7 million or $2.67 a share a year ago.

Revenues for the period rose to $120.5 million from $107.5 million.

The 1973 results include the previously announced year-end downward adjustments of $11.6 million and an $8.1 million after-tax gain from the sale of Commonwealth Services, Inc.

Cash proceeds from the sale were used to repay short-term indebtedness of about $12.5 million, CSC said.

Fourth quarter results showed $8.1 million from the sale of Commonwealth, and earnings totaled $2.4 million or 18 cents a share compared with a loss of $39.2 million or $2.93 a share in the same year-ago period.

Revenues rose to $35.4 million compared with $25.5 million in the fourth quarter of 1972.

Position for Recovery

"The strengthening of CSC's financial posture resulting from the Commonwealth sale and the recent restructuring of our bank credit arrangements has established a firm position for recovery from the liquidity problem experienced by the company during the past three years," President William R. Hoover said.

The firm has renegotiated a long-term financing agreement with banks headed by First National City Bank, New York, to postpone by a year the date for making payments.

Hoover also added that Infonet revenues have doubled in the past year to a level of about $1.6 million monthly. "With the start-up and development phase of Infonet now complete and the large attendant losses in Infonet and other significant write-offs behind us, we expect a much improved fiscal 1974," he said.

Calcomp Has Profitable 3d Quarter, But Reports Loss in Nine Months

ANAHEIM, Calif. – California Computer Products Inc. has reported sharply improved earnings in the third quarter, continuing the trend set in the second period.

President Lester L. Kilpatrick said he is looking for record revenues and a significant profit in the year ending June 30, 1973.

In the third period, Calcomp earned $976,000 or 33 cents a share compared with a loss of $512,000 or 18 cents a share in the same period a year ago.

Revenues rose to $21.3 million from $11.5 million in the 1972 third quarter.

A change in accounting methods at the end of last year produced losses for both 1972 and the first quarter.

In the nine months, Calcomp lost $603,000 or 21 cents a share compared with a loss of $5.7 million or $2.15 a share in the previous year.

Revenues reached $54.8 million, up from almost $37 million in the 1972 period. The year-ago nine month loss included $4.7 million cumulative effect on prior years of changing accounting methods. Under the new method of accounting, engineering and development costs and lease acquisition and installation costs are expensed as incurred.

EM&M 1st Quarter Results Improved

LOS ANGELES, Calif. – Electronic Memories and Magnetics Corp. showed vastly improved earnings for the first quarter ended March 31, and company president Trude C. Taylor said he expects earnings in the rest of the 1973 quarters to equal or top those of the first quarter.

Earnings rose to $1.4 million or 27 cents a share compared with a loss of $898,000 or 17 cents a share in the 1972 period.

Revenues rose 49% to $24.7 million compared with $16.6 million in the year-ago quarter.

Sales for the year, Trude said, should be in the $100 million range, up from $76.4 million last year.

Current order backlog is around $50 million, up 15% from a year ago and up 10% from the end of 1972, Taylor said.

EM&M's first steps to move into the end-user market cost the firm about $2- to $3 million in pretax earnings, but should yield a small profit in 1973, Taylor said.

About 80% of the company's volume last year resulted from the sale of core memories, he added. Although core memory sales will continue to grow, he said he expects they will amount to only 50% to 60% of total sales by 1975.

Nickels & Dimes

Shareholders of University Computing voted to change the firm's name to Wyly Corp. President Sam Wyly said he expects the firm to be profitable for the year, and that the Datran network has the $25 million financing needed for this year, but further financing hasn't been arranged. If market conditions improve, Wyly said the firm might sell up to 20% of Datran, or one of its wholly owned subsidiaries, to the public.

$$$

United Computing Systems, a subsidiary of United Telecommunications, earned $209,000 compared with a year-ago loss of $433,000 in the quarter ended March 31.

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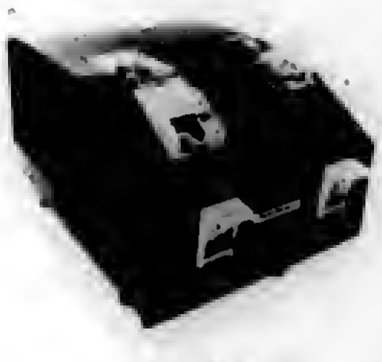

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Computerworld Stock Trading Summary

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CLOSING PRICES THURSDAY, MAY 24, 1973

EXCH		PRICE 1973 RANGE (1)	CLOSE MAY 24 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 2	1 1/8	- 1/8	-10.0
A	APPLIED DATA RES.	2- 4	2	- 1/8	-5.8
O	APPLIED LOGIC	2- 3	1 1/2	0	0.0
N	AUTOMATIC DATA PROC	64- 94	66	-2 1/4	-3.2
O	BRANDON APPLIED SYST	1- 1	5/8	0	0.0
O	COMPUTER DIMENSIONS	2- 5	3 1/2	- 1/2	-12.5
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	1- 5	1 1/4	- 1/4	-16.6
N	COMPUTER SCIENCES	2- 6	2 1/2	- 1/8	-4.7
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	1- 3	1	- 1/2	-33.3
O	COMPUTER USAGE	4- 9	4 3/8	- 7/8	-16.6
O	COMRESS	1- 2	1/8	- 1/8	-50.0
O	COMSHARE	4- 9	4 1/2	- 3/4	-14.2
N	CORDURA CORP	6- 15	6 1/2	- 3/8	-5.4
O	DATATAB	2- 4	2	- 1/4	-11.1
O	EDP RESOURCES	1- 3	1	0	0.0
A	ELECT COMP PROG	1- 2	1	- 1/8	-11.1
N	ELECTRONIC DATA SYS.	35- 56	40	+2 1/2	+6.6
O	INFORMATICS	2- 6	2 7/8	- 5/8	-17.8
O	I.D.A. DATA CORP	1- 1	3/4	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 1/2	+ 1/8	+1.9
O	LOGICON	4- 7	4	- 1/8	-3.0
A	MANAGEMENT DATA	2- 5	1 3/4	- 1/4	-12.5
O	NATIONAL CSS INC	8- 41	23 1/4	- 3/4	-3.1
O	NATIONAL INFO SRVCS	1- 2	1	- 1/8	-11.1
P	ON LINE SYSTEMS INC	13- 17	13 1/2	+ 1/2	+3.8
N	PLANNING RESEARCH	3- 7	2 1/2	- 1/8	-4.7
O	PROGRAMMING METHODS	22- 24	22 3/4	- 1/2	-2.1
O	PROGRAMMING & SYS	1- 1	7/8	0	0.0
O	RAPIDATA INC	7- 24	6 1/2	-4 1/2	-40.9
O	SCIENTIFIC COMPUTERS	1- 2	1	0	0.0
O	SIMPLICITY COMPUTER	2- 4	2 3/4	- 1/2	-15.3
O	TRS COMPUTER CENTERS	3- 4	2 3/4	0	0.0
O	TCC INC	1- 1	3/8	- 1/8	-25.0
O	TYMSHARE INC	6- 12	6	-1 1/8	-15.7
O	UNITED DATA CENTER	5- 6	4	0	0.0
N	UNIVERSITY COMPUTING	5- 11	5 1/8	+ 1/8	+2.5
A	URS SYSTEMS	4- 8	4	- 1/2	-11.1
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	14- 34	14	-1 1/8	-7.4
O	ADVANCED MEMORY SYS	8- 23	8	-1 1/2	-15.7
N	AMPEX CORP	4- 7	3 3/4	- 3/8	-9.0
O	ANDERSON JACOBSON	3- 6	3	- 1/4	-7.6
O	BEEHIVE MEDICAL ELEC	6- 10	6 1/2	- 1/2	-7.1
A	BOLT.BERANEK & NEW	7- 12	6 3/4	- 3/8	-5.2
N	BUNKER-RAMO	6- 18	9 1/8	-3 3/8	-27.0
A	CALCOMP	5- 13	7 1/8	- 1/4	-3.3
O	CAMBRIDGE MEMORIES	10- 15	10 1/4	-1	-8.8
O	CENTRONICS DATA COMP	13- 28	19 1/2	- 1/2	-2.5
O	CODEX CORP	10- 19	11	- 1/2	-4.3
O	COGNITRONICS	1- 3	1 1/2	- 3/8	-20.0
O	COMPUTER COMMUN.	2- 4	1 5/8	- 1/8	-7.1
A	COMPUTER EQUIPMENT	2- 3	2 3/8	- 1/8	-5.0
O	COMPUTER MACHINERY	7- 13	6 3/4	- 7/8	-11.4
O	COMPUTER TRANSCEIVER	2- 6	1 3/4	0	0.0
A	COMPUTEST	3- 5	4 7/8	0	0.0
N	CONRAC CORP	15- 32	16 5/8	- 5/8	-3.6
A	DATA PRODUCTS CORP	2- 4	2 1/4	- 3/8	-14.2
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 3/8	- 1/4	-9.5
O	DI/AN CONTROLS	2- 4	2 1/4	0	0.0
N	ELECTRONIC M & M	3- 6	3	- 3/8	-11.1
O	FABRI-TEK	3- 5	2 1/2	- 1/4	-9.0
O	GENERAL COMPUTER SYS	6- 9	5 1/2	- 1/4	-4.3
N	GENERAL ELECTRIC	56- 76	59 1/2	+1 3/4	+3.0
N	HAZELTINE CORP	6- 9	6 1/8	- 5/8	-9.2
O	INFOREX INC	11- 23	10 3/4	-1 1/8	-9.4
O	INFORMATION DISPLAYS	1- 2	5/8	- 1/8	-16.6
O	INFORMATION INTL INC	10- 15	10	- 1/2	-4.7
A	LUNDY ELECTRONICS	4- 9	3 3/4	- 3/4	-16.6
O	MANAGEMENT ASSIST	1- 1	1/4	- 1/8	-33.3
A	MILGO ELECTRONICS	17- 28	17 1/2	- 1/2	-2.7
N	MOHAWK DATA SCI	4- 13	4 1/2	+ 1/2	+12.5
O	ODEC COMPUTER SYST.	2- 6	2	-1	-33.3
O	OPTICAL SCANNING	2- 7	2 3/4	-1	-26.6
O	PERTEC CORP	5- 8	5 1/2	- 5/8	-10.2
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	4- 9	4 1/8	0	0.0
O	PRECISION INST.	2- 6	2 1/4	- 3/4	-25.0
O	RECOGNITION EQUIP	4- 8	4 5/8	0	0.0
N	SANDERS ASSOCIATES	7- 18	8 1/4	+ 1/2	+6.4
O	SCAN DATA	2- 6	1 3/4	0	0.0
O	STORAGE TECHNOLOGY	14- 34	14 1/4	+ 1/2	+3.6
O	SYCOR INC	9- 14	12 1/4	+ 1/4	+2.0
O	TALLY CORP.	2- 14	2 3/4	+ 3/8	+15.7
N	TEKTRONIX INC	31- 53	32 1/4	-1 5/8	-4.7
N	TELEX	3- 6	3	- 5/8	-17.2
O	WILTEK INC	11- 18	11	- 3/4	-6.3
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	6 1/2	0	0.0
A	BARRY WRIGHT	6- 13	6 7/8	- 5/8	-8.3
A	DATA DOCUMENTS	18- 22	18 5/8	-1	-5.0
O	DUPLEX PRODUCTS INC	8- 10	7 1/2	- 1/4	-3.2
N	ENNIS BUS. FORMS	5- 8	5	- 1/4	-4.7
O	GRAHAM MAGNETICS	10- 20	10 1/4	-2 3/4	-21.1
O	GRAPHIC CONTROLS	9- 12	8 3/4	-1	-10.2
N	3M COMPANY	78- 89	85 1/4	+5 1/4	+6.5
O	MOORE CORP LTD	53- 60	54 1/2	- 1/4	-0.4
N	NASHUA CORP	42- 58	46 3/8	-2 3/8	-4.8
O	REYNOLDS & REYNOLDS	40- 51	43	+2	+4.8
O	STANDARD REGISTER	14- 20	15 1/2	- 1/4	-1.5
O	TAB PRODUCTS CO	10- 23	9 1/2	-2 1/2	-20.8
N	UARCO	17- 23	17 1/4	-1 1/4	-6.7
A	WABASH MAGNETICS	5- 7	5	- 7/8	-14.8
N	WALLACE BUS FORMS	19- 26	19	- 1/2	-2.5
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	211-245	228	+10 7/8	+5.0
N	COLLINS RADIO	18- 26	18 7/8	- 1/2	-2.5
N	CONTROL DATA CORP	39- 62	40 3/4	-1 3/4	-4.1
O	DATA GENERAL CORP	29-131	33	-4	-10.8
O	DIGITAL COMP CONTROL	2- 6	2 1/4	- 7/8	-28.0
N	DIGITAL EQUIPMENT	73-105	85 1/2	+5 1/2	+6.8
N	ELECTRONIC ASSOC.	4- 9	4 3/4	+ 1/2	+11.7
A	ELECTRONIC ENGINEER.	6- 11	6 1/4	- 1/4	-3.8
N	FOXBORO	23- 32	25	+ 1/2	+2.0
O	GENERAL AUTOMATION	26- 55	31 1/2	+3	+10.5
O	GRI COMPUTER CORP	1- 3	1	- 1/8	-11.1
N	HEWLETT-PACKARD CO	74- 95	82 1/2	+7	+9.2
N	HONEYWELL INC	101-139	102 7/8	-3 7/8	-3.6
N	IBM	387-457	400 1/2	+3 1/2	+0.8
O	INTERDATA INC	7- 13	9 7/8	0	0.0
N	MEMOREX	2- 19	4 1/2	+1 1/2	+50.0
O	MICRODATA CORP	3- 10	3 3/8	-1 1/8	-25.0
N	NCR	27- 35	34 3/8	+1 3/4	+5.3
N	RAYTHEON CO	26- 34	27 3/8	+ 1/4	+0.9
N	SPERRY RAND	36- 50	40 1/2	+2 3/8	+6.2
A	SYSTEMS ENG. LABS	3- 8	3	0	0.0
N	VARIAN ASSOCIATES	10- 20	11 1/2	- 5/8	-5.1
N	WANG LABS.	14- 34	15	- 1/4	-1.6
N	XEROX CORP	141-169	153 1/2	+12 1/4	+8.6
	LEASING COMPANIES				
A	BOOTHE COMPUTER	1- 5	1 3/8	- 3/8	-21.4
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	8- 17	7 3/4	- 7/8	-10.1
O	COMMERCE GROUP CORP	3- 4	2 3/4	- 3/4	-21.4
O	COMPUTER EXCHANGE	1- 1	1/2	- 1/8	-20.0
A	COMPUTER INVSTRS GRP	2- 8	2 3/4	0	0.0
O	COMP. INSTALLATIONS	1- 2	1	- 1/2	-33.3
N	DPF INC	5- 9	5 3/8	- 5/8	-10.4
M	DATRONIC RENTAL	2- 3	2 1/4	0	0.0
A	DCL INC	2- 3	1 5/8	- 3/8	-18.7
A	DEARBORN-STORM	14- 26	15 5/8	+ 3/4	+5.0
A	DPA, INC.	5- 8	5 1/4	- 1/8	-2.3
A	GRANITE MGT	2- 6	2 7/8	0	0.0
A	GREYHOUND COMPUTER	3- 6	3 3/8	- 1/4	-6.8
A	ITEL	4- 12	4 5/8	- 3/4	-13.9
N	LEASCO CORP	9- 18	9 1/4	- 3/8	-3.8
O	LEASPAC CORP	2- 8	2	- 1/4	-11.1
O	LECTRO MGT INC	1- 2	1	+ 1/4	+33.3
A	ROCKWOOD COMPUTER	1- 3	1 1/4	0	0.0
O	SYSTEMS CAPITAL	6- 15	6 1/8	- 1/8	-2.0
N	U.S. LEASING	16- 36	15 3/4	-4 1/2	-22.2

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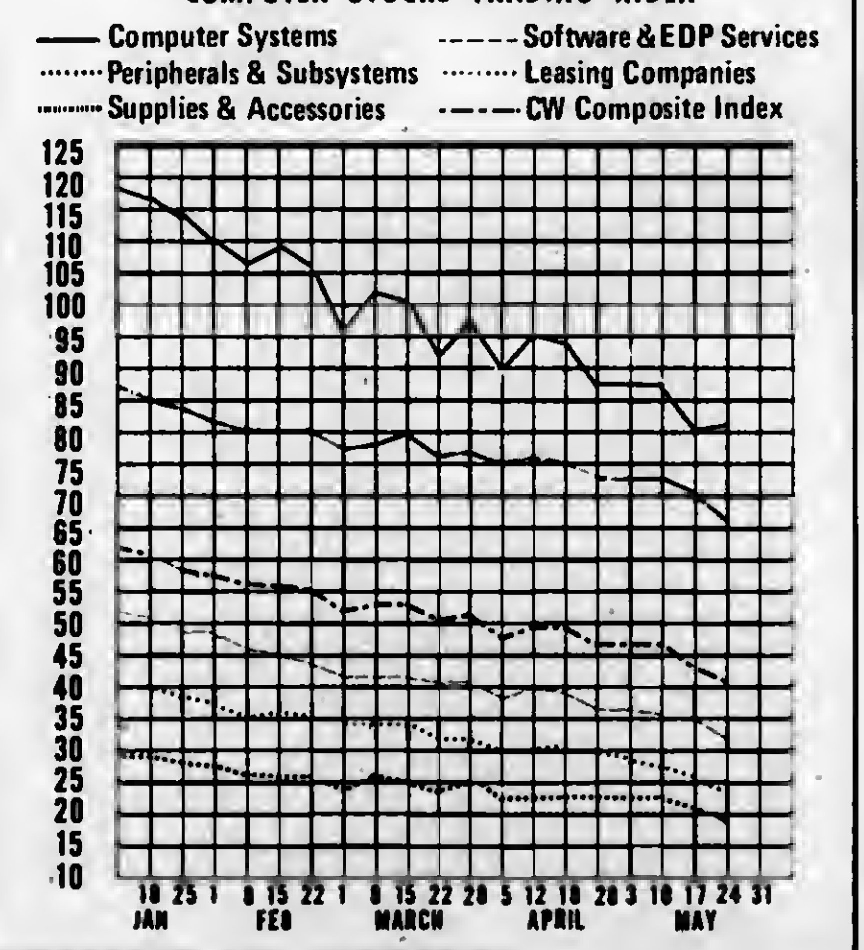
COMPUTER STOCKS TRADING INDEX



Earnings Reports

COMPUTEST
Nine Months Ended Feb. 28

	1973	1972
Revenue	$3,618,656	$3,095,567
Spec Cred	a49,540	.....
Loss	353,073	1,072,749

CONRAC
Three Months Ended March 31

	1973	1972
Shr Ernd	$.45	$.38
Revenue	15,892,000	13,835,000
Earnings	608,000	519,000

COMPUTER EQUIPMENT
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.21	$.13
Revenue	20,789,000	18,799,000
Disc Op	.....	(219,000)
aSpec Cred	216,000	325,000
Earnings	539,000	331,000

a-In 1972, tax credit plus gain on retirement of long-term debt, less losses related to previously discontinued operations; in 1971 gain on retirement of long-term debt.

DATA 100
Three Months Ended March 31

	1973	a1972
Shr Erned	$.17	.....
Revenue	7,654,000	$1,587,000
Tax Cred	232,000	.....
Earnings	504,000	(2,071,000)

a—Restated to reflect accounting changes.

DATA DOCUMENTS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.70	$.52
Revenue	9,258,728	6,954,251
Tax Cred	23,785	23,873
Earnings	328,708	242,709
6 Mo Shr	1.22	.97
Revenue	17,106,316	13,564,428
Tax Cred	35,364	37,680
Earnings	570,803	453,875

MACRODATA
Three Months Ended March 31

	1973	1972
Shr Ernd	$.17	$.16
Revenue	1,339,698	896,553
Earnings	133,228	100,863

STANDARD REGISTER
Three Months Ended April 1

	1973	a1972
Shr Ernd	$.47	$.27
Revenue	29,100,985	25,948,597
Earnings	1,005,436	575,387

COM-SHARE
Three Months Ended March 31

	1973	a1972
Shr Ernd	$.10	$.27
Revenue	2,312,271	1,781,620
bSpec Item	(11,934)	270,959
Earnings	128,394	311,006
9 Mo Shr	.31	.29
Revenue	6,351,039	4,991,105
bSpec Cred	72,184	251,585
Earnings	398,652	295,126

a—Restated. b—in 1973, consists of loss on disposition and writedown of assets less tax credits; in 1972, consists of gain on disposition and writedown of assets and tax credits.

HAZELTINE
Three Months Ended March 31

	1973	1972
Shr Ernd	$.22	$.07
Revenue	18,329,000	12,014,000
aSpec Cred	235,000	116,000
Earnings	441,000	134,000

a—in 1973, tax-loss carryforward; in 1972, tax credit and gain on sale of property.

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5213 Mod 6 Printer Ribbon	only **$13** /doz. (spool type only)
1403 Mod 2 High Speed Printer (or N1)	only **$13** each
5471 Cartridge for Selectric Printer-Keyboard – tell your purchasing department that these ribbons fit any IBM Selectric typewriter	only **$15** /doz.

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NEWSPAPER

LOOKS AHEAD

System Q is the IBM operating system designed for its FS (Future Systems) central processors which will probably be announced in 1975 for shipment a year later [CW, May 23].

The system will also be compatible – in limited form with the 370 processors being marketed today. A scaled-down version of the system will be announced in 1974 for use on the 370 in 1975.

Recent documents released in the IBM-Telex antitrust suit outline some of the requirements System Q is expected to meet.

The following series (Pages 43, 45, 46, 47) discusses some of the major items in this plan.

'Q' to Supplant IBM Software

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – "The number of programming systems has grown to the point that some or all of them must be obsoleted," according to secret IBM documents which further detail the firm's plans to develop System Q for the 1974-76 time period.

Although the documents were written in 1970, they give some insight into the IBM programming strategy at that time – a strategy that apparently has not changed to this day.

One of the major reasons for obsoleting the present programming systems, the IBM planners said, is because "it is increasingly doubtful these systems will be able to support long-range revenue goals of the division."

To meet these needs, therefore, the planners said the Systems Development Division "must construct a new system which will completely obsolete and replace present generation systems. This system must satisfy the marketplace requirements for function, price and performance. It must provide a convenient migration path for the customer population," the documents said.

10-Year Life

In addition, they declared that the new system "must be designed to last at least a decade" and that "its cost/value relationship must substantially exceed today's return on programming investment."

IBM said it recognized it had a problem in the 1960-64 time frame when several different hardware systems competed for resources both in manpower and funds. "In addition, this proliferation of systems was fragmenting the marketplace," the planners noted.

(Continued on Page 43)

'Be Safe—Try to Break Your System'

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Jerry Neal Schneider feels the best way to protect a data processing system is to have some one trying to claw his way into it.

The challenge is healthy for the system, according to Schneider, who last year "clawed" his way into the Pacific Telephone and Telegraph Co. computer system to steal more than $1 million worth of electronic equipment.

Schneider was still in college when he broke the telephone company's computerized ordering system.

He pleaded guilty to one count of grand theft, after investigators recovered more than $100,000 worth of stolen merchandise. Other charges were dropped, including burglary and receiving stolen property.

He served 40 days of a 60-day sentence in a minimum security facility and was released on probation for three years.

Schneider, 22, now is systems consultant for EDP Security, Inc., a company he helped organize.

"The user is really in a bind now with the current state of the art," Schneider said. The best way to develop confidence in a system is to try and break it, he added, and "we feel we can break into almost any system."

Schneider recommended the following precautions to safeguard the integrity of user systems:

- Establish a positive frame of mind. "Say, 'We are going to become tighter. We are going to look, talk less and listen more.'

"A lot of problems are right out in the open if the company executive will look. Then he can immediately develop his own analysis. And he doesn't necessarily have to take drastic steps."

- An examination of physical security should be made to make sure there is protection for the equipment. The walls

(Continued on Page 8)

370 DOS Modified to Run on 360

370 Code Simulated, Backward-Compatible

By Don Leavitt
Of the CW Staff

IBM announced some time ago that DOS Release 27 would be limited to System 370 users only, but two independent sources – Itel's Data Products Group and The Computer Company – have said, in effect, "it ain't necessarily so."

San Francisco-based Itel has been working on modifications of DOS 26 to allow support for the 7330 disk system, Itel's version of IBM's 3330, on 360/50s and 65s. That step includes a software-driven rotational positional sensing (RPS) capability which is the key to 7330 use, Itel said.

Once the DOS 26 modifications are firmed up, the company expects to complete work on a coding scheme that will allow use of DOS 27 on 360s, with its IBM-designed improvements over DOS 26, but without getting caught on IBM's use of instructions that are hardware-executable only on 370 mainframes.

Itel will do this by writing a series of 360-acceptable instructions to simulate the effect of the 370 instructions, and by invoking the appropriate series whenever a program instruction exception is sensed.

Expanding Edos

The Computer Company, Richmond, Va., is pursuing the same general concept in its just-released Extended DOS (Edos) feature, which allows 360s to work with application programs that include 370-type instructions. The full-blown DOS 27-compatible version of Edos is expected to be released later this year, company spokesmen indicated.

The Edos feature is available to the entire range of 360s and so brings "370 compatibility" to machines smaller than those that can utilize Itel's 7330 and that vendor's software modifications. This might be called "backward compatibility" by some industry observers, the Edos people said, but they argued it is really a forward step for users.

It means that a 360 can be used for backup for a 370, they noted, even when

(Continued on Page 2)

Expectation, Reality Mark NCC's Opening

By a CW Staff Writer

NEW YORK – An attendance that could exceed 30,000 and the return of IBM as an exhibitor in a national DP trade show after a long absence are both the expectation and reality of the first National Computer Conference and Exposition (NCC) which opens here this week at the New York Hilton and the Americana hotels. Two hundred-and-sixteen firms are expected to exhibit in 620 booths at the New York Coliseum.

Officials of the sponsoring society, the American Federation of Information Processing Societies, said the 5,200 preregistration figure is ahead of that for the 1972 Fall Joint Computer Conference when 21,000 persons attended in Anaheim

But since two of the largest segments of

(Continued on Page 8)

User, Industry Fates Hinge On Telex-IBM Case Verdict

By E. Drake Lundell Jr.
Of the CW Staff

Analysis

TULSA, Okla. – All the testimony has been taken and within 45 days Judge A. Sherman Christensen should reach a decision in the $1.2 billion antitrust suit brought by Telex against IBM.

That decision, even though it is sure to be appealed all the way to the Supreme Court no matter who wins, will surely affect the computer industry and computer users for years to come.

In addition, the decision will also serve as a guide to the Justice Department in the preparation of its case against IBM, most observers believe. A decision favorable to Telex is seen as a spur to hurry the government case and a decision against Telex is seen as delaying the government action even further.

Oral Summation

The only remaining court action planned in the Telex case will come June 18, when lawyers for both sides will be given three hours each to present their concluding arguments before the judge.

In addition to these three-hour oral summations, the lawyers for each side have been requested to submit written arguments pointing out the legal precedents for their positions and outlining what they feel are the most important questions in the case.

After that session, Christensen has promised to hand down his ruling within 30 days, so the case will be over by the middle of July at the latest.

Arguments Outlined

In its closing statements, Telex will probably argue that the independent peripherals market is indeed a separate segment of the computer industry and should be treated as such by the judge.

(Continued on Page 2)

There is a new data entry family on IBM's drawing board. Story on Page 51.

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User Fate Hinges on Telex-IBM Verdict

(Continued from Page 1)

It will likely point out that even the IBM planners, quoted at length in the IBM documents, treated that market segment as separate and planned their actions in order to beat back competition in that area.

Telex will then show that from the IBM documents and the IBM census figures IBM clearly dominates that segment of the market, holding a greater than 85% share of it in all areas and by all yardsticks.

'So What' Defense

On the other hand, IBM will probably stick to its defense as outlined in its motion for dismissal after Telex finished presenting its witnesses – a defense that has been characterized by some laywers as a "so what" defense.

IBM contends there is no separate market for peripherals equipment attached to IBM equipment. Therefore, even if Telex proves that IBM has a large share of that market, IBM cannot be found guilty since no firm can be accused of monopolizing its own product line, it contends.

The market definition issue is the key here as it was in most large antitrust cases in the recent past.

If the judge accepts the Telex argument that there is indeed a separate market for peripherals equipment that attaches to IBM systems, then it is likely he will have to find IBM guilty of monopolizing that market.

If on the other hand he accepts the IBM view that there is no separate market as Telex defines it – if he finds that in fact IBM peripheral equipment competes against other systems from mainframe makers and from the competition of such things as time-sharing and service bureaus – then he will probably find IBM innocent as charged, lawyers indicated last week.

IBM Counterclaim

The action on the IBM counterclaim that accuses Telex of stealing trade secret information will probably hinge on the action in the Telex case, sources indicated.

The judge could of course find both of the firms either innocent or guilty, but lawyers noted last week that if IBM is found guilty of monopolizing the industry, then Telex would probably be found innocent on the trade secrets charge.

However, if IBM is found innocent of the monopoly charges, it does not necessarily follow that Telex will be found guilty of the trade secrets charge, they indicated, noting that in this case the counterclaim would stand or fall on the weight of the evidence.

At this point, within a month-and-a-half of the final decision, it is hard to tell who is winning the case.

Telex has been able to get further with its suit than any of the 12 other firms that have filed antitrust actions against IBM, something of a victory in itself.

However, the IBM legal team is one of the best, if not the best, in the nation and it was extremely effective in countering most of the Telex charges in the courtroom.

Much of the outcome will, however, hinge on how the judge interprets the documents and depositions introduced into evidence but not presented in the courtroom.

A decision for Telex will certainly boost the independent peripherals manufacturers – and several of them will surely follow the Telex lead and file suits of their own against IBM.

The consequences of these suits against IBM could be even more damaging than the planned government case against the giant, since several treble damage suits of the type filed by Telex could probably bankrupt a firm, even one with the resources of IBM.

In addition, a Telex win in this case could help the government in its case, since it would indicate the judicial climate was ripe for antitrust actions of this type.

On the other hand, a Telex loss might serve to delay the government case and make the government more amenable to negotiation of its suit against IBM.

In addition, several sources in the independent peripherals industry feel a Telex loss might also serve to notify IBM that it could take any action in that industry without fear of punishment.

They indicated that if Telex loses the suit, it would be highly unlikely that any other firm in the business would enter the arena against IBM in the near future, no matter how damaging it thought IBM actions were to its business.

A Telex loss also might serve to allow IBM to take any action to force out competition since it would not have the fear of antitrust action hanging over its head from the other plug-compatible manufacturers.

Whatever the results, they will be known by the middle of next month. The latest betting line is 3 to 2 for IBM.

Clarification

TULSA, Okla. – While IBM President Frank Cary admitted IBM did hire some engineers from its competitors [CW, May 23], he did not hint this was done to catch up with developments in the competitors' laboratories. The hinting was done by Telex lawyer Floyd Walker in his cross-examination of Cary.

In addition, Cary never specifically admitted IBM was behind those competitors in development of field effect transistors. Again, this was implied by the questioning of the Telex attorneys.

And while Cary did admit the dynamic address translation box that was sold for $200,000 cost IBM only $8,960 to build, he tried to indicate in his testimony there were other costs associated with marketing and servicing it. He did not give specific details of these additional costs.

Correction

The correct address of International Publications Services, from which the British Computer Society Code of Good Practice is available in the U.S., is 114 E. 32nd St., New York, N.Y. 10016.

370 DOS Modified to Run on 360

(Continued from Page 1)

the application programs include 370 instructions. Some tests indicate, in fact, that executing (simulating) 370 instructions in the "real memory" environment of the 360 is faster than executing the same instructions in a VS environment on a 370.

The 370 instruction compatibility on the 360 also means that all current packaged software development – even if intended for the 370 market – can be used on the 360s.

Complement, Not Conflict

Itel and The Computer Company have been at least talking to one another as their work progressed and it appears that their new products will complement each other rather than conflict.

The Edos people noted, for example, that users who have the Itel 7330 support don't need the special Edos 370 instruction support feature.

But Edos can provide a broad range of system support facilities that are not available from Itel or through IBM's DOS coding.

These include load balancing between partitions, storage of programs in relocatable form and blocked fetching of program phases, as well as spooling of output and, on a special feature basis, support for six partitions instead of the normal three.

Itel is basically a hardware vendor and doesn't want the burden of a full software maintenance staff. It reminds its users that IBM will not support the use of DOS 27 on 360 hardware. The Computer Company is a software company and it can support either Edos or the Itel-created software modifications.

Used in combination, the two companies and their new DOS enhancements can be expected to add considerable life to the 360 user base, in the view of one industry observer.

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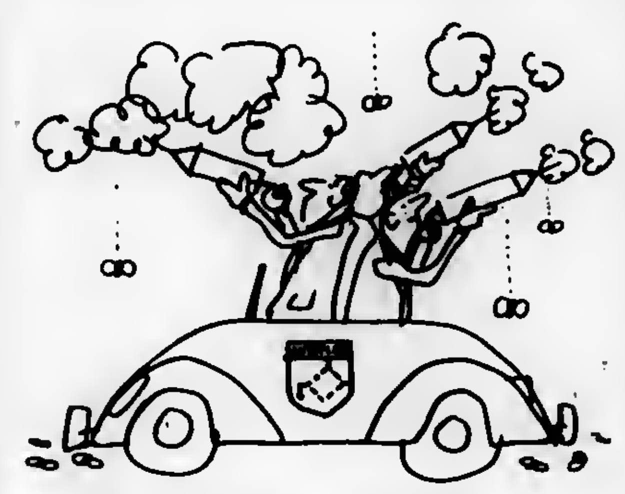

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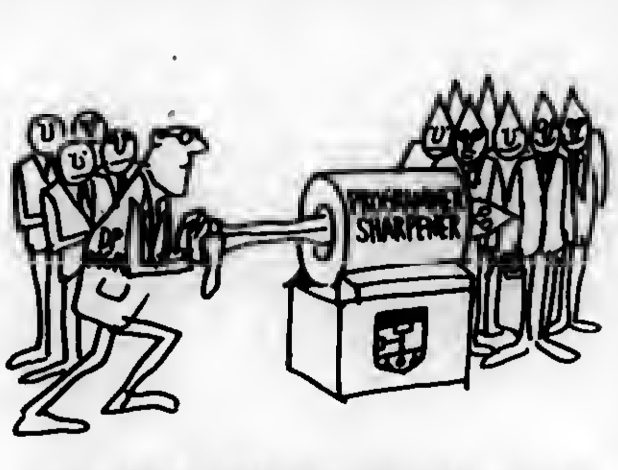

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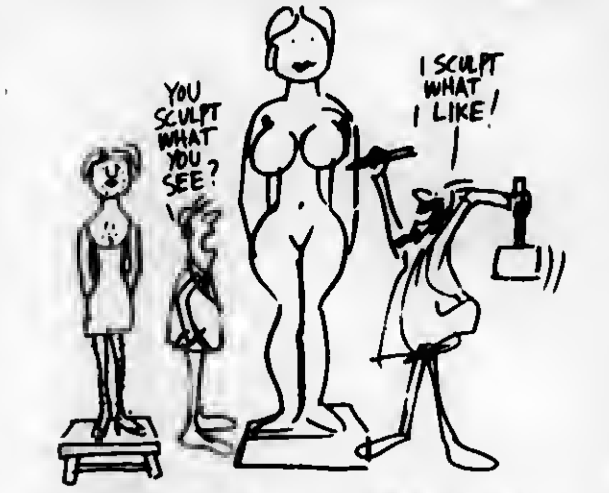
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Back on the Job

Epulu, the three-and-one-half-year-old chimpanzee who gave data processing a one-day fling before returning to a zoo in Germany [CW, May 30], makes his second consecutive "debut" on the pages of *Computerworld*, this time in fully unabridged form.

Some Claim System a 'Nightmare'

MDs at Odds Over Hospital MIS

By Marvin Smalheiser
CW West Coast Bureau

MOUNTAIN VIEW, Calif. – Some physicians rebelling against a computerized medical information system (MIS) at El Camino Hospital here are actively campaigning to have it removed.

Dr. Lawrence Epstein, one of the leading opponents of the integrated system, said the system has "caused deterioration of our ability to care for patients.

"It is bulky and difficult to work with charts and difficult to interface with the machine. When we try to dictate resumes from the record room, it's a nightmare." He blamed voluminous output from the computer.

Hard to Read

Patient records are unreadable "because the computer throws out" information totally alien to what we're used to. Reams of computerized notes and lab work are impossible to read," he claimed.

Dr. Ralph Watson, chairman of the MIS physicians' committee, takes a more positive position.

"The system can do the job we want it to. We're at the point now as far as value to the hospital. It will increase accuracy of scheduling medicines and lab work to be done.

"It has great potential for cost containment. But we don't have proof yet. We're working on that now."

46% Favor It

A recent survey of the 450-bed hospital's physicians showed that 42% want the MIS removed. But 46% favored the system.

About 58% said they would be willing to continue participating in research and development of the system.

However, 50.5% said the system should be dumped "if a substantial minority of clinicians are unwilling to participate in continued development."

Almost 72% said that "demonstrable cost savings would influence my decision."

A broad review of the system – including a federally requested study – will be released this month.

The $12 million system was developed by Lockheed, which later sold it to Technicon, Inc., Tarrytown, N.Y.

It was installed in January 1972 and became fully implemented in October.

The system is set up to handle all physician orders, pharmacy functions, admissions functions, scheduling of lab tests and medication as well as all business office functions.

Information entered into the computers is sent to appropriate parts of the hospital and communication is through numerous terminals, which include CRTs and light pens.

Watson said it is fully integrated into the operations of the hospital. "Virtually everyone in the hospital uses it."

The system runs on an IBM 370/155 with a 145 as backup. There are about 46 video terminals with light pens throughout the hospital and 26 ink jet printers.

Cost of running the system comes to $82,750/mo and is expected to save at least that much in the long run, officials believe.

False Arrests Spark Police Mea Culpa

CW West Coast Bureau

SAN FRANCISCO – In the wake of several false arrest suits, the police department here has publicly apologized for inaccuracies in the computer system used to identify wanted persons.

"We are very sorry for the errors we made," said Capt. Jeremiah Taylor, although he said the errors were those of human oversight rather than the computers themselves.

The police department has been sued for amounts up to $1.5 million by persons who claimed they were detained on charges ranging from failure to pay overdue parking warrants to felonious auto theft.

The latest suit was brought by a San Francisco couple who contended they were arrested, roughed up and held for 18 hours because the computer reported the car they were driving as stolen. They said their auto had been stolen two years earlier and returned to them.

Taylor said the police department's warrant system is used by nine counties and officers in outlying counties and municipalities who query the system by radio are supposed to make a direct verification by telephone but have neglected to do so.

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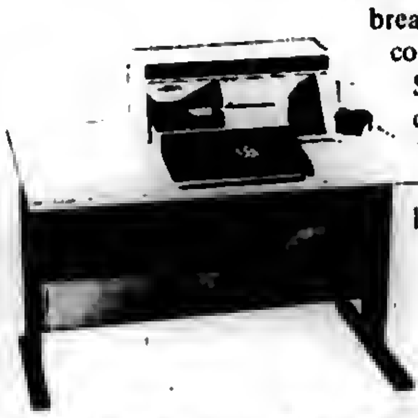

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State Reregisters Voters the Modern Way

By Ken Shonk
Of the CW Staff

FRANKFORT, Ky. – Kentucky has shifted to computerized voter registration after the state legislature ordered a complete reregistration of all the state's voters.

The computerized system will give the state for the first time a master file of all the voters by precinct and enable the state to give the news media and other organizations breakdowns on the sex, race and occupation of voters for each precinct.

County Imbalances

The legislature's move came after newspaper accounts revealed that in many counties voter registration lists were seldom purged and frequently not kept up-to-date, resulting in imbalances between counties.

The governor and his aides saw a computerized voter registration system as the least expensive and the most administratively sound of the alternatives as well as the only sure way of reregistering all of Kentucky's nearly one and one-half million voters in time for state elections this fall, according to state officials.

The computerized registration system provides for automatic purging of the voter lists, eliminating the need for local purgation boards. Instead, the state Board of Elections has set up an appeals procedure for purged voters. Monthly update printouts will go to each county clerk.

The state's Department of Finance and Administration is handling the operations on an IBM 370/155 with 500K. The voter registration operations are utilizing up to 100K, according to the state. The state Election Board is using a remote 370 video terminal to monitor operations.

Selma Stovall, secretary of state, said she expects breakdowns and problems this year with the introduction of the system, but primarily on the precinct and local level. Before the introduction of the computer the state Election Board did not even know how many precincts there were in the state.

And Maybe by 1990...

JACKSON, Mich. – Traffic in Jackson County, Mich., should be flowing smoothly by 1990, thanks to a computer which is now developing a master plan for the Jackson Area Comprehensive Traffic Study (Jacts) committees.

The Jacts technical and policy committees test their developing plan by feeding it into the computer, which then assigns traffic loads projected for 1990 onto the road network. The printout shows which roads will be overloaded if the plan is fully implemented. Then the computer shows how a specific modification of the plan will affect traffic flows on other roads.

The committees' final plan will be the basis for distribution of federal and state road and highway assistance funds over the next 20 years.

The Jacts committees expect to test four modifications of their plan before the development deadline date in July.

Nato Air Defense Now on Target

LONDON – A $300-million computerized air defense system, which stretches from Norway to Eastern Turkey is now operational.

The Nato Air Defense Ground Environment (Nadge) is a chain of early-warning radars and air traffic sensors, tied to a data communications network and computerized control centers. These are combined with interceptor bases and ground-to-air missile sites to provide "detection-to-destruction" protection against hostile aircraft.

Long-range radars search out unidentified, and potentially hostile, aircraft. Electronic sightings are fed into computers which record their speed, altitude and course.

The computers are preprogrammed with such information as identification codes of friendly aircraft, weather conditions, enemy forces available, and possible methods of attack, and can determine if a sighting is a "known" or "unknown" aircraft.

Once a detection is classified as "unknown," a military officer may order an interceptor aircraft to visually inspect the unknown aircraft.

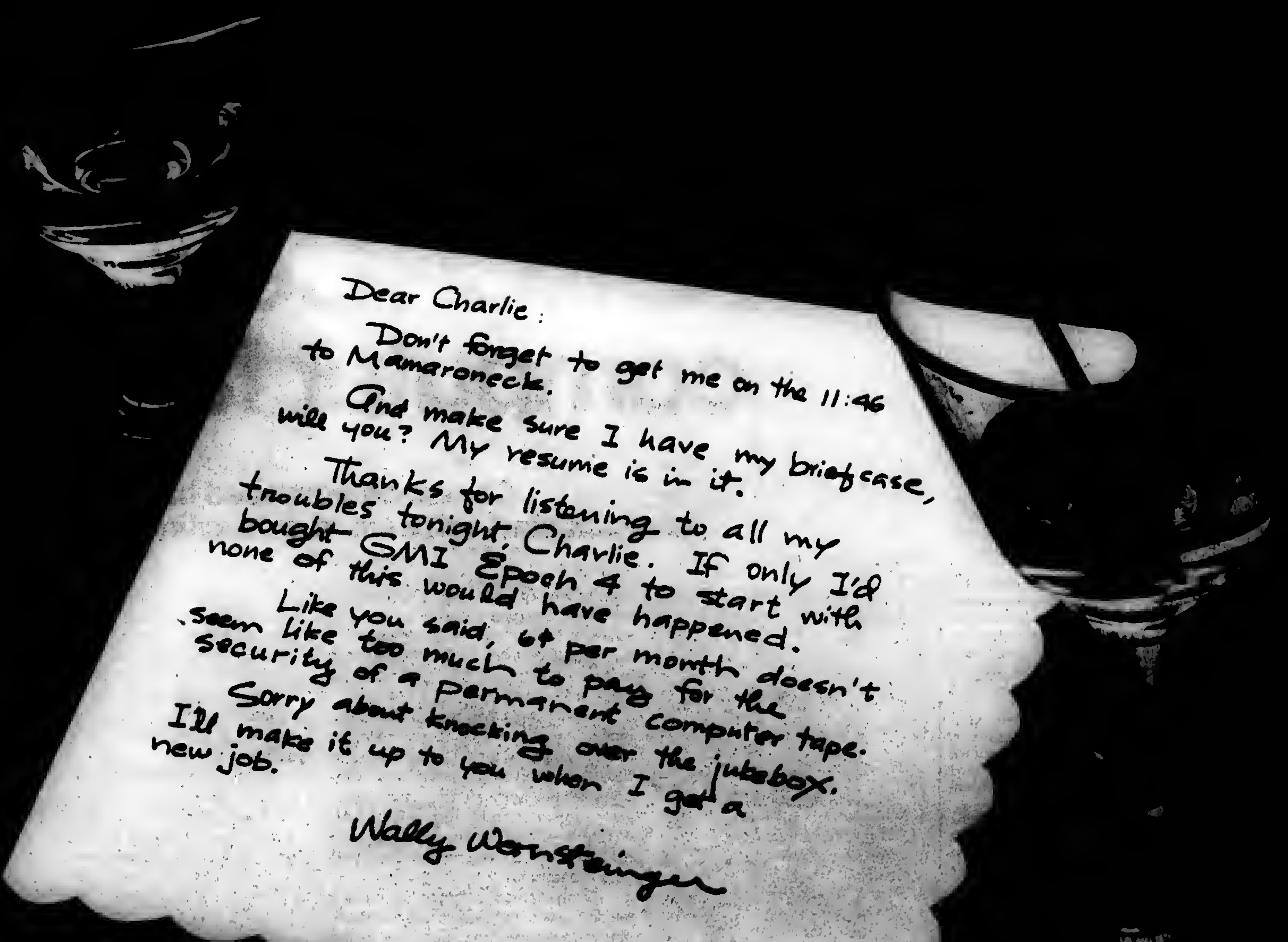
In war, he may order missiles fired to destroy intruders.

A Signal to Pollution

SALT LAKE CITY, Utah – Computerized traffic signal control will help Salt Lake City meet 1975 federal standards on carbon monoxide in the air.

Streets Commissioner Stephen M. Harmsen said the city will have no difficulty in securing and implementing the control system, which is aimed at smoothing traffic flow and therefore reducing exhaust output.

Next time that economical tape you bought to impress the boss costs the company a ton in re-run time, here's a note for your bartender:



Dear Charlie:

Don't forget to get me on the 11:46 to Mamaroneck.

And make sure I have my briefcase, will you? My resume is in it.

Thanks for listening to all my troubles tonight, Charlie. If only I'd bought GMI Epoch 4 to start with none of this would have happened.

Like you said, 6¢ per month doesn't seem like too much to pay for the security of a permanent computer tape.

Sorry about knocking over the jukebox. I'll make it up to you when I get a new job.

Wally Wornsteinger

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How to Make a System Secure...

(Continued from Page 1)

should be strong, glass windows avoided and waste materials avoided.

Employees' Integrity

- The integrity of the employees must be assured.

"Tighter controls in the personnel department are required. Also, test the integrity of your employees and find out what their goals and merits are.

"A personnel application can be very revealing about an employee and a keen eye can pick up things like that."

- Data processing security should have a system of checks and balances to insure the accuracy of data, Schneider believes.

"We watch input and output. We look to see if cards are slipped out of place, errors tacked onto programs or modifications made to programs."

Unauthorized use of the system has to be prevented, he said.

Schneider suggested it is sometimes helpful for evaluation to shut down a system for a day and run it manually.

"It would pick up a lot of programs written into the system which the user is not familiar with or may not be aware of."

- Host computers or host minicomputers can be set up alongside a computer to watch the programs.

"It is like an armed guard who watches a printout."

- A data scrambler can stop unauthorized data taps, which are "one of the easiest ways to get into a system," Schneider continued.

A person using a data tap can "record all the passwords and procedures to access a system," he said.

Manufacturers, Schneider said, should now think about security in the design of their new systems and think about implementation of host computers or minicomputers as auxiliary controls for security.

"Manufacturers should get together with consultants to find out what the problems are and develop products needed in security instead of introducing customized products for particular security applications."

Schneider said his firm, which now has a staff of 13, will soon merge into now dormant Electronic Data Processing Security, Inc., Los Angeles.

In addition to services, it will offer products such as electronic locks, closed circuit television, monitoring consoles, supervisory panels, remote-access beeping systems, low-cost data scramblers, debugging devices for telephones and paper shredders.

The new firm, Schneider said, will offer a braintrust that will be able to sit down and study security problems on a project-oriented basis.

The major effort, he said, will be in "perpetrator analysis," which he described as a technique to challenge system security by looking for weak points to try to break the system.

Before helping to organize EDP Security, Inc., Schneider tried to join the telephone company but "they didn't want any part of me."

370 Lease May Save User 30%

CW Washington Bureau

NEW YORK – Users can save between 10% and 30% on a new 370 lease program being offered by Ford Motor Credit through DPF, which will be the marketing arm for the new program.

Under the new leases, which run from three to seven years, users can save 10% on a three-year deal, 14% on a four-year plan, 18% on a five-year deal and 30.6% on a seven-year lease.

All of the plans can be terminated after three years, but if a user has signed up for a longer term he will have to make up the difference between that rate and the three-year rate, DPF said.

The plan applies to all IBM 370 CPUs with the exception of the 155 and the 165, the firm said, and the rates are for CPU and memories only.

The savings on a systems basis could be much higher, sources indicated, if the user chooses all independent peripheral equipment with his system, since the independent peripherals can be offered also at a discount over the IBM price for the same devices.

Peripheral equipment with the new leases will be offered by DPF from a wide range of independent peripheral companies, the firm said.

At the same time, DPF will continue to offer its long-term eight-year leases which promise the user greater savings over the IBM prices if he is willing to commit to such a term and which come packaged with independent peripheral equipment.

In the area of upgrade penalties, DPF said that in all cases its penalties for upgrading would be less than the ones charged by IBM on its four-year lease.

There are also some interesting extension privileges under the new plan. If a user, for example, under a five-year plan at the end of three years, decides to use the system for another three years, he can sign a new three-year contract and have the monthly rental reduced to 75% of the IBM price instead of the 82% he would have been paying on the five-year plan.

NCC Marked By Expectation

(Continued from Page 1)

attendees, the exhibitor guests and the exhibit-only attendees, do not generally preregister, officials said the preregistration results are not a fair indication of total attendance.

IBM's first appearance in a national DP trade show since 1970 will be highlighted by a System/3 Model 10 which, along with a 370/145 located off the floor in the Coliseum, will support multi-application demonstrations in areas such as medicine, government, education and manufacturing.

Outgoing executive director of Afips Bruce Gilchrist defined Afips' challenge as how "seriously it wants to attack major problems within the industry," and named two, standards and standardization.

"These are major issues which I think need an overall and responsible approach, but they're tough issues, because they immediately get you into a position of having to address major economic problems.

"Obviously, you tread on people's toes when you do that. If you only attack minor issues, no one bothers you," he observed.

"People within the field should have a strong voice to address key issues, and not wait for the manufacturers or the government to make the decisions for them," he urged.

Replacing Gilchrist as executive director of Afips will be Robert W. Rector, who will assume his new responsibilities July 1, concurrent with the beginning of Afips' fiscal year.

Rector is currently chairman of Afips' finance committee.

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Terminals & Computers

DPMA Show Hopes for Success, Must Buck Competition

By Edward J. Bride
Of the CW Staff

CHICAGO – Faced with competition from two other major computer conferences within three weeks, the Data Processing Management Association (DPMA) will host its annual conference here June 25-29.

Officials are hoping the exhibitor and attendance totals of last year (70 companies, 5,200 total attendance), when the show was held in New York, could be equalled.

The format is similar to last year's, with opening-day sessions comprised of industry tours of DP centers, and second-day events consisting of all-day workshops and the exhibit, which opens at 10 a.m.

The speech-making and seminars begin on Wednesday, June 27, with the keynote being given by William L. Lindholm, vice-chairman of the board and chief operations executive with AT&T.

Information Management

Most of the individual workshops are being chaired by industry marketing experts, with some led by consultants; a few users will also conduct the seminars in the conference, whose theme is "New Dimensions in Information Management."

DPMA said recently that some 50 companies had signed up as exhibitors, including IBM and Univac, with others in the peripherals and supplies fields.

Three weeks before DPMA is to open, the first annual National Computer Conference and Exposition is scheduled for New York City, and that same week, here in Chicago, the American Bankers' Association will hold its annual Automation Conference, one of the biggest of the banking industry's data processing shows.

Workshops, Seminars

The six separate one-day workshops scheduled for June 26 include meetings on banking, government applications, insurance, manufacturing, medical/hospital applications and systems development.

For the most part, these concurrent sessions are conducted by large users such as Harris Trust and CNA Insurance. All meetings and the exhibit will be in the Conrad Hilton Hotel.

DPMA defended its choice of Industry insiders to conduct the other workshops, noting the speeches would be "independent" of the equipment manufactured by session chairmen.

Who Will Speak?

Examples of session chairmen include the national sales manager for CDC's time-sharing operation, who will conduct a seminar on time-sharing applications; the product line manager for Digital Equipment Corp.'s business systems division, who will conduct the session on minicomputers in business; the national sales manager for Stromberg Datagraphix, who will talk on microfilm (reviewing "various techniques and equipment," DPMA said); and the manager of AT&T's planning and regulatory support activities, who will speak on inter-connection and implementation of integrated data communications systems.

John Guerieri, DPMA's director of research and professional services, said the selection of marketing personnel provided "some of the best people available" for public speaking.

Although technical people are usually familiar with the equipment, the sales people are generally more up-to-date on applications, he noted.

He also said DPMA had had good past success with this approach.

The week's program finishes on Friday with an open seminar on visually impaired programmers; the exhibits close Thursday at 6 p.m.

Information is available from DPMA headquarters, P.O. Box 502, Park Ridge, Ill. 60068.

N.Y. System Promises To Ease Overcrowding In Hospital Wards

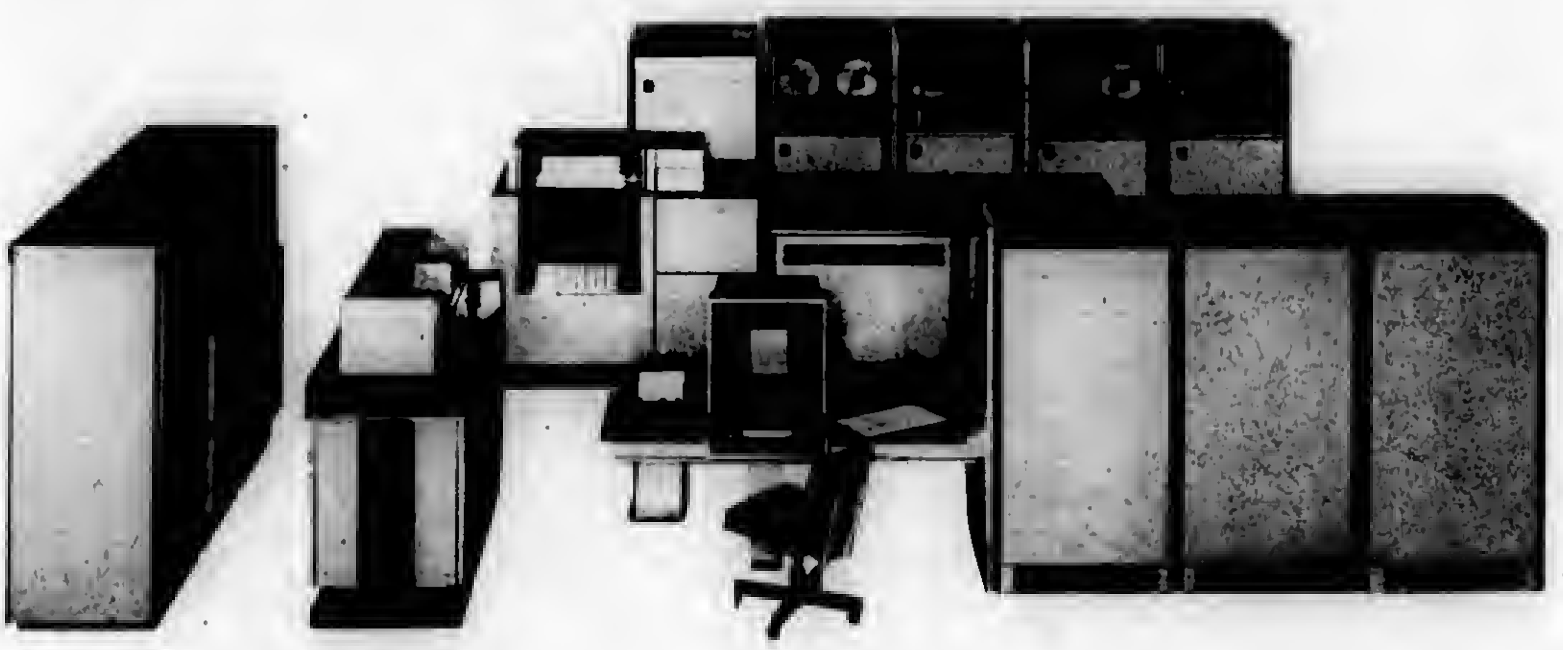
BROOKLYN, N.Y. – A computer-based system is helping relieve overcrowding in pediatric departments of nine major medical facilities here by sending some patients at crowded hospitals to underutilized facilities.

The program, called Embers (Emergency Bed Request System), was devised to include eight institutions: Methodist, Long Island College, Kings County Center, Jewish of Brooklyn, Coney Island, Kingsbrook and Greenpoint hospitals and the Bedford-Stuyvesant Health Center, all of which are linked with Downstate Medical Center's computer center by direct telephone cable.

Where to Go

"The computer compares pertinent information concerning patient needs for hospital admission with stored and continuously updated information of the availability of pediatric beds, and notifies the referring and receiving hospitals of the most appropriate disposition of the patients," according to Dr. Vincent Larkin, director of medical affairs for the Methodist Hospital and one of the system's authors.

The system becomes operative when the inpatient load in a participating hospital exceeds 90% of its pediatric bed availability. That hospital may request admission of a sick outpatient to another participating institution through the computer.



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Rush to Computerization?

Counties May Pay 'Too Much' for Voter Registration

By Michael Weinstein
and
Toni Wiseman
Of the CW Staff

IOWA CITY, Iowa – Several counties within this state are paying "two to four times" what they should for voter registration computer services, according to Merle L. Kopel, Linn County auditor, and much of the problem appears to stem from a rush to computerization.

The overcharging, Kopel said, is indirectly caused by the new election law which requires preelection registration in certain cities and counties. This requirement put a strain on local election offices, and officials with no knowledge of computer operations attempted to computerize the registration procedure in order to comply with the provisions of the law.

The 1970 bill requires every city with more than 10,000 voters and every county with more than 50,000 voters to register these voters before each election.

Prior to 1970, in many areas voters would just show up at the polls on election day and vote. In most cases this was considered adequate as areas were small and most people knew each other.

But with the new law, many local officials had to develop a documented registration operation for the first time.

Varied Operations

These operations varied from city to city and most used computers in some form. For example, one city used the computer of a local college while another bought time from a local company and a third used the police computer on a part-time basis.

Before the 1970 law had time to settle into operation, however, a new law removed the responsibility from the cities and made the county auditors responsible for the registration.

Practically, this meant many county auditors were charged with combining various infant city systems into a centralized county system.

To compound the problem, even had the auditors been DP experts, different cities were using different types of computers and different formats for data.

At this point, the Iowa Data Processing Co., through its president, Stanley R. Zegel, offered some county auditors a complete computerized voter registration service.

Who Pays for What?

IDP billed for its services on a transaction basis, as opposed to computer time used or nature of the programs, so it was hard to determine the exact nature of charges and how they were accrued, Kopel said.

But despite this inability to determine the cost of each portion, the bottom line cost has led to numerous attacks on the services.

Attacks have been directed at the cost and service provided by IDP and also at the system of no bidding that allowed IDP to go directly to the county auditors.

"I've talked to some of the people who have had his [Zegel's] service," said Kopel, "and they can correlate nothing on his bills as far as a standard method of billing."

Linn County, which had been using IDP's service, dropped it when Kopel became auditor. Kopel explained his actions:

"A representative of the firm [IDP] approached me about the sale of voter registration forms and voter registers for an amount of $40 a thousand and $35 a thousand respectively.

"I had already received bids of $10.98 and $13 for these same services from another source. Further, disregarding the financial aspects for a minute, we had already found his [IDP's] service inadequate for what we had to do. He ran the primary last year and mistakes abounded," Kopel said.

"Basically, they use scare tactics to take advantage of the naive," said T.J. Snarsyk, director of information services for Cedar Rapids. "He [Zegel] gets the little towns upset because they don't have time to look at all this, and then offers his services."

Zegel defended his company's efforts: "It is not our obligation to see that they [the county auditors] go out and try to find someone else who would try and do what we do.

"If someone else says they can do something similar to what we do, that's fine, they can make a proposal too."

But these are not the only factors, one official said. "Zegel is a registered lobbyist in the state and helped to write laws he is now offering service for. He is highly wired with state politicians and unless bidding is open and public there is too much of a temptation for local officials to act as political animals."

In any case, unless there is public bidding, the question of whether taxpayers pay four times as much as necessary for computer services will remain academic, he concluded.

N.Y. Harbor Dyed To Trace Pollutants

NEW YORK – With the aid of computers, the most polluted harbor in the U.S. may eventually see its waters clean again.

In an experiment sponsored by the National Oceanic and Atmospheric Administration, 11 small boats dumped a "harmless and biodegradable" yellowish-green dye into the ocean near the mouth of New York Harbor at 100 points from Ambrose Light to Coney Island. Airplanes and helicopters passed overhead snapping infrared, black-and-white, and color photographs of the dyed areas.

From the photographs, scientists hope to build a computer model of wave action and currents in the harbor, presenting graphic evidence of where pollutants travel once they enter the harbor's waters.

Scientists want to find out what percentage of pollutants are swept out to sea or get into the atmosphere through evaporation, so they can begin planning some means of control.

New York Harbor was chosen for the experiment because "about 70% of all the ocean dumping in the U.S. occurs either in or near New York Harbor," according to a Federal Environmental Protection Agency official.

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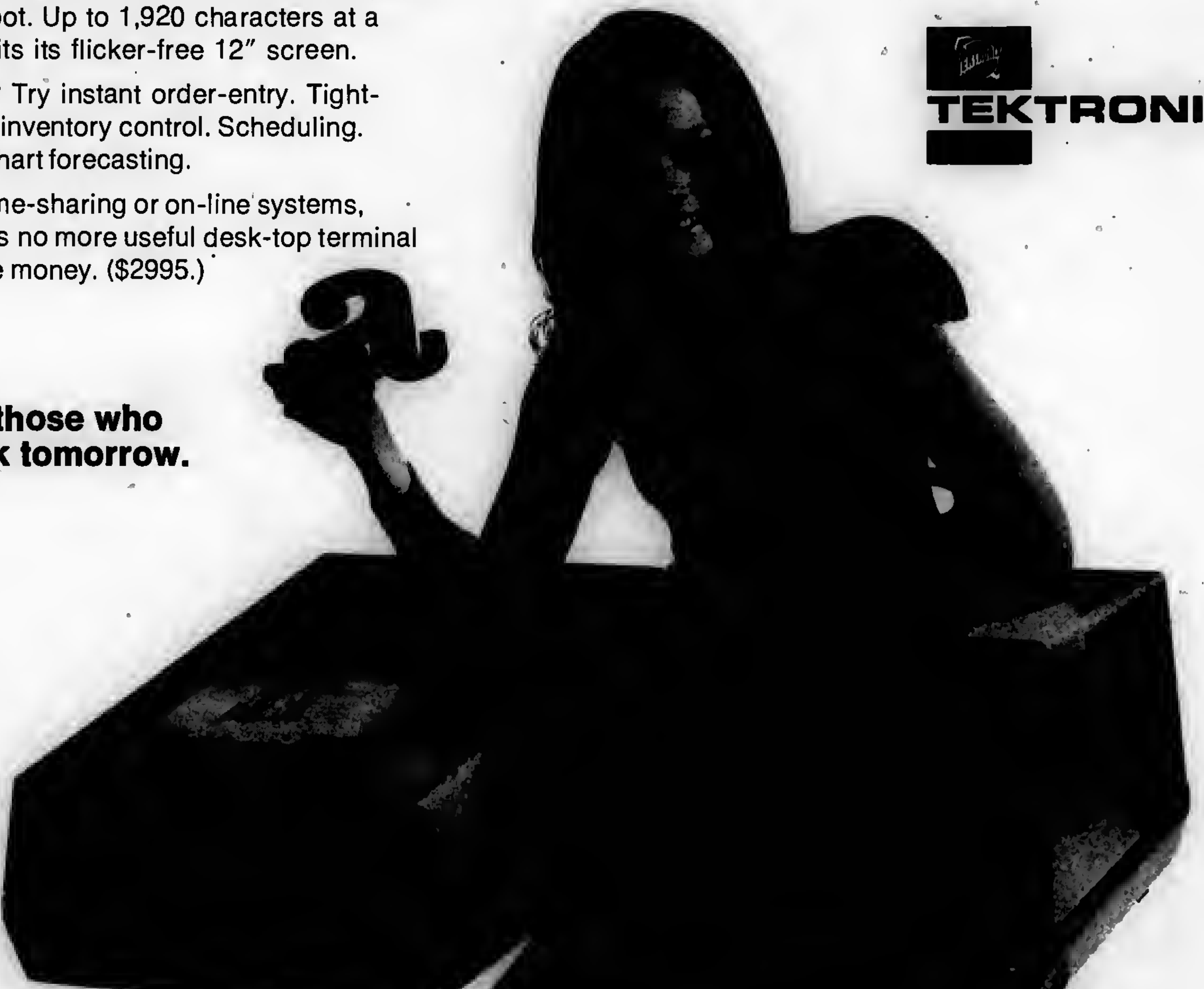

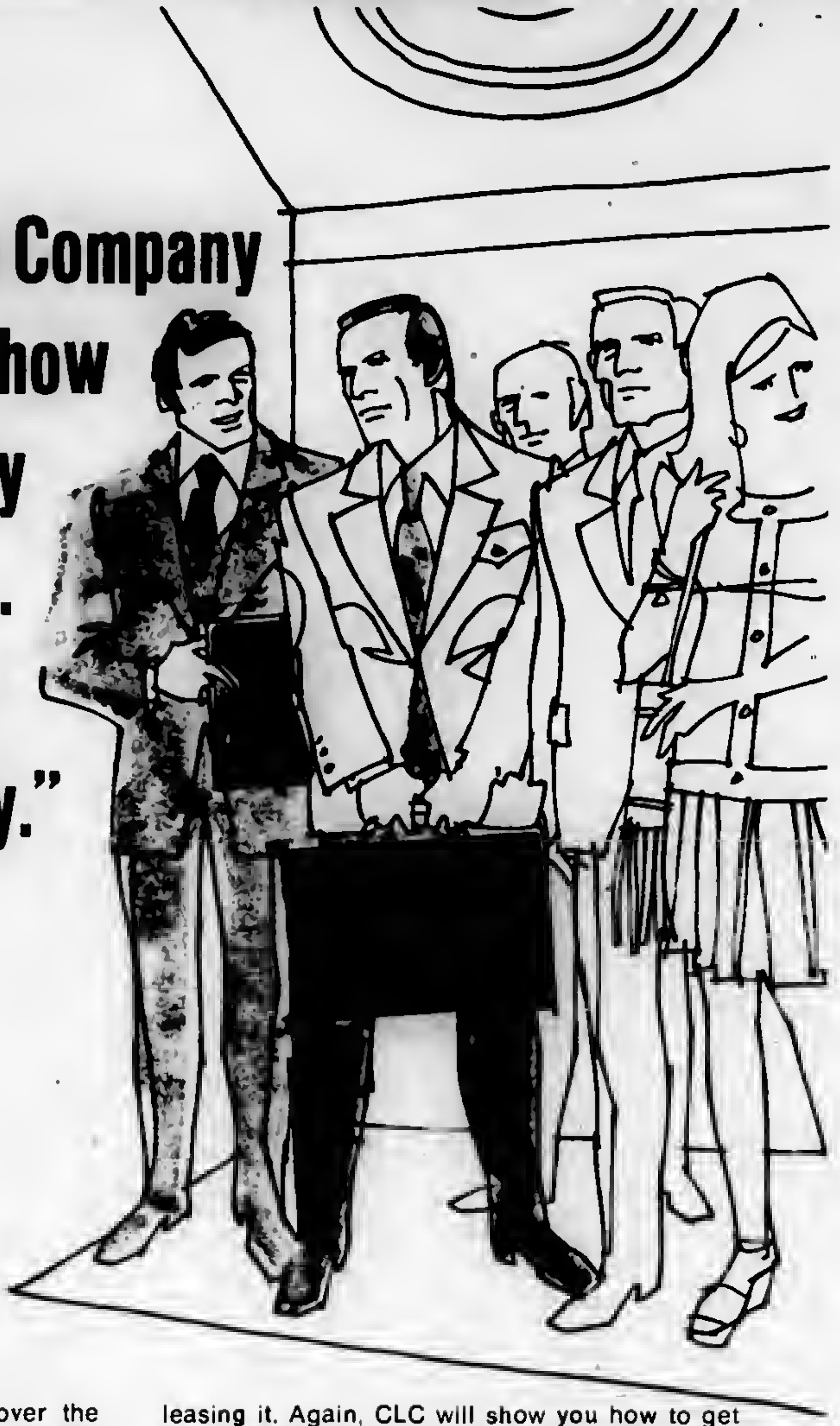

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From Space Flights To Flood Monitoring —110 Has a New Job

By Toni Wiseman
Of the CW Staff

BIRMINGHAM, Ala. – RCA 110-A has been permanently grounded and the National Aeronautics and Space Administration has reassigned it for duty at the University of Alabama, where it will monitor river floods rather than space flights.

The 110-A is a digital/analog computer, designed specifically for Nasa space applications and never marketed commercially. Only 24 were built, to be used for automatic testing of Saturn 5 vehicles. They have since been used to check Apollo and Skylab launches.

After it was no longer needed to check the Saturn 5 missile, the $3.5 million machine was declared surplus and put out to pasture. The university was more than willing to provide a fresh "grazing" area.

The transition from Nasa to the halls of academe was not an easy one for RCA 110-A. In January 1972, Dr. Thomas Gatts, director of the university computer center, and four students went to Huntsville, Ala., dismantled the computer, loaded it on a truck and brought it back to the university. Engineering students there built a specially wired and air-conditioned area to house the machine.

It took students six months to reassemble the computer, and it wasn't operational until March 1973. Graduate students are currently writing a new and simpler language for the 110-A so more students will be able to use it, according to Gatts.

In addition to solving student problems, the computer will help solve sewage disposal problems and regulate the flow of Alabama rivers through spillways and floodgates without damaging surrounding areas.

Livestock Auctions Updated

LAFAYETTE, Ind. – The price of beef may not be going down, but at least computers are keeping down the cost of running livestock auctions.

Scientists at the University of Missouri-Columbia have developed a computer system to handle sales data at auction markets.

The system, which has been used successfully for three years in Missouri, minimizes the possibility of errors in computations and preparation of records and accounts, speeds up payments following sales, and provides permanent records of all business transacted.

The UMC program developers estimate that adoption of the system can reduce clerical costs by 50% for the nation's 1,700 livestock auction markets.

On June 27th, Computerworld takes a big look at small systems.

New equipment and decreasing prices have made EDP feasible for hundreds of smaller businesses with gross revenues of $5 million or less. But EDP systems on this scale are quite different from the systems in larger companies. Small businesses have different needs and smaller budgets. And they often don't have in-house technical staffs. So meny of their problems ere different. And that's whet our small systems expert, Ed Bride, will be looking at in our June 27th Small Business Systems Supplement.

Through the eyes of current small business users, we'll be exemining some examples of successful use of computers, end some of the pitfalls you're likely to meet in attempting to instell smaller EDP systems. We'll discuss the problems involved in selecting the right equipment, summarize what computers can be expected to do, and examine the technical problems of implementing a system. We'll also weigh the edvantages of outside software, and go over the question of whether or not en in-house technical steff is necessary. We'll be getting part of this informetion directly from small business users who participated as penelists in the 1973 Computer Ceravan. So you know it will be precticelly oriented, useful end timely.

If you use small EDP systems in your company—or if you're thinking of doing so—this June 27th Supplement is important reading. And if you're marketing small business systems equipment or services, your ad should be there. Close is June 8th.

For more informetion, contact the nearest *Computerworld* Representative.

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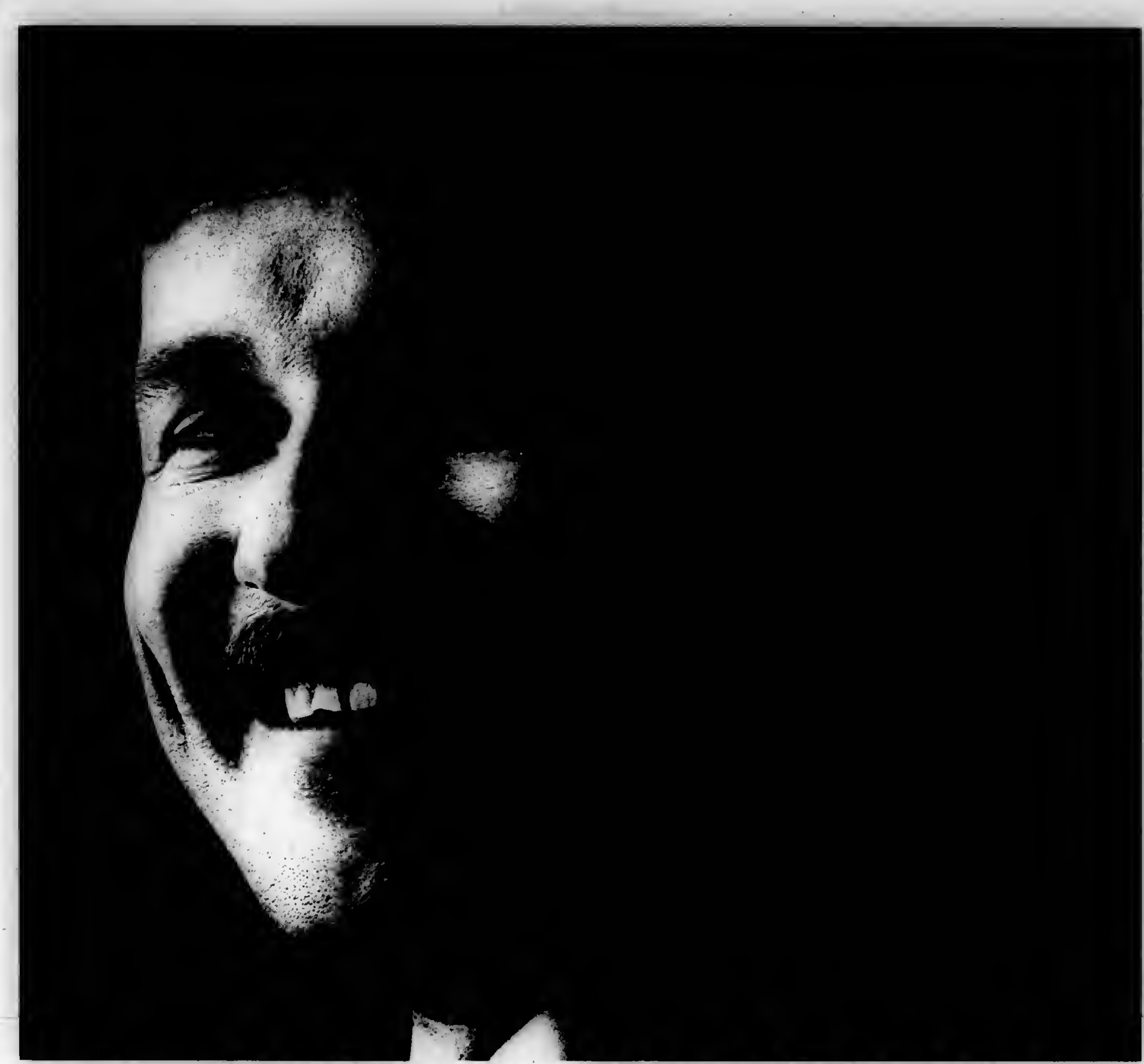

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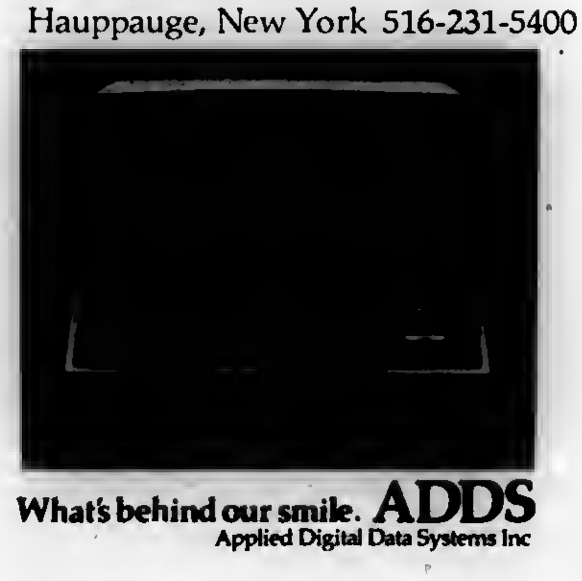

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Editorials

Changing Communications

A bill now pending in the Minnesota Legislature could effectively eliminate any cost advantages enjoyed by users of non-carrier communications equipment.

The bill would subject all suppliers (who install and maintain equipment attached to the phone network) to the regulatory control of the state Public Service Commission. Such control as applied to phone companies has required full justification of prices based on costs.

Also, the state PSC might have to set tariff rates for all non-carrier communications equipment in the same way it now sets charges for the phone companies. This could mean the same rates for both carrier and non-carrier equipment.

The original intent of regulation in the telephone field was to assure all users basic phone service at a fair rate.

But the world of communications has changed. There are now non-carrier suppliers who feel they can improve on certain services offered by the phone company.

To unnecessarily encumber these independent suppliers with the stringent demands of regulation would be grossly unfair to suppliers and users alike.

The Promise of System Q

The broad outline for System Q laid down by IBM planners points to a system that will be easier to use by both programmers, laymen and DP installation managers.

It is definitely a step in the right direction and if carried out should go a long way toward making data processing the easy-to-use commodity it should be.

But the lessons of the past indicate a great gap between the broad outlines for such systems and their reality upon release to the marketplace.

At the same time, IBM management committee minutes indicate there will be some trouble in providing all of the resources to develop System Q and to continue development of 370 programs in the 1973-74 period.

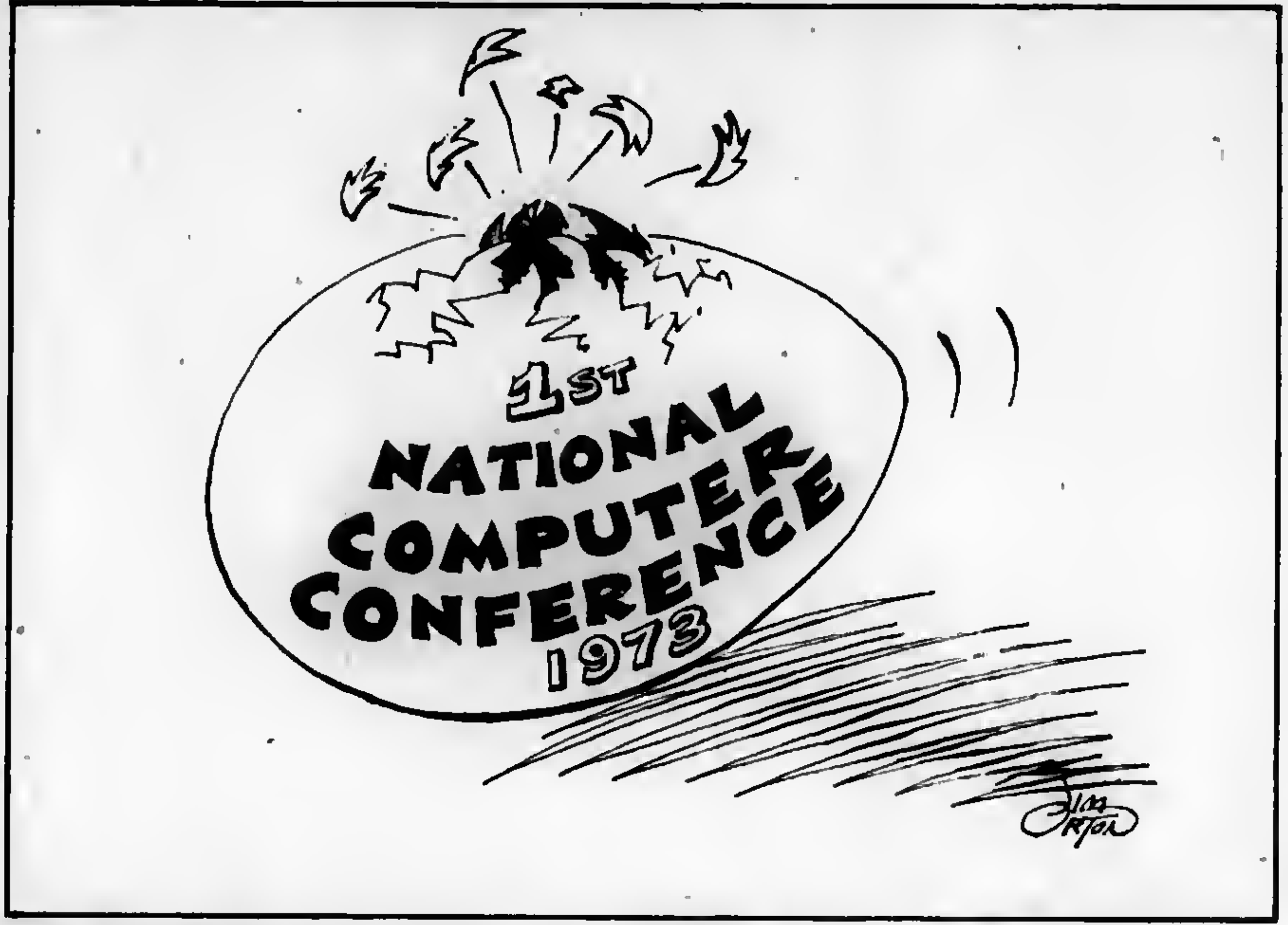
If, as the IBM management committee debated, there will be a struggle for the firm's software development resources during this time period, then there might be a tendency to drop development of some of the most difficult, but most potentially rewarding, features of System Q.

We hope IBM is still on schedule with System Q and the FS Series and that no features that would make the system easier to use have been dropped due to lack of resources for software development.

IBM likes to talk of technological leadership in the DP industry. Everyone will find out if it followed through with the System Q plans when the entire system is announced in 1975.

It's a long time to wait, but if the system lives up to its promise, it will be worth it.

Bird, Beast or ...?



Yes, It's True, DP Community Still Needs a Standard Code

By Thomas W. Kern

Special to Computerworld

The data processing community still has a need for an across-the-board standard code. Ordinarily, when we refer to a standard code we are referring to an established relationship between a number of binary bit patterns and a set of characters necessary for accomplishing the DP function.

In situations in which recorded data remains within the confines of a particular system or environment the choice of a code is almost immaterial and is subject only to influences such as those that may affect the processing efficiency of the particular application.

However, as the system matures to meet ever-increasing workloads, more DP equipment is brought into the inventory. One of the requirements that must be reckoned with when making additional procurements is that the new equipment must be able to handle the code.

Either it must be code-insensitive or it must accommodate the present system code without any degradation of performance or the incurrence of a cost penalty.

Larger Role Seen

It is at this point, the addition of code-sensitive devices to an existing system, that the original choice of code assumes a much larger role than had heretofore been attributed to it.

Viewpoint

In other DP applications where the system boundaries are not well defined and data is interchanged at various points within the system, the use of a standard code is the first step in achieving data transferability within the system.

One of the benefits of the acceptance of Ascii as a standard code has been its influence on the development of ancillary standards which, in turn, facilitate data and equipment interchange.

For example, there now exists a widely accepted standard for recording the code on punched paper tape.

A similar standard was developed for representing the 7-bit code on punched cards.

In this instance the standard was soon expanded in an anticipatory manner to accommodate an 8-bit code of which Ascii is a compatible 7-bit subset.

On a more controversial note, in the course of developing the first recorded magnetic tape standard, it was necessary to settle what became known as the "firing order" problem; i.e., the bit-to-track relationship of data bits in memory to the nine tracks of the tape. Without a standard code this relationship would have relatively little meaning.

Of Standard Importance

However, having established the code and subsequently this relationship, widespread interchange of data on magnetic tape among different systems became a common reality and not just a remote possibility.

More recently, in the development of the standard for the digital magnetic tape cassette, a device that did not exist as a DP product when Ascii was devised, it seemed only natural that the standard should specify the manner in which the standard code was to be recorded on that medium.

In still another area, fundamental problems were encountered in sending data across a pair of transmission lines. These were problems such as determining the sequence of sending the bits, the structure of characters within a bit stream and the type of error-detection scheme that was to be employed.

None of these problems can be termed code-sensitive; that is the problems wouldn't be radically different, or even become nonexistent, if another kind of code is used.

Instead, these problems would have been present regardless of the choice of code.

The point is that because of the acceptance of a standard code it became possible to focus the attention of the DP community on these problems and to develop standards to settle the relatively arbitrary technical questions which otherwise threatened to further complicate the process of data interchange.

In summary, if widespread data and equipment interchange is established as a goal, then probably the most important characteristic of the standard code has been its effect on the development of supporting standards to facilitate that interchange.

The cost of converting large files may preclude their being converted to the standard code; however, as new applications are initiated, new files can be structured with an awareness of the standards that support interchange. Within that set of standards, the standard code has become the keystone.

Kern is a member of the staff of the Industry Standards and Relations group at NCR.

Letters to the Editor

Cobol/RPG Dispute Shows Standards Gap

Re the Cobol/RPG Controversy:

I can't believe the running controversy over Cobol and RPG. Who is trying to convince whom?

There are advantages/disadvantages to each, but the letter writers attack the other side with a zeal that leads me to believe each side wants to either obliterate proponents for the opposition, or justify its own position, or both.

Efficiency, documentation, usability and other factors are being tossed back and forth with facts and opinions intermixed to such a degree that someone may well wonder, "Isn't there any way to objectively evaluate all this?"

It seems to me the heart of the problem is the DP profession's inability to produce a framework of standards, at all levels, that would perhaps provide more objectivity to controversies such as these. At least some common ground could be reached.

The ever-growing DP industry, a giant already, needs to get itself together soon, or there will be a great, fragmented area in our society, impeding progress in all areas. Where are our leaders? Or, where are the people in present leadership positions taking us?

Terry E. Berryman

Davenport College of Business
Grand Rapids, Mich.

Cheers for Compass

The article in the March 7 issue of *Computerworld* gives the impression that the NGPSS/6000 version of GPSS-V, developed by Norden for the Navy's CDC 6000 Series system, was coded on Cobol.

In actuality, the simulation package is a two-phase processor which used Cobol in the assembly phase and only for input stream syntax processing and data structuring. The GPSS execution phase required Compass for maximum speed and the output phase used Fortran.

Julian Reitman
Computer Simulation Branch
Norden Division
United Aircraft Corp.
Norwalk, Conn.

(other letters and viewpoints on Page 16)

Let's Not Reinvent Stonehenge

Third Generation of Computers Begins With Users

The Taylor Report

By

Alan Taylor, CDP

Data processing has a long 4,000 year history, certainly dating back to Stonehenge. It includes the different data processing machines produced by Babbage and son in the 1800s, the Whirlwind machine of the 1940s, as well as the families of machines that grew up in the 1960s.

Yet, all in all, there are presently only three major computer generations. These computer generations encompass all of the data processing systems so far, and I think it is useful to understand them.

The first data processing generation lasted from about 1900 B.C. to 1950 A.D. During this period a number of people had long, complex and worthwhile (on a national scale) calculations that had to be done correctly.

In each case, however, merely being able to get the right answers, *without also being able to give greater authority to these right answers than had been previously possible,* was fundamentally useless. It simply resulted in stalemates between equally qualified practitioners and consequent instability. The credibility that only an outside authority – such as a computer – could give was necessary. The four problems involved during this first generation were:

1. The Problem of Unforecast Eclipses

In early days, the appearance of a solar or lunar eclipse was disruptive to the continuation of smooth government. If the eclipse itself, or at least its probability, could be foretold by the government scientists concerned, however, this disruption could be converted from a weakness to a strength. The problem was that there were too many scientists with different solutions, and no real way to tell which was right.

The solution was an official government computer, adopted after at least an 18-year observation and design acceptance test (Woodhenge). Now the government was safe since any programming error which occurred later (two cases were found, both involving the shift register) could be solved by putting the programmer to death, perhaps by dropping one of the bits on him. (They weighed a few tons, so this would be quite effective.)

2. Inaccurate Copying of Tide Tables

In the 1800s the tide tables for various parts of the world were being mathematically produced, but inaccuracies in copying the tables could not be prevented. As a result, various ships taking British goods to remote parts of the world were commanded by mariners who often ignored the tide tables if they felt that they could gain some advantage by doing so.

Many British ships were being unnecessarily wrecked, and the national interest was being hurt. Yet the mariners could show that the tables were untrustworthy and so could escape punishment.

The Babbage machines were designed to produce multiple and correct tide tables so that the mariners could not get away with ignoring them. National support was given (around $10 million 1973 equivalent) for preliminary testing of digital solutions. (Actually, the basic design was faulty in that power consumption was not taken adequately into account, but a basically analog design solved the problem later.)

3. The Need for Long-Term Reliance on an Untestable Science

In the 1940s, the design of the atom bomb was not merely complex, but was also something beyond the capability of mathematicians to manually hand-check each other's work at a sufficiently certain level. No 18-year demonstration or partial development (as with Stonehenge and Babbage) was available.

With the use of data processing capabilities both the certainty of successful bomb development and successful bomb testing was much higher than it would otherwise have been, and made the expenditures politically possible. Data processing therefore, permitted this long, expensive development to take place as it was able to reassure political, non-scientific opinion despite the lack of an acceptable demonstration.

4. Continued National Use of Known Incorrect Data

In the 1950s the first Univac Systems were installed in the U.S. Census Bureau. They were needed because the inaccuracy of the census count, and the long delay before its publication were hurting the census bureau's national credibility.

Suspicions that some of the data was being purposely excluded were unavoidable, and a suitable scandal could have pulled the whole census system down.

Fortunately, 1950-style data processing came to the rescue, with equipment that could guarantee that errors were accidental and were not deliberately introduced by census bureau personnel. There was a real need for this kind of guarantee, as error rates of up to 5% continue even today in this area. Others besides those directly involved could check on the accuracy of the operation, and authoritative computer printouts could give credibility.

Same Basic Solution

Conceptually, there is little difference between the slow, manually-operated, one-instruction-per-year, one-machine-code-instruction system at Stonehenge (Move Each Five-Ton-Bit in the Shift Register One Place to the Right), and the Univac 12-tape system with twin processors, separate tape-to-printer and keyboard-to-tape equipment that was installed in the Census Bureau.

Each of the systems was a special system. Each system was designed and built for a special national project. The use of general-purpose hardware in 1950 was only, at that stage, a convenience which allowed easier alterations of the programs than hard-wired programming systems (such as Stonehenge) permitted. Thus the programmers were necessary when trouble arose as well as honored when it didn't!

This type of data processing, however, changed during the 1960s. The 1950 conviction that we would never need more than 18 or so machines lost out to the newly discovered utility of general-purpose computers. The increased understanding of the difficulties of programming and operating the computer combined with their potential utility made corporations around the country demand the advantages of in-house computers with their own programming staffs, and the prestige value of being "computerized" made the financial investment worthwhile.

Second Generation

The year 1959 represents the genuine beginning of the second generation of computers. The key event was probably the development of the transistor and its installation in the Univac solid state computers. This development made hardware reliability a matter of programming, rather than of engineering. Compatibility was also secured to a considerable extent by the use and development of Fortran, and the adoption of Cobol. Now the general-purpose computer is practically as immortal as Stonehenge.

The IBM 1401, therefore, was the major computer which made the mass use of data processing possible, as opposed to the pre-1960 generation, when only national problems were approachable.

Mass production gave rise to real families of computers. Only programs and data structures could be incompatible across the different members within each family, so control of development was handled by programming rather than by the hardware.

During this period, the whole question of what a computer genuinely is was examined. In 1965 IBM proclaimed its "long life" doctrine, which put the immortal essence of a computer in a nutshell. IBM failed to follow up on its implications at the time, but rather operated under the concept of users changing systems every few years.

The second generation of computers, which lasted from 1960 to 1972, was marked by mass production. Eventually this mass production brought the supply of computers up to equal the demand, and the price of second-hand computers began to drop, even though maintenance and software were available.

The end of this second generation was signaled when the available computer supply started to exceed the demand. In 1965 IBM noted that computers, unlike most other systems, do not grow old. The paycheck produced by a computer that is 20 years old is worth just as much as the paycheck produced by a computer that has just come off the production line.

But a few years later production was stopped on one major computer system after another, starting with the IBM 360/30. But stopping production – or stopping marketing – did not stop the systems from being used. In fact, by 1970 there existed over $10 billion worth of computers that could be continued in operation for 10 or 20 years.

User-Controlled Generation

The third generation of data processing is just starting now. Unlike the first generation, more than just national-level problems can be attacked by the third-generation computer. Unlike the second generation, the third generation can concentrate on the data processing task itself, as opposed to the problem of laying physical hands on a computer straight off the production lines (and therefore having to pay the appropriate research, development, production and marketing costs).

Moreover, the signs indicate that during this new third generation the data processors will again have to take real responsibility for the accuracy of *all* their data processing. This will return to them the control over output accuracy they had during Stonehenge and the Census Bureau generation, but lost during the mass production era. No longer will an answer be acceptable just because it appears on a computer printout.

The signs pointing to this need for accuracy are all around us. The issues bear names like Equity Funding, privacy and credit card handling. All these show the need for reasserting the data processing professional's control over the vast capabilities of the hardware, and the lack of a need to put more and more money into hardware instead of into improving the quality of data processing. The inability of the computer builders to provide quality applications is attested to in the contract forms which don't even guarantee that the operating systems or the compilers are harmless.

I hope the users use their new control wisely. I hope they start putting accuracy before newness, quality before brand names. Only by building quality into our systems can we hope to achieve the real advantages that data processing has to offer the world. Without quality the world will not trust us with its important problems, and the lesson of Stonehenge – that is not enough to be right, it must also be obvious that errors are avoided – will once again have to be learned by the profession. And learned painfully, as usual.

We've reinvented the wheel too often already, let's not reinvent Stonehenge!

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The Professional's Viewpoint

Pros and Cons of Decision Tables

Decision tables have been around for a number of years, and have been checked from various points of view. They are currently being considered in the Systems Committee of the Conference on Data Systems Languages (Codasyl) from a systems point of view.

Jonas Rabin of the Western Electric Co. has been asked to consider the potential of decision tables in systems design. He has drawn up a "status report" giving the pros and cons and a possible program of work for the committee.

The advantages of decision tables, according to the status report, are that they are:

- **Natural** – In transaction-oriented systems each rule corresponds to one or more transactions, thus making the logical breakdown of the program one which naturally follows human thinking.
- **Functional** – The decision tables are found to be helpful in dividing the system into functional units, increasing the modularity of the system. One or more decision tables is connected with each particular transaction type, and they assist in keeping the programs and their functions parallel.
- **Less error-prone** – The completeness of each decision table module can be assured at design time, thus making it, in general, a less error-prone system than that provided by other procedural methods. In other procedural systems it is often possible not to include treatment for one or more contingencies. Using the decision table format, this is quite unlikely so the reliability of the system is increased.
- **Better management control** – Decision tables make programs less "program dependent," and hence decrease the risk of management losing control over its information processing system. Decision tables are excellent documentation, and at the same time are machine-executable.
- **Productive** – The use of decision tables increases the productivity of software development and maintenance. A large part of maintenance in computer programs can be attributed to software errors, and changes in the enterprise itself. Decision tables improve the reliability, thus avoiding the software errors, and are also capable of being easily modified, thus making it possible to match the program to changes involved in the enterprise.

(It has been reported that the productivity due to the use of decision tables at Goodrich doubled, and that a study made in England by International Computers Ltd. showed the productivity advantage of decision tables ranged from 180% to 350% [*EDP Analyzer*, October 1972].)

- **Position-Fixed Input Formats** – Decision table input formats, acceptable by commercially available translators, are position fixed and are extremely difficult to use initially, and later in modifying the tables. This becomes a serious problem when a large number of tables are involved.
- **Inefficient Code** – The code generated by existing translators is extremely inefficient. Obviously there should be a reasonable trade-off between the productivity advantage of using decision tables, and how much inefficiency in the generated code is acceptable.
- **Program Objections** – Many programmers are accustomed to thinking sequentially, and decision tables are a nonsequential technique. It is also possible that some programmers fear any degree of program automation. However, the use of nonprocedural techniques does not reduce the need for people; rather, it shifts the emphasis on design and problem solving.

With these facts in mind, the suggested program for the task group is as follows.

- Develop a design methodology of using decision tables in systems design. For example, how to partition a problem into a system of decision table modules.
- Study human-oriented and technical problems associated with using decision tables as both a communication and programming tool.
- Develop human-oriented decision table formats for both easy inputs and modifications. This would also include editing.
- Develop standards for diagnostic messages. With present precompiler-compiler systems the user gets messages regarding logical errors in the decision tables, but error messages regarding the variables have no relation to the decision table structure. For example, it would be desirable to have a message for variable SUM within ACTION 3.
- A subgroup could be working on developing acceptable performance standards for decision table translators.

Anyone wishing to comment on the decision table task group recommendation, or on the pros and cons, may contact Jonas Rabin, Western Electric Co., Engineering Research Center, P.O. Box 900, Princeton, N.J. 08534. Comments can also be addressed to the Professional Viewpoint Page, *Computerworld*, 797 Washington St., Newton, Mass. 02160.

Letters to the Editor

Smart Programmers, 'Smart' Finances

The letter from John Culleton Jr. [CW, May 2] noted we should make intelligent use of the power of the computer via smart programmers. How smart we are to think a system with all the bells and whistles is the answer. Segmentation, subscripting and message analysis sound like a TV commercial for an expense product. DP shops are in many cases overexpensed because smart programmers insist on unnecessary smart hardware.

Intelligent use of the computer means intelligent use of a company's capital. RPG, ABC or XYZ. Smart programming or smart investing.

Jerry C. Swantek
President

Data Information Service Center
Bay City, Mich.

Let's 'Pool' Knowledge

Any *Computerworld* readers willing to share information about computer usage in setting up carpools, please let me know.

L.A. Jaroch

St. Cloud State College
St. Cloud, Minn. 56301

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

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Random Notes

Report Facilities Improved By 'Total/Culprit' Update

BOSTON – The Total/Culprit output processor from Cullinane Corp. has been extended so users have more flexibility working with Cincom System's Total data base management system. Now, for example, information is available from the entire Total record, including the root and linkage segments.

A file definition subsystem provides the ability to catalog file and field definitions into Total data sets which, Cullinane said, eliminates the need to define logical fields in report parameter cards. The initial driving file in a path through the data base can be read either serially or directly, the company added from One Boston Place, 02108.

Xerox Computer Opens Office

NEW YORK – Xerox Computer Services has opened offices at 767 Fifth Ave., here, and at 190 Moore St., in Hackensack, N.J., to serve the New York, New Jersey and Connecticut areas.

This expansion, following the mid-March opening of an office in Chicago, allows the company to provide coast-to-coast service to users with multiple locations. XCS is currently expanding its library of application programs so users need not go through a heavy software development cycle to use the system.

Security Data Tapes Extended

NEW YORK – Interactive Data Services Inc. has expanded the number of securities listed on the daily Investment Statistics Library (ISL) tapes.

The ISL tapes now include pricing data on 15,000 corporate bonds traded over the counter, bringing to approximately 25,000 the total number of securities carried on the tape. Working through a 360/40 in downtown New York, the company is able to get the magnetic tapes of the current day's trading to some users by 6:30 p.m., a spokesman claimed.

Retail Plans Simulated

FT. LAUDERDALE, Fla. – Property developers and management of retail chain stores can determine the potential sales volumes for various locations, before they start building, through the Retail Sales Site Evaluation System service now offered by Creative Realty Concepts Inc.

Factors used by the basic simulation programs are customized to the type of retail outlet the user is considering, and the tables reflecting the buying patterns of specific areas are maintained by Creative Realty. There are fixed charges for the use of the system and the user is also responsible for the computer charges accrued when his run is processed, a spokesman said, from 1385 E. Oakland Park Blvd., 33308.

Task Group Survey Finds

Government Users Avoid Switch to Ascii

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – The American Standard Code for Information Interchange (Ascii) is being used by government agencies for those files and other data streams that are being interchanged, but there is continuing operations-level resistance to converting non-interchanging files to the standard code.

A preliminary report of Federal Information Processing Standards (Fips) Task Group 12 (TG 12) also shows that interchange of information between agencies is still minimal and as a correlary, the use of Ascii is also at a low level. Most agencies answering a TG 12 questionnaire indicated that the bulk of their work – programs and file data formats – is carried in whatever native code their computer configuration utilized, or in an earlier code being handled under emulation.

The failure to go to a common code could cause real problems in case of natural – or man-made – disasters since programs and files are not now transferable to other sites if the need should arise. This lack of interest in self-protection by government agencies is, unfortunately, typical of major industrial and business DP users as well, a TG 12 source noted, adding that he hoped they might now at least recognize the problem and the potential solution offered by Ascii usage.

Review Board

TG 12 was formed last fall to review the effectiveness of requiring governmental agencies to use Ascii in interchange situations, a directive that has been in effect since 1969. Under Fips Publication 7 (PUB 7), government installations were called on to include Ascii interchange capability on all new systems proposals. Most of the agencies that have sought new equipment since then have complied with that requirement.

One interesting finding of the TG 12 questionnaire, according to a task group member, has been the amount of government DP work still being done on second generation equipment developed before Ascii was established, or on "third generation" gear working in emulation mode.

The push for Ascii in 1969 was intended to get as many government installations as possible to work in a common code, but the effort apparently was too gentle. Promulgators of Fips PUB 7 saw it as a means of protecting agencies against disasters by allowing complete transfer of programs to alternate sites.

Drive Stalled

But, the TG 12 source noted, the directive keyed only on the idea of common code for interchange of information, and since most agencies don't swap information to a great extent, the Ascii drive has been almost stalled. The provisions of Fips PUB 7 that allow waivers of the Ascii requirements are currently so vague that any diligent DP director can probably apply them to his situation if he feels so inclined, the task group noted.

Impetus to shift to Ascii for efficiency, protection against disaster or for any other reason has to come down from the management of a DP installation, not up from the operations staff. The shift probably should be a time-phased effort and will involve considerable time, effort and money, but it would seem to be worth the cost, the preliminary report suggests.

User's Source Program Studied; 'Metadata' Creates Dictionary

EL SEGUNDO, Calif. – DOS/360 users moving toward a full data base management system can gain control of their files and possibly improve the structure of their applications with the Logic Metadata System now available from Logica, Inc. In its current form, the Metadata system is a data directory and dictionary which analyzes where the user's data is, what programs would be affected by a change in a data element, and similar planning functions.

Even though the full-blown data base management system isn't ready yet, data being monitored by the Metadata system can be accessed in the user's choice of Cobol, Fortran, PL/I or Assembly language through a separately priced host language interface module.

Capabilities

Descriptive information is entered on punched cards prepared from unique specification sheets, or as data definitions from Cobol source programs, on cards or from the user's Cobol library. Any of these entries can be modified later to keep them current, the company said.

Running all of the existing programs against the system provides the user with a listing of every place in every application program in which a data element is stored or edited. In addition, the narrative capability can be used to specify the sources and end users of each element.

The combination can in many instances identify redundancies in data already stored and used, and in some cases eliminate the need to write new programs to generate data, since the user may find the data he wants already exists, a Logica source said.

The system is modular and is designed to run in a 64K DOS partition. The minimum configuration consists of the Metadata Base and the Data Description Module, a combination which can be licensed for a one-time charge of $7,500.

The more complete system includes modules for describing any data base or file structure, source inputs and reports, and processing functions, in addition to the minimum Metadata elements. This larger system is available for a total of $18,000, including maintenance, training and several utility programs. The host language interface is priced at $5,000.

The firm is located at Suite 136, 931 S. Douglas St., 90245.

DEC Enhances Basic for PDP-11

MAYNARD, Mass. – PDP-11 users can have up to 15 times faster throughput working with Basic programs controlled by either of two new language processors now available from DEC. But there is a price – literally – for this improvement since the new Basics are licensed products.

Basic PTS (Paper Tape System) is a core-only single-user Basic designed for use by generalists in interactive environments. RT Basic PTS is a real-time extension of the simple system, with 20 real-time commands, and is intended to supplement DEC's Laboratory Peripheral System (LPS-11) that links PDP-11s to lab instruments.

Basic uses simple English-like statements and familiar mathematical notations to perform various operations. Basic PTS features an optional string capability that enables core-conscious users to eliminate that support and reclaim program space when string manipulation is not needed.

The new Basic also provides a CALL subroutine that allows easier interfacing with assembly language functions, and interrupt-driven support for a line printer and high-speed paper tape devices. Several PDP-11 floating point options are accessible under the Basic PTS logic, a DEC spokesman added.

RT Basic PTS and LPS enable the user to monitor various instruments, specifying sampling rates and duration of the experiments. The software has modularity similar to that of the hardware so core used by the system is kept to a minimum, and the application program can utilize more space with an optimum of efficiency, according to the company.

Basic PTS and RT Basic PTS are available from DEC through license for one-time charges of $500 and $700, respectively.

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NEW YORK – An interactive software system developed by Blood Bank Management Corp. (BBMC) enables hospitals to control blood bank inventories and "sharply reduce" the number of units of blood lost because they are unused while still fresh.

The Fortran-based application can be installed on a using hospital's in-house CPU or accessed through tbe Boston-based time-sharing facilities of Computility Inc.

It suggests order quantitites for all supplies used by the blood bank and provides a daily patient billing report for the accounting department. In addition, complete individual patient records are maintained for retrieval whenever tbe particular patient again utilizes the blood bank.

The prior record and answers to newly-posed questions are combined by the system to determine the oldest unit then available for cross-matching.

The Computility time-shared implementation has the potential of supporting inventory sharing between hospitals or a master listing of all donors within a community so that emergency situations can be handled effectively, BBMC added.

The software requires 60K characters of core on Computility's Decsystem-10 but probably can be adapted to different configurations as long as the target CPU supports an on-line Fortran compiler.

BBMC is at Suite 303, 370 Lexington Ave., 10017.

'PBP' Uses Standard Coding Schemes In Handling College Administration

PISCATAWAY, N.J. – Colleges and universities with any of several CPUs can avoid the effort of developing their own administrative applications and, at the same time, work with code schemes compatible with common classification structures, if tbey install the Payroll, Budgeting, Personnel (PBP) system from Integral Systems Inc. (ISI).

PBP is designed to solve many problems that are unique to a college or university environment, including the tighter fiscal controls now imposed by various governmental and funding agencies, and the often complex payroll distribution and cost accounting required by the institute's various faculties and supporting staffs.

PBP is made up of three independent but integrable modules, each having file maintenance and reporting phases.

All modules are essentially "table-driven," working from the Control Tables File which is accessible to the user so that he can shape the processing to the needs of his institution.

The data encoding used by the system conforms, where possible, to Western Interstate Commission on Higher Education (Wiche) and Higher Education General Information Survey (Hegis) taxonomy, allowing tbe user to maintain information-compatibility with other institutions of higher education.

Indicative of just how unique are the approaches used by some of these institutes is the cross-checking done by PBP to determine which departments are over-committed on salary.

The system can, if desired by the administration, prevent the issuance of paychecks if funds just aren't available. Similar lockouts can be imposed against individual employees who have overused their sick leave, vacation or personal leave allowances, ISI said.

PBP runs in 54K under DOS/360 or in a 90K region under OS, but has also been adapted to work under Burroughs MCP and Univac Exec-8 environments. ANS Cobol source code is provided with all modules.

Prices range from $10,000 to $60,000, depending on the modules selected and the specific installation support requirements of the user. LSI is at 82 Lenox Court, 08854.

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Mohawk 2400 Gains Concurrent Tasking, More Hasp Support

UTICA, N.Y. – New support, primarily software, has been introduced by Mohawk Data Sciences to make its System 2400 processors more versatile. The enhancement hasn't actually added to the types of tasks that can be handled by the units, but it has allowed several tasks to be conducted concurrently.

Until now, the 2400 has been either a remote batch terminal, a stand-alone "peripheral processor," or a key-to-disk data entry system, depending on the configuration. The tasks could be user-selected and changed over time, but at any given time all visual display and keystations in a 2400 system were "dedicated" to the same operating mode.

Now, concurrency support software allows the combination of key-to-disk entry operations on the 2409-1 processor with one of three remote job entry communications packages or with the Piston tape-to-print utility package. RJE support includes the choice of 360/20 Hasp, IBM 2780 and IBM 2968 tape-to-tape communications.

The 360/20 Hasp emulator has been expanded to allow communications from one MDS system to another, the spokesman added.

Other communications packages in Mohawk's collection of bundled software include Gert, an emulator for use with large Honeywell/GE CPUs, and Mohawk Terminal Access Method (Motam), which allows the 2400 to handle up to 8 asynchronous communications lines when used with the new 2429-1 concentrator.

Other software now includes an industry-compatible RPG II language processor, enhanced to provide faster throughput; a tape monitor system for job stream control on user written programs and general purpose utilities; and a faster sort/merge package with READ BACKWARD tape capabilities.

Data Base System Guide Now Available From Q.E.D.

WELLESLEY HILLS, Mass. – The 340-page guide, *Data Base Management Systems: A Critical and Comparative Analysis*, describes the similarities and differences of various data base systems, including IBM's IMS, Cincom's Total, MRI's System 2000 and Software AG's Adabas [CW, Feb. 28].

Developed jointly by Performance Development Corp. and Q.E.D. Information Sciences Inc., the book is available from Q.E.D. for $385, and includes updates through the end of 1973. Q.E.D. is at 170 Worcester St., 02181.

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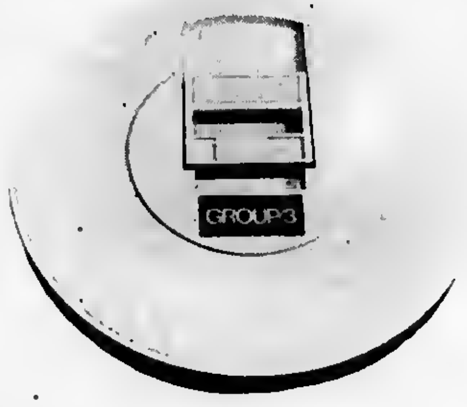

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COMMUNICATIONS

Data Briefs

$1,500 CRT Display System Available From Lear Siegler

ANAHEIM, Calif. – Lear Siegler is offering a $1,500 CRT display system.

The ADM-1 terminal has a display format of 960 characters (12 lines of 80 characters), using the 64 alphanumeric Usascii character set in a 5 x 7 dot matrix. An optional 1,920-character screen (24 lines of 80 characters) is also available.

The terminal is designed for EIA RS232 point-to-point interfaces at rates of 110 to 9,600 Baud.

First production units of the ADM-1 will be delivered in late September from 714 N. Brookhurst St., 92803.

Syntech Modem Bell-Compatible

ROCKVILLE, Md. – Syntech has a Bell 202-compatible modem with EIA interface displays.

The TT-202 provides asynchronous (up to 1,800 bit/sec) or synchronous (at 1,200 and 1,800 bit/sec) speeds for 2-wire half-duplex or 4-wire half- or full-duplex operation.

The TT-202 is suitable for either dial-up or private-line use, the firm said.

The TT-202 has LED displays that show the status of the terminal/modem EIA interface. Data terminal ready, data set ready/ring indicator, clear to send, transmit data, receive data and carrier detector are all indicated.

The modem costs $425. Delivery is from stock from 11810 Parklawn Drive, 20852.

Modem Card for Sale

TARZANA, Calif. – Novation, Inc. has a modem card for sale in the $50 range.

The 103F-compatible card is intended for use in multipoint polled data nets. It has answer or originate mode frequencies, carrier detection and request to send.

The unit operates on 4-wire private lines. Novation claims it requires a minimum of filtering.

Delivery is 30 days from 18664 Oxford St., 91356.

Modem Tester Spots Failures

FORT WASHINGTON, Pa. – Tele-Dynamics, Division of Ambac Industries, is offering the 7914A Data Set Tester for nonsynchronous and synchronous data sets. It interfaces directly via EIA connector (male and female supplied.)

The unit can implement a number of tests to isolate equipment failures or evaluate system performance. The tester can be operated in synchronous or nonsynchronous systems and in the simplex, half-duplex or full-duplex modes. Data rates may be 150, 300, 1,200 or 1,800 bit/sec in nonsynchronous applications and up to 9,600 bit/sec for synchronous applications.

Prices are $495 from 525 Virginia Dr., 19034.

35% Savings Seen

RCA User Group to Share AT&T Lines

By Ronald A. Frank
Of the CW Staff

NEW YORK – A joint user group that could provide data channels at savings up to 35% less than comparable AT&T circuits has been formed by RCA Corp.

To be administered by RCA Global Communications, the joint user service will use time-division multiplexers to subdivide 3002-type voice-grade data channels leased by RCA from AT&T.

Initially, the nationwide service will be available in New York, Chicago, Detroit, San Francisco and Los Angeles. But users will be able to link into these user group terminal cities by means of local loops or longer distance Bell facilities.

Joint-Use Provisions

The joint users group will operate under the sharing provisions of AT&T tariff 260 which covers private-line service. Under these joint-use provisions, one user (in this case RCA) acts as the AT&T customer and has overall control of the group's operations. RCA will also operate and maintain the multiplexers that will allow users to share the Bell facilities.

Although the exact circuit capacities of the user group will depend on customer requirements, up to 75 low-speed lines can be derived with multiplexers from one 4kHz voice-grade channel, according to RCA. The initial system already includes seven users who have subscribed for 25 of the available lines.

RCA Global Communications will sign up users for one-year contracts with 60-day cancellation privileges.

Although specific savings will depend on the size of the joint user group and the amount of Bell facilities in service, some comparisons are possible.

Based on a 30-circuit network, a 1,000-mile link would cost $7,500/mo for a joint user customer compared with $11,000/mo for a user who went direct to Bell. The costs are based on a 75 bit/sec circuit, RCA said.

The More the Cheaper

An interesting side benefit to users will be the prospect that rates for individual lines will drop as more customers are added. The rate structure for the user group will be based on first dividing the cost of the basic channel among those using the facility.

In addition, RCA will add an access charge and a mileage charge for its services. But the net result will mean savings of at least 25% or more for most customers.

On a New York-to-San Francisco link, a Bell user with 75 bit/sec service would pay $1,361/mo while a joint user group customer would pay $940/mo for the same capability. The RCA charges would include $640 mileage charges and $90 for access charges ($45 at each end). The joint-use mileage charges will range from 20 cent to 40 cent/mi/mo, depending on total length, an RCA spokesman said.

Although RCA as the joint user administrator will collect all bills, users will receive separate statements from AT&T notifying them of their allocated costs of the shared facilities.

And RCA will also act as interface with the phone company for the user. This means that RCA Global will assume end-to-end maintenance responsibilities for the user, RCA said.

The initial five-city network is expected to begin operations "within the next several weeks." The system will include Codex modems and Infotron multiplexers installed at RCA sites in the five cities. Eventually the system could grow to 35 cities, depending on user acceptance, an RCA spokesman estimated.

Initial customers for the user group include RCA Corp., Mitsui Bank Ltd., The Tokai Bank Ltd., NYK Line Inc. and Sanwa Bank, all of New York. Other users include Electronic Memories & Magnetics Corp., Hawthorne, Calif., and Retla Steamship Co., Long Beach, Calif.

Information concerning the joint user group is available from Kenneth E. Ryan, RCA Global, 60 Broad St., 10004.

Bell Plans Modems and Expanded DDS

BOSTON – A new family of Bell data sets, increased capabilities for the Dataphone Digital Service (DDS) and an alternative for Telpak service were among the AT&T plans revealed at the recent International Communications Association (ICA) conference here.

The new data sets will utilize LSI technology and will cover "a more limited number of products" that will correspond to the speeds of the DDS network, according to Carl Stuehrk, operations director of service plans for AT&T.

The modems listed by Stuehrk included a 2,400 bit/sec "remake" of the 201B, to be designated the 201C and scheduled for the third quarter of 1973.

Also mentioned were a higher-speed 9,600 bit/sec data set, reportedly to be designated the 209, and a modified 202-type modem. And current AT&T specifications show a dial-up version of the 4,800 bit/sec 208 data set to be designated the 208B and scheduled for delivery in the third quarter of 1973.

When AT&T introduces its 9,600 bit/sec data set, it will also support the higher data speed as a service offering, Stuehrk said. Users who now transmit at 9,600 bit/sec on the dial-up network with independent modems often encounter service support problems from their local phone companies. But a Dataphone 9600 offering from AT&T could help such users.

The DDS enhancements for the service scheduled to begin early in 1974 are subject to regulatory approval. They include "intrastate service on a selective basis," Stuehrk said. Work is also "well under way toward supporting an interstate filing for DDS" and a tariff will be filed "in time to meet the proposed service."

With possible FCC approval of the Bell DDS application by June 1, 1973, installation of equipment between New York and Boston will "commence immediately" to meet the projected start-up date of January, Stuehrk said. Initial service will be for private-line point-to-point users, but multipoint capability will be added in late 1974 and "a switched digital version is under study."

The proposed alternative for Telpak bulk rate tariffs was mentioned by F.F. Stoddard, AT&T's marketing director for private-line services. The offering would be called "Hi Pak" and would apparently be based on the high-density rate centers included in Bell's recent high-density, low-density revision for its private-line tariffs.

The Hi Pak would "use the basic rate structure" from the high/low plan and would "confine Telpak-like cross-sections primarily to the high-density network," Stoddard said.

In a related remark during an AT&T presentation at ICA, a Bell official said the company was looking at Telpak "to de-average the rates," possibly "by the end of this summer."

The announced 370 high-density rate centers apparently will be expanded, Stuehrk said, estimating that about five to six per year would be added.

Intertel Has Modems For Bell 103F Users

BURLINGTON, Mass. – A pair of integral modems which provide full Bell 103F-compatible operation at speeds up to 300 bit/sec over two-wire private lines has been introduced by Intertel, Inc.

The Model 1038 is an Originate mode unit, while the Model 1039 operates in the Answer mode. Standard features in both models include full duplex operations on unconditioned Type 3002 two-wire private lines. Either model can also be operated on the DDD network when connected to a Bell CDT Data Access Arrangement (DAA). Deliveries are now being made from 6 Vine Brook Park, 01803.

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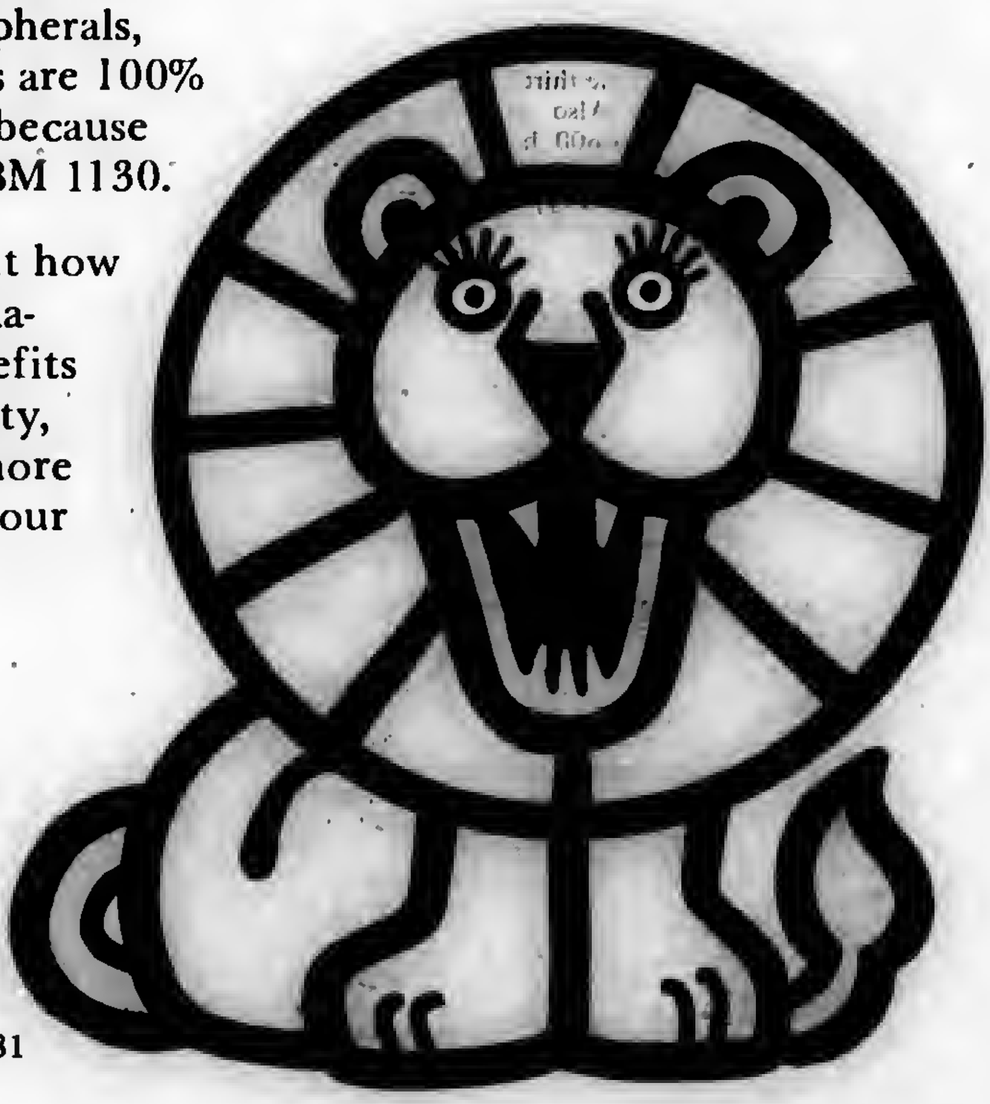

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Teller System Based on LSI Processor

DETROIT, Mich. – Burroughs has introduced a processor-oriented terminal system designed for banking and financial users.

The DC 140 is an LSI processor which provides operating and control logic for a variety of teller and administrative terminals. The processor is part of the TCS 1000 terminal computer system which can operate at remote sites connected on-line to a central mainframe.

The TU 700 teller terminal is part of the TCS 1000 system and can be used for teller window passbook and similar banking applications. The TU 700 has automatic passbook reading and includes both numeric and alphanumeric keyboards. The earlier TU 500 for cash and audit control will also operate with the TCS 1000 system.

The DC 140 is a Cobol-oriented CPU that is a modification of the TC 3500 Burroughs system. It has a maximum storage capacity of 64K characters and can be configured in modular memory increments from 4K to 44K characters depending on terminal system configuration. The processor has two data communications channels that can transmit simultaneously from remote terminals and the main CPU.

Both the TU 500 and the TU 700 can read magnetic stripe coded cards for electronic funds transfer systems. The DC 140 can also be used to control TD 700 and TD 800 inquiry display terminals, RT 2000 cash dispensers and RT 4000 remote teller systems.

Peripherals available for the TCS 1000 system include 90- and 180 line/min printers, 80- and 96-column card equipment, magnetic tape and punched paper tape units.

A typical TCS 1000 system including five TC 700s and 10 TC 500s with DC 140 will cost about $6,000/terminal using numeric-only terminals, a spokesman said. A system of three alphanumeric TC 700s with a DC 140 will cost about $10,000/terminal. First deliveries are scheduled for the fourth quarter of 1973.

'Savings to $8,000/Yr'

Display System IBM-Compatible

By Patrick G. Ward
Of the CW Staff

BETHEL, Conn. – Computer Optics, Inc. has introduced an information display system that is plug-to-plug compatible and software interchangeable with IBM's 3270 display system.

The firm said the CO:77 provides the user with cost reductions and performance advantages over the IBM 3270.

User savings are in direct proportion to the number of displays in the user's total system, according to Computer Optics. The firm stated "user savings can range from $2,000/yr on an existing 8-station system, to over $8,000/yr on a typical 16-station configuration."

The CO:77 can be ordered in complete terminal systems or as modules for incorporation into existing systems.

The system includes a display station with a desk-top video display module and movable keyboard, plus a control unit. The CO:77 display station is offered in 480-, 960- and 1,920 char./screen sizes, the smallest unit having 40 char./line and the larger two, 80 char./line. The "dual case option" offers both upper and lower case characters on the largest screen.

Computer Optics is also offering a separately priced character printer and line printer with the CO:77. The character printer provides upper and lower case at 30 char./sec on a 132-char. line.

The page printer transfers an entire screen image to an 8-1/2 in. by 11 in. sheet of paper.

No prices were available from the firm.

The CO:77 system will be available for delivery in the fourth quarter of this year. Computer Optics is at Berkshire Industrial Park, 06801.

If your company has an IBM 370 computer system on order or is considering ordering one in the near future, explore the leasing terms available from DPF.

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So, you see, the short-term operating lease did not die with the advent of the 370. It is alive and well at DPF. Why not get the full details by contacting Mike Swords, our National 370 Sales Manager at Hartsdale, or one of our five Regional Managers: Bill Drew, Chicago, (312) 297-4620; Mac McDaniel, Houston, (713) 783-5641; Harry Carr, Los Angeles, (213) 641-5370; Tony Pintauro, New York, (212) 688-7601; Bill McDermott, Washington, (202) 833-2065.

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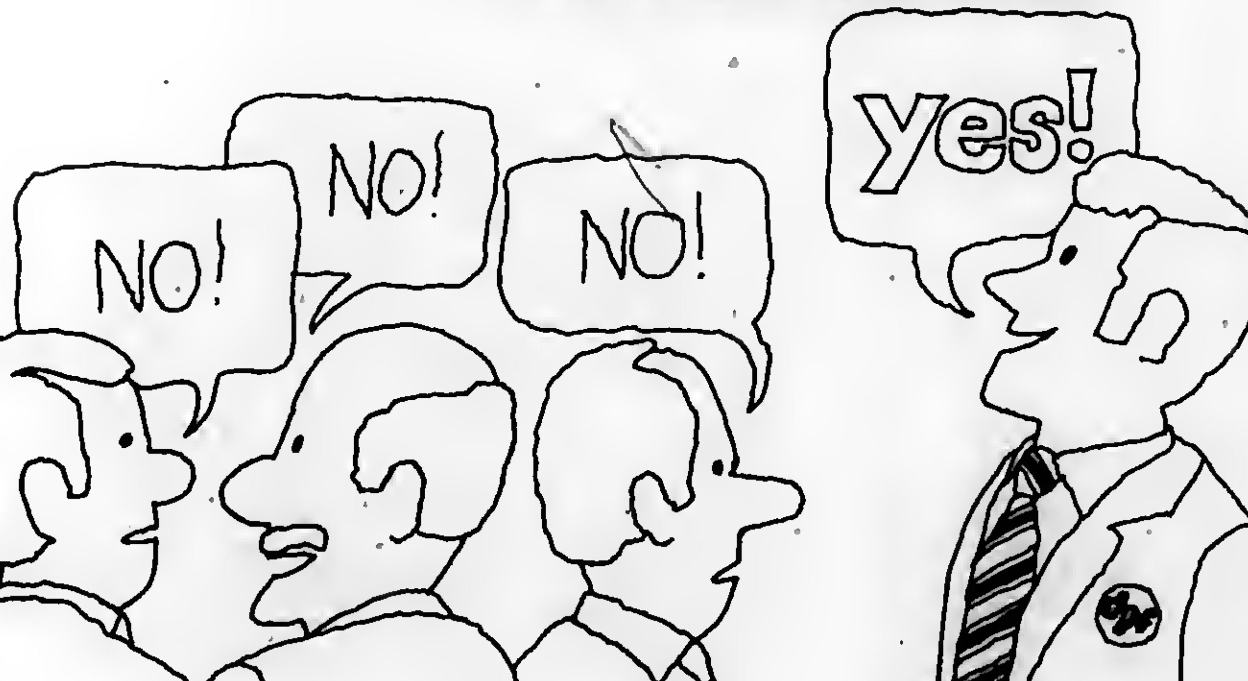

Data Briefs

GTE Modifies Data Set

SAN CARLOS, Calif. – GTE Lenkurt has announced modifications to its type 26D data set.

The firm said changes to the 4,800 bit/sec modem include advanced recovery and synchronization circuitry for phase control. The development of a switchable compromise equalizer and automatic carrier phase adjustment circuitry has simplified both preequalization and post-equalization of data networks, according to the firm.

The 26D costs $2,700 from 1105 County Road, 94070.

Terminals Convert to Telex

HAUPPAUGE, N.Y. – Multiplex Communications Inc., is offering an adapter to convert terminals to the Telex network.

The firm said its CU 300 interface package will enable the use of any five-level teletypewriter or other terminal on the Telex network.

The adapter contains an operator control panel with a rotary dial, sonalert and operating switch indicators, plus a line interface.

Price of the CU 300 is $133 in OEM quantities. Delivery is 90 days from 123 Marcus Blvd., 11787.

Converter Translates Ascii Baudot

ITASCA, Ill. – Nationwide Electronic Systems has a code converter that translates 8-level Ascii tapes to 5-level Baudot output.

Along with the new CC 1038MR code converter, Nationwide offers the CC 1035MR, which converts 5-level tapes to serial 8-level Ascii.

The code converters include mechanical tape reader, all translating circuitry and an output circuit for constant current.

The converters can drive tape perforators, teletypewriters or communication systems.

Price for either model is $1,845 with a four to six week delivery from 7N662 Route 53, 60143.

Device Switches, Monitors Data Set

PROVIDENCE, R.I. – International Data Sciences, Inc. is offering its Model 8501 data patching and monitoring module that allows the user to switch, patch and monitor all 25 leads of the EIA data interface.

The 8501 displays transmit data, receive data and data carrier detect signals through LED indicators.

When the unit's front-panel switch is in the normal position, the interface appears on a front-panel EIA connector for monitoring.

In patch position, the normal connections are broken and the leads from the rear-mounted connectors are transferred to the front panel for testing, or for channel-to-channel patching.

The Model 8501 costs $145 with immediate delivery from 100 Nashua Street, 02904.

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■ APRIL 1972: Performance Enhancements and Six Partition Support

PERFORMANCE

Users throughout the world are experiencing overall throughput improvements of 25% from the Basic EDOS package alone. Features such as Blocked Fetch, Resident Transients, CPU Load Balancing, and the Fast Linkage Editor are included in Basic EDOS.

OPERATIONAL EASE

Features such as Automatic Volume Sensing, Program Relocation, Dump/Restore, and the flexible Procedure Library simplify the operational environment.

COMPATIBILITY

EDOS is 100% compatible with DOS. All IBM distributed programs and all user written programs operate without modification. No changes to JCL, data files, programs are required.

SIX PARTITIONS

Provides twice the partition availability. It is like having another C.P.U. Run whatever you want in any partition.

■ JANUARY 1973: Extended Spooling

PERFORMANCE

The fundamental design criteria for Extended Spooling was superior performance. To achieve this goal, this facility was integrated into the EDOS nucleus, not added-on as additional overhead in the form of a sub-system. The management of both main memory and DASD space is automatically performed to insure maximum performance. EDOS Extended Spooling gives a new dimension to the term performance. Performance of up to 50% improved throughput over any other spooling system available.

MINIMUM MAIN MEMORY

The integrated design of Extended Spooling avoids duplication which minimizes main memory requirements.

- 2K Resident Main Memory
- 2K per Device— Dynamically Loaded When in Use
- As many pseudo devices as required without charge

DYNAMIC DASD MANAGEMENT

Extended spooling requires ONE-HALF the disk space required by other Spooling systems. Extended Spooling DASD Management features include:

- Complete Record Compression
- Shared Buffer Area
- Dynamic Space Allocation
- Early Start Facility
- Generic Queues

OPERATOR FEATURES

Extended Spooling functions automatically without operator intervention. A host of operator control and flexibility features include:

- Automatic Device Assignment
- Cascading Abbreviations
- Variable Number of Tasks
- Interrupt Driven Utility
- Automatic Warm Start
- Full I/O Accounting
- Dynamic Output Buffering

■ JUNE 1973: 360/370 Compatibility

The 360/370 compatibility facility provides the complete 370 instruction set for the 360. Run any 370 program on the 360. The data processing industry's 370 development effort is now available to the 360 user! New compilers, sorts, application programs that are written only for the 370 can now be run on your 360.

EDOS is... Support... Inexpensive

EDOS is a continuing series of system releases offering coordinated extensions to DOS providing improved performance and operational characteristics. EDOS was developed under the direction of Jerry Enfield, the co-author of the Compatibility Operating System (COS), which has been used by over 4,000 360 users.

SUPPORT

EDOS is continuing systems software support for the 360 user: EDOS users continue to receive without charge complete maintenance. Continuing support not only in terms of maintenance, but a continuous development plan of powerful extensions, such as have occurred during the past year.

INEXPENSIVE

EDOS is inexpensive. With all of the features and performance that EDOS provides, its compatibility and ease of installation, you will want to evaluate it in your own installation. We frankly believe you will agree that EDOS is the most exciting systems software available. A 60 day free evaluation period is provided. In lieu of the 60 day free evaluation period The Computer Company will install EDOS on your system without charge. The Basic System Release 5 of EDOS has a lease price of $225.00 per month. Six Partition Support has a monthly lease of $75.00; Extended Spooling has a monthly lease price of $200.00.

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SYSTEMS&PERIPHERALS

Bits & Pieces

HP Calculator Accepts Marked/Punch Cards

PALO ALTO, Calif. – Hewlett-Packard has a card reader that enables users of the HP 9800 programmable calculator to use marked and/or punched cards as a data entry medium.

The Model 9869A Calculator Card Reader reads 128-character Hollerith code and converts it to 7-bit Ascii for input to the programmable calculator.

Marks, punched holes or even preprinted marks can be randomly intermixed. Cards in either 40- or 80-column format can be read. Cards without clock marks can be read using an encoder option.

Cost of the card reader is $2,775. Options available include: 500-card hopper, $25; reject/select hopper, $200; encoder for cards without clock tracks, $200; and a bell, $50.

Deliveries are scheduled to begin in June from 1501 Page Mill Road, 94304.

Floppy Disk Attaches to Minis

BEDFORD, Mass. – Innovex Corp. has an interface which connects the firm's "diskette" (floppy disk) moving-head memory subsystem to PDP-8 and PDP-11 minicomputers.

Mounted in the diskette formatter cabinet, a single interface card will handle up to eight floppy disk drives.

The interface contains all the control registers, disk address register, memory register, formatter control sequencing logic and interrupt control needed for disk control, a spokesman said.

The interface bought separately costs $200. A complete floppy disk subsystem ready to plug into a PDP-8 or PDP-11 is priced at $2,740 from Four Alfred Circle, 01730.

Add-On Unveiled for DDP-516

SUNNYVALE, Calif. – Advanced Memory Systems (AMS) has announced a series of plug-compatible solid-state main memories for Honeywell's DDP-516 line of computers.

Access time for the AMS memory is 425 nsec and cycle time is 980 nsec.

The basic 4K bytes can be expanded linearly to 16K bytes with the HIS DDP-516 system enclosure, through an "add-on" memory storage board that requires no additional power supply modification, the firm's spokesman stated.

Expansion beyond 16K bytes – up to 64K bytes – can be configured by AMS on special order, still within the basic system cabinet, he added.

Price is dependent on memory capacity, but is said to be less than the core memory replaced.

AMS headquarters is located at 1276 Hammerwood Ave., 94086.

Resembles Standard Copier

Xerox Printer Accepts Tape, CPU Input

By Michael Weinstein
Of the CW Staff

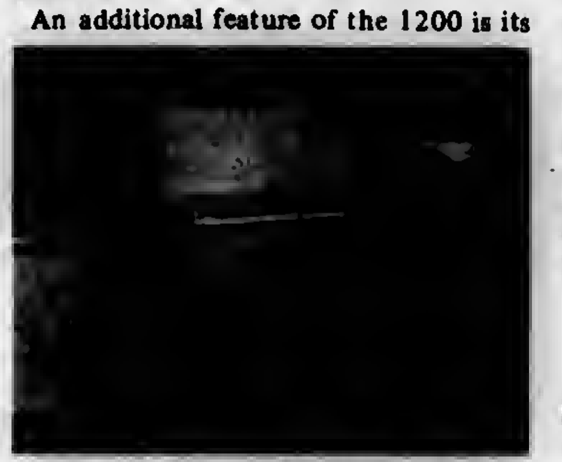
NEW YORK, N.Y. – Xerox has combined its copier and computer efforts into a single non-impact "xerographic" computer printing system.

The 1200 resembles the standard Xerox copier on the printing operation and is available in two versions. An off-line model prints from industry-compatible magnetic tapes, while an on-line model operates as a peripheral to the Xerox Sigma 6, Sigma 7 or Sigma 9 computer system.

The 1200 uses the same kind of paper as the firm's copiers – unsensitized 8-1/2 in. by 11 in. paper – and prints at speeds up to 4,000 line/min.

This corresponds to a throughput of over one page/sec, according to a Xerox spokesman, which is about twice as fast as a standard impact-type printer, he added.

An additional feature of the 1200 is its ability to use preprinted paper stock so that fixed-format information can be copied simultaneously with variable tape- or computer-generated data.



Xerox 1200 printing system produces copies of computer-generated information on unsensitized 8-1/2 in. by 11 in. paper.

By using a copy-type of operation, users can print an unlimited number of copies, the spokesman said, eliminating the need for multiple passes on the computer. This contrasts with standard impact printers which are limited to a maximum of an original and five carbon copies, he added.

Modified Ascii Set

The 1200 uses a modified Ascii character set of 95 upper- and lower-case characters.

The off-line unit will accept data from any 800- or 1,600 bit/in., 9-track magnetic tape that conforms to either Ansi, IBM OS/360 or DOS/360, or Xerox tape formats.

The on-line version operates as a standard Xerox Sigma computer peripheral under control of the Xerox Control Program-Five (CP-V) virtual memory operating system.

Initial deliveries of the off-line model are scheduled for the fourth quarter of 1973. The computer-driven version is scheduled for delivery in the first quarter of 1974.

The stand-alone model, including magnetic tape input unit, leases for a minimum of $2,600/mo. The computer-driven system leases for a minimum of $2,100/mo.

Package Lease Plan Combines DAT Box, MOS Memory for 155

SAN FRANCISCO – Itel is offering 370/155 users a package lease plan which combines Itel's semiconductor memory with IBM's Dynamic Address Translation (DAT) box. The result, according to Itel, will be to transform the 155 into a working equivalent of the virtual 370/158.

The semiconductor portion of the package is a monolithic (MOS) main memory with a read and write time of 690 nsec.

This MOS memory is a reworked version of Itel's semiconductor memory modules for the 155. But in the earlier models the cycle time was clocked down, according to an Itel spokesman, to be identical with the IBM-supplied core memory – 2.1 µsec storage cycle.

The second portion of the package – the DAT box – will be the standard IBM unit which IBM expects to be ready for delivery in June or July on a purchase-only basis for $200,000. To make the package, Itel will obtain these units from IBM and IBM will assume responsibility for maintenance of the boxes, while Itel remains responsible for supporting the MOS memory.

While there are no 155s with DAT boxes in the field, an Itel spokesman stated the supercharged 155 would operate at least as efficiently as a standard virtual 158, and in many cases the converted 155 might outperform the latter IBM machine, he said.

The 155/PSU (processor speed-up) memory will be made available in configurations of one to 4M bytes.

For users who don't want the virtual capabilities of the DAT box, the MOS add-on can be obtained separately to replace the standard 155 core memory. In these cases, the spokesman asserted, system performance will be improved from 20% to 50% over standard core.

Prices for the new memory are 10% to 30% higher than those for the earlier Itel 155 memories and about equal to the cost for standard IBM core.

Lease prices for the package deal vary depending on the amount of memory ordered and the duration of the contract. However, 1M byte of Itel 155/PSU and the IBM DAT box will lease for about $8,000/mo on a five-year lease from One Embarcadero Center, 94111. Deliveries are expected to begin in November 1973.

Plotter Throughput Reaches 10 In./Sec

ANAHEIM, Calif. – Calcomp's "top-of-the-line" Model 1036 Digital Incremental Drum Plotter has a throughput capacity up to 10 in./sec.

The Model 1036 operates on-line or off-line and is compatible with Calcomp's 900 or 915 controllers. It is available with step sizes of 0.002 in. or 0.05 mm.

Three-pen plotting with programmable pen selection is standard. Liquid ink or pressurized ballpoint pens may be used at full speed (5,000 increment/sec). Two interchangeable drums are supplied – one 36-1/2 in. wide and the other 15-1/2 in. wide.

Other features include an electronic scaling device to compensate for paper width variations and a built-in cutting bar to facilitate the removal of completed plots.

Base price of the drum plotter is $22,720, including one-year maintenance from 2411 W. La Palma Ave., 92801.

Decision Data Has 5-Year Purchase Plan For S/3 Peripherals

HORSHAM, Pa – A deferred payment purchase plan permits IBM System/3 users to buy data preparation equipment for about the same amount of money as it would cost to rent the equipment for five years, according to Decision Data Computer Corp.

Under the new plan, System/3 users pay an initial down payment with the balance of the purchase price paid in monthly installments over the five year period. For existing lease contracts, up to 70% of the monthly rental may be credited against purchase price.

The purchase monthly payments, which include maintenance costs, are lower than the monthly charges under either of the firm's present rental programs, a spokesman said.

After the five-year period, the only user costs are those for monthly maintenance.

Card equipment covered in this offering are the Data Recorder, Interpreting Data Recorder, Alphanumeric Sorter and Sorting Data Recorder.

Decision Data is located at 100 Witmer Road, 19044.

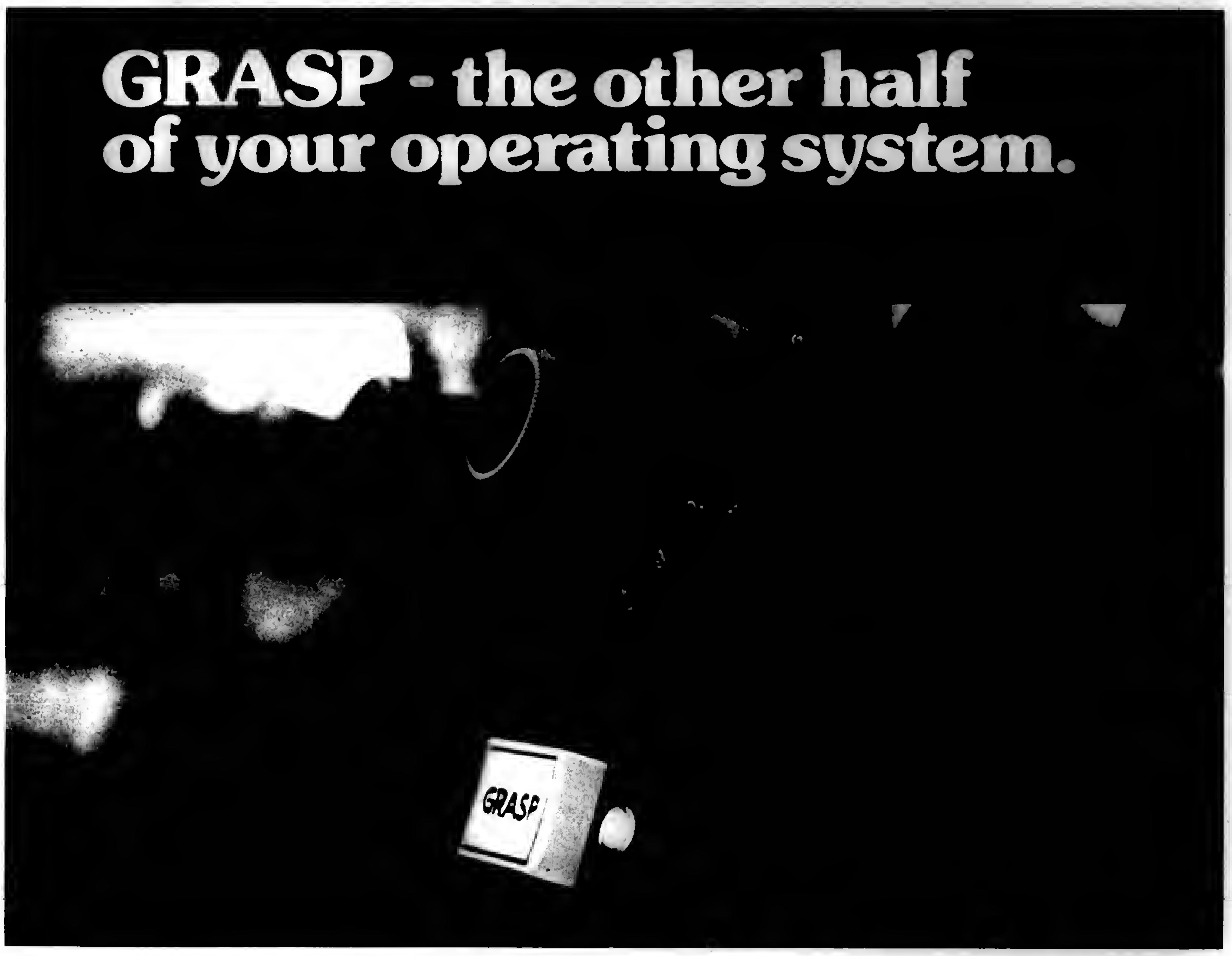
A prize in every package.

And what a prize! Diablo's HyType I is simply the best serial printer on the market today. It's a rugged, reliable, low-cost, quiet, compact beauty with a speed of [illegible] characters per second. That's two to five times faster than competition. HyType print quality matches that of the finest electric typewriter. And you get five sparkling clear copies using any standard carbon forms. A unique, easy to change, 96-character wheel enables an operator to quickly switch to a variety of type styles including foreign languages. A snap-in cloth or carbon ribbon cartridge eliminates messy ribbon changes. Over two thousand HyTypes have already been shipped, all giving the trouble-free performances you've come to expect from Diablo products. The HyType I is truly a prize among printers. For more information, write or call Diablo Systems, Inc., 24500 Industrial Boulevard, Hayward, Calif. 94545. 415 783-3910.

Diablo

Diablo Systems, Incorporated
A Xerox Company

Here's good news for DOS 360/370 users!



GRASP - the other half of your operating system.

GRASP is the most effective DOS systems software available today. It's providing dramatic dollar savings to over a thousand installations around the world. Here are some of the reasons why.

WRAPAROUND SPOOLING: Faster than IBM spooling and much easier to install and operate. Requires much less core and disk space.

COMPLETE JOB ACCOUNTING: Consumes about one percent of CPU time for accounting. IBM's uses about ten percent. Statistics collected are far more meaningful and comprehensive.

SELF-RELOCATABILITY: One copy of all programs means reduced maintenance costs, reduced disk requirements for libraries. Speeds execution of overlaid programs—like SORT.

PARTITION BALANCING: A completely transparent priority dispatcher that increases throughput 8 to 12 percent per partition.

FOURTH PARTITION: Adds a complete, storage protected partition for GRASP's residence. IBM spooling takes one of DOS' partitions.

AUTOMATIC VOLUME RECOGNITION: More usability for tapes and disk. More fluid multi-programming.

RESIDENT TRANSIENTS: Especially for the ISAM user, phenomenal reductions in run times.

PCI FETCH—CATALOGUED PROCEDURES—TAPE SPOOLING—are among many more time and dollar saving features of GRASP.

GRASP can be installed in just 15 minutes, with no change to existing programs or procedures. The savings start immediately.

GRASP is a product of Software Design, Inc., the performance leaders in DOS systems software, and supported by a worldwide organization of specialists whose only business is DOS systems software. Send for your GRASP button today, and the other half of your operating system.

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Please have an SDI representative show me how the GRASP button will give me the other half of my operating system.

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We have 360/370 Model________________

Word Recognition System

Voice Data Entry Gives Quality Inspectors a Hand

PITTSTON, Pa. – Quality inspectors at Owens-Illinois Corp. are using a Voice Data Encoding System (VDES) for data entry of quality control measurements.

As the inspector measures each component he speaks his findings into a headset microphone. From this vocal input a monitor displays the input data so the inspector can verify it or see if the measurement is out of tolerance.

If the displayed data is correct – i.e., exactly as he voiced it – he uses the control word, "go", which directs the system to input that data to a central processor.

If the information is incorrect, he speaks a control word and his measurement. The retry is overlayed in the buffer area with the newer voice input figures displayed on the screen of the visual display unit.

Heart of the VDES, developed by Threshold Technology Inc., is a word recognition system that analyzes and compares words as they are entered by comparing them with referenced samples stored in the system.

System Trained

Samples are introduced during a training period, in which each inspector who will be using the system repeats each command in the system's vocabulary ten times.

When a production floor inspection entry is later made by that particular inspector, the stored reference sample most closely matching the incoming command is selected as the proper response and is visually displayed on the front panel as numerical output.

After a voice verification that the displayed data is correct, the computerized data is retained along with descriptive information such as the measurement category associated with the voice input.

This information when combined with the inspectors audio measurement data describes any one piece being inspected. Later the same input forms the basis of a report or can cause an alarm to sound if a piece is out of acceptable tolerance range.

In a typical operation a standard teletypewriter provides the hard-copy output for the reports. The TTY's standard functions are to provide manual control, entry of heading information, a final report and corresponding paper tape containing inspection data.

Day in the Life

In a typical day of operation at Owens-Illinois, the quality inspector comes on duty and goes to the teletypewriter – perhaps located in a separate room with supplies and accessory equipment.

He begins by directing the system to activate a program for use with a given type of equipment – in this case television tubes.

A run of up to 11 samples is begun by entering on the TTY keyboard the heading, containing item code data, shift, time, name of inspector, name of the foreman, plunger, survey number and shop.

The system is now ready to accept spoken data from the inspector with a maximum of five digits and positive or negative sign entered for each measurement.

As each entry is made, it is compared to any applicable tolerance limit previously stored. If a measurement is "out of tolerance" a lamp is lit on the display and the value is typed out along with the sample number and data category. This allows the operator to check the measurement value and/or take any corrective action required.

Inspector measures the width of a television tube, entering the result through his headset.

Threshold Technology is located at Route 130 and Union Landing Road, Cinnaminson, N.J. 08077.

Mark II Controller Protects Systems During Power Loss

SAUGERTIES, N.Y. – FX Systems Corp. has introduced a programmable controller system, called the Mark II, Un-Computer, Series 700.

The unit is designed to protect against failure or other interruption, and a power-failure guard circuit insures completion of the step being performed despite loss of power, the firm said. Protective circuitry transfers control to a shut-down routine that preserves all program and operating data, halts processing and returns to a logical point in the control cycle for restart when normal processing is possible.

SCL-10 Language

The programming language used is called SCL-10 and employs English-language instructions. Relay logic is programmed and entered through a teletypewriter.

The basic controller costs $2,950, including rack and front panel, wiring to accept six optional I/O interface cards and priority interrupter with arithmetic logic. The power supply is an option at an additional $400. Delivery is three months from Mount Marion Road, 12477.

Test Station Provides On-Line Diagnostics

ANN ARBOR, Mich. – An expanded test station is in operation at Sycor Inc. headquarters to provide the firm's field engineering representatives on-line answers to user's hardware communications problems.

The custom-designed test station uses a digital switching device to duplicate customer terminal communications networks and is capable of communicating in Ascii, Ebcdic, Hasp/Asp and binary synchronous modes from 1,200 to 2,400 bit/sec. Asynchronous transmission is from 37.5- to 1,200 bit/sec.

The complete CRT terminal. *All this for only $65.00 a month...*

- Built-in modem
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They're all standard ASCISCOPE display features. Result: you're on line immediately with ASCISCOPE.

There's no complicated installation or reprogramming required. And with our Service by Immediate Replacement—SIR—we won't waste your time repairing a leased ASCISCOPE—we'll replace it on the spot from one of ITT's 62 nationwide service centers.

If you're ready to replace noisy, slow printers with silent, high-speed ASCISCOPES, call Jerry Porter at (201) 935-3900. Or write ITT Data Equipment and Systems Division, Dept. 401, International Telephone and Telegraph Corporation, East Union Avenue, East Rutherford, N.J. 07073.

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THE REASONS TO KEEP YOUR IBM 1130:

THE REASONS NOT TO:

Throughput. You already know there's a limit to the throughput your 1130 can handle. If you haven't reached that limit yet, you probably will. Then come the problems. You don't want to move up to a more expensive system. You don't want to rewrite your software. You don't want a lot of grief. We think you should check into our "Super" 18/30 DMS. It's a direct 1130 replacement that gives you three to ten times the throughput at about the same cost. And it still uses all your existing programs.

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Money. The 18/30 does much more work for almost exactly the same number of dollars. And lets you avoid having to move up to a bigger, more expensive computer with all new software to write. The result: enormous savings in dollars, downtime and anguish.

None of the above. Even if you aren't throughput-bound and couldn't care less about real time at the moment, we can still help you cut costs. Our "Mini" DMS also works with your 1130 software and gives you at least the same throughput (much more in disk work). All for as much as 40% less per month than you're paying now.

Us. Anybody who says they can do all this is worth talking to. Call Ron Doiron at (714) 778-4800. Or write him in care of General Automation, Inc., 1055 S. East St., Anaheim, Calif. 92805.

GENERAL AUTOMATION 18/30 DMS

See DMS in Booth 2201 at the National Computer Conference.

OEM Products

While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users. Further, while some of this equipment is not presently available to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.

Floppy Disk Memory System Designed With Fixed Heads

BOULDER, Colo. – A "floppy" disk memory system designed with fixed heads that fly above the floppy disk surface is available from Intelligent Memory Systems, Inc.

The MU/104 series is available in three models: the MU/104 – cartridge only; the MU/108 – cartridge plus 16 Kbytes on the fixed disk; and the MU/112 – cartridge plus 32 Kbytes on the fixed disk.

All models are designed for 130 bytes/sector, have an average access time of 16.7 msec, and have a data transfer rate of 1.06 Mbit/sec.

Prices without interfacing range from $760 single unit price to about $500 in OEM quantities for the MU/104 from 5721 Arapahoe Ave., 80303.

Build Your Own Mini

NATICK, Mass. – A build-it-yourself minicomputer system is available from Control Logic, Inc.

A minimum LSI/MOS based system sells for under $400 and consists of an 8-bit processor, I/O control and memory address buffer.

Other L Series modules include a 512 by 8-bit Prom, 256 by 8-bit RAM, Universal Asynchronous Receiver/Transmitter.

Prices of modules range from $30 to $325 from Nine Tech Circle, 01760.

Tape System for Digital Use

HIGHLAND PARK, Ill. – Data Specialties has announced a tape perforator system designed for applications such as recording the output of digital instruments.

The PER-820 operates at 20 char./sec asynchronously. The unit accepts logic level input signals.

Cost is $1,050 from 1548 Old Skokie Road, 60025.

Sweep Generator Uses LED

SAN DIEGO – Wavetek is offering a sweep generator with a front-panel LED digital display that shows the frequency and positive/negative peak voltages of the output signal with 3-digit resolution, a spokesman said.

The Model 147 is a .0005 Hz to 10 MHz source of sine, triangle, square, positive pulse and negative pulse waveforms, each with variable amplitude, dc offset and symmetry, the spokesman said.

Price of the 147 is $1,295 from P.O. Box 651, 92112.

ROM DTL/TTL-Compatible

SUNNYVALE, Calif. – Monolithic Memories, Inc. has announced its MM5280/6280 ROM with 8K-bit storage.

Access time for the 8K ROM is 150 nsec maximum, with power dissipation of 50 µW/bit. It is DTL/TTL-compatible with 1/10 of standard TTL input load and open collector output.

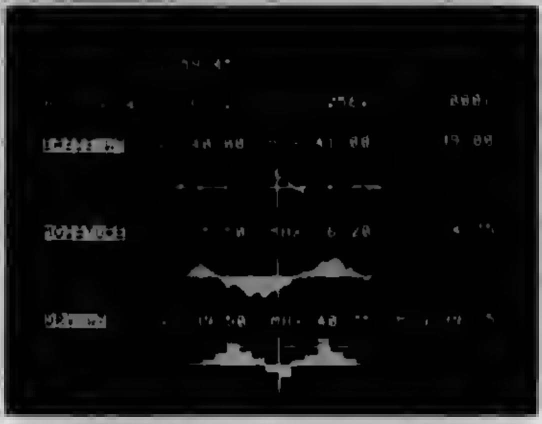
The price of the MM6280 is $55 in lots of 100 from 1165 E. Arques Ave., 94086.

Raster Graphic System Displays Black/White And Color Images

SUNNYVALE, Calif. – Ramtek Corp. has introduced a solid state, raster graphic system with capabilities for color, grey scale or black and white.

Capabilities of the GX-1000 include alphanumeric generation, graphic plotting, artesian graphics, selectable erase and reverse background. These capabilities are accomplished within the system controller resulting in reduced software requirements and reduced computer time load, a spokesman said.

Resolutions are 256 elements by 256 lines and 512 elements by 256 lines. All points are addressable and 26 applications combinations are possible, he added.



Screen displays output provided by the **GX-1000.**

The system is priced – in OEM quantities – at about $4500 per channel for grey scale or color, and about $1500 per channel for black and white graphics from 292 Commercial St., 94086.

Cassette Recorder Has Variable Speeds

PASADENA, Calif. – A digital cassette tape recorder for use in data gathering and processing systems has been announced by Bell & Howell's Electronics & Instruments Group.

Available in single and dual-track models, the recorder uses standard Phillips-type cassettes with digital grade tape. Any operating speed between 2-and 20 in./sec. may be selected.

The unit operates in incremental or continuous modes, and in several combinations of recording codes and data channel selections.

The recorder sells for $360 in OEM quantities of 51 to 100 from 360 Sierra Madre Villa Ave., 91109.

4. COPE 1000 Series
2. COPE 1200 Series
3. COPE 65 Communications Controller
1. COPE 4705 Communications Controller

1. *COPE 4705 Communications Controller*
   Designed to provide 360/370 users an alternate for IBM 2701, 2702, 2703 and 3705 transmission control units . . . at reduced cost. Our "Emulation Plus" Program supports both asynchronous and synchronous terminals at line speeds up to 9600 bps.
2. *COPE 1200 Series*
   COPE remote batch terminals are the most economical, flexible and cost-effective means of accessing major large-scale computers (including IBM, CDC and Univac), using ordinary voice-grade lines, coaxial cable or Telpek lines for maximum economy.
3. *COPE 65 Communications Controller*
   COPE 65's can simultaneously interface with up to three IBM 360/370's, CDC 6000's, Univac 1100's or combinations of these under their normal operating systems. Various bi-sync, 1004 and 200 UT protocols can be accommodated at speeds from 2KB to 50 KB.
4. *COPE 1000 Series*
   COPE portable conversational keyboard terminals are alternates for IBM 2740 and 2741 and operate at speeds up to 15 cps for both on- and off-line applications.

Larger Memories Coming

Trial Papers Imply IBM Withholds 135 Enhancements

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – The first announcement of the 370/135 "did not include many key elements of the total system package," secret IBM documents revealed here in the Telex antitrust suit against IBM.

"These follow-on items were left for later announcements either for strategic purposes or lack of currently available resources," according to the Model 135 "Greybook," a financial analysis of the expected product performance.

Under the memory upgrade plan users will be able to upgrade their memory on the 135 from the present 240K maximum to either 368K or 496K, according to the documents. But the memory upgrade is just part of an entire package of enhancements planned for the 135 this year, according to the IBM papers.

Several of the enhancements, it noted, were dependent on groups outside the Data Processing Division, most notably the Components Division, which was then developing a memory known to IBM as "FET-CP" to be used in later versions of the 135.

This memory, the document said, was intended to be four times as dense as the memory announced with the 135 and would offer "two distinct advantages" when used with the 135.

First, the Greybook said, "Its density would enable considerably more than 240K of memory to fit under the covers of the CPU". Since it was IBM's intention to provide more memory for the 135 than the original maximum of 240K, it was important to have the extra memory under the cover. It would be less vulnerable to replacement there than in a separate box, as would have been required if the firm had used the original 135 memory to upgrade the capacity.

The second reason the development of this new memory was important to IBM was "its low cost would provide" between $30 million and $40 million in cost savings, since the firm planned to use the new memory in all 135s after December 1973.

Additional Enhancements

In addition, there will also be an integrated file adapter (native attachment) for the Winchester-type disk units, a scientific accelerator for the unit and a real-time channel/priority Interrupt feature for the system.

All these features are expected to be available for first customer deliveries by the end of this year unless the IBM development plans slip, according to the documents. Apparently the announcement plans have already slipped since they were due late last year.

One project that has already been canceled by IBM was to be a new operating system for the 135s and 145s known internally as Leos. This project has been shelved, apparently permanently, but no reasons were given.

Suprisingly, although the 135 Greybook devotes a great deal of time explaining the advantages of AOS-1, which became VS-1 for the 135 users, the IBM projections indicate they do not really expect many users to go to it for their operating system – even if it is used as the major sales tool for the system.

The peak year for the use of VS-1 among the 135 users is seen to be 1976, when 12% of the users will have it installed. However at that time, IBM expects most of the users (87%) to be using DOSE (DOS extensions). At present most users, according to the projections, should be shifting from straight DOS to the DOSE package.

The major purpose of the 135 was to provide a migration path for the 360/25 and 30 users, according to the document. It noted that 360/25 users should be willing to pay the 24% to 43% increase in price to get the additional features and higher speeds, while the typical 360/30 users were expected to pay between 15% and 29% more to make the upgrade.

"Such increases should not be difficult to sell unless the customer is strictly price conscious and has no requirements for throughput performance," the Greybook asserted.

The IBM planners were worried when the 135 was announced the other mainframe makers might come up with some new systems that would compete heavily against the 135.

But a few months later they could confidently say, "Most of the anticipated competitive announcements did not turn out to be as dramatic as expected."

Ironically, the planners noted the RCA-2 system came closest to the 135 on a performance comparison. "However, it was not as price-competitive as had been expected."

Overall the IBM planners could note the 135 should be a "marketing and financial success for IBM." And they indicated that over its pricing life of 48 months the system should return a profit of $1.6 billion on revenues of $5.5 billion worldwide, or around 30%.

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Called Expensive 'Prima Donnas'

Dim Future Painted for Programmers; Clerk Role Seen

By Joseph Hanlon
Special to Computerworld

NOTTINGHAM, England – User programmers have no future – their jobs are disappearing and their promotion' prospects are almost nil. Within a few years, the remaining user programmers will have jobs comparable to that of a bank clerk, with most of the traditional responsibilities split between operators and systems analysts.

These conclusions were drawn from three papers given at the Datafair conference here last month.

Datafair is the biennial conference of the British Computer Society. Attendance was estimated at 5,000, down more than 2,000 from 1971 figures.

Career development from computing positions to general management is a myth – programmers may become DP managers, but they won't move into general management, IBM consultant systems engineer Brian R. Edwards told the Datafair attendees.

Three arguments were cited as necessary for career progression: the high IQ of the computer community, its widespread knowledge of the organization and its power. Edwards then explained why none of these factors actually works.

> *There are really only two ways for a DPer to have career prospects: "Take the risk of leaving computing and breaking into one of the main line areas, such as marketing or production, or move to an organization which is dedicated to computing."*

IQ, controlled through programmer aptitude tests, has no correlation with management ability, he said.

DP managers tend to be concerned with "improving mechanistic aspects of a department's work," and look to the internal system rather than to customers, suppliers, etc. Line managers, on the other hand, "are primarily concerned with the non-mechanistic aspects" and must look outside. So the DP manager largely has training in the "wrong part of the business."

As for power, Edwards stated, the "DP manager is vital as a provider of a service, but he is nowhere near usurping the functions of those whom he serves." He is powerful only in the negative sense that he can stop the organization.

Management information systems may ease the problems, but only if the DP manager dedicates himself to building a system to actually serve the chief executive, Edwards suggested. The DP manager then enhances the significance, value and power of his job.

"The best advice to the ambitious computing man who seeks to exercise 'general management' is to so develop the DP function in his organization that he becomes the DP manager of the chief executive's control system," Edwards said. Failure to do this may indicate a lack of ability for general management positions.

But this route seems open to very few DP managers. Edwards cited one of his studies that showed "few DP managers ever reach general management. Nearly all of those who do are either people with significant experience prior to DP, or people with assignments in companies where DP *is* the business."

This means, he explained, that there really are only two ways for a DPer to have career prospects: "Take the risk of leaving computing and breaking into one of the main line areas, such as marketing or production, or move to an organization which is dedicated to computing."

Job Disappearing

This advice is good for another reason – the job of the user programmer is disappearing, but its passing should be encouraged, according to David Willingham, senior consultant for Management Dynamics Software Services.

"The user programmer is being reduced to the level of a coder and program tester," Willingham asserted. This has happened because "part of his job is being performed by the systems analyst who often descends to considerable depths of detail," largely because the introduction of modular programming means that objectives can be translated to software without a "knowledge of detailed programming tricks."

Another part of the programmer's job has been taken over by the operator, who has risen "from a mere button pusher to somebody who is essential to the efficient running of the large, complex systems that we favor these days" and who is now "often responsible" for library maintenance, reprogramming and recognition of bugs.

Program generators and software packages have also reduced the need for programmers, aided by the increasing compatibility both of ranges and of different manufacturers' machines, Willingham declared.

In a few years, virtually all remaining programmers will be with software houses and manufacturers. And DP managers are sure to encourage this trend, he argued, because programmers are expensive "prima-donnas" who only "created additional problems."

Middle-Aged Programmers?

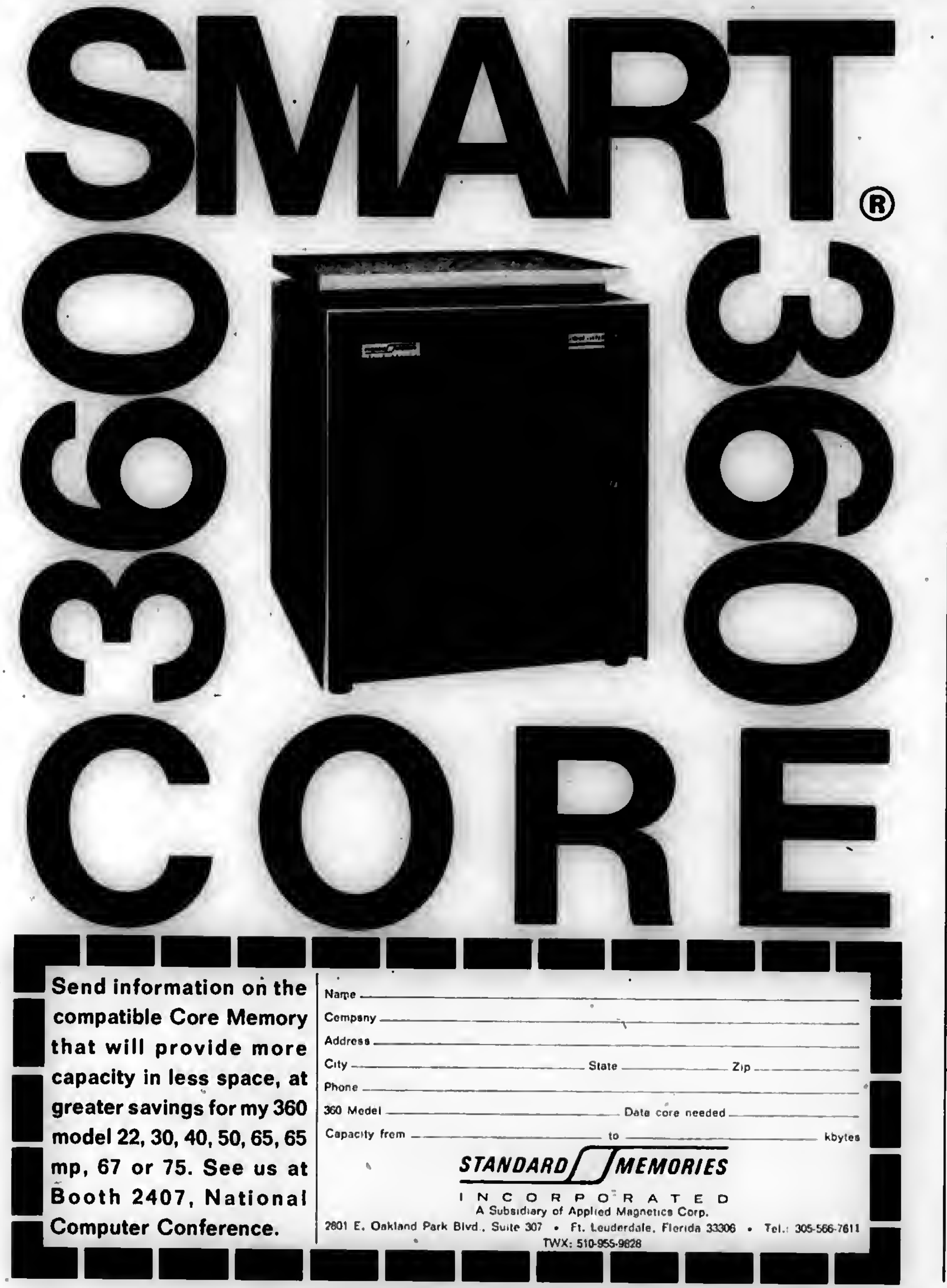
And what of the programmers who remain? "One never raises an eyebrow at the middle-aged clerical worker with his civil service image, but the concept of a middle-aged programmer was laughable."

No more, according to Rosemary Sarafian, manager of Computer Personnel International. Programmers now must expect to do "the same job month after month just as white collar workers do, enjoying a professional status with few promotional rewards."

Sarafian, in essence, supported Willingham's view of the programmer's future: "a programmer will gradually have less and less responsibility" and the job will be comparable to that of a bank clerk.

Car Pools Catching On

PASADENA, Calif. – A two-year-old car pool program at a Burroughs Corp. facility here has cut parking space needs by 30%, the firm said. Since parking space shortages spur many employers to promote car pools, Burroughs is making its car pool computer program available to interested employers through "Operation Oxygen," an environmental organization.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Market Advice Compiled

Data Bank Aids Home Builders, Sellers

By Patrick G. Ward
Of the CW Staff

ANAHEIM, Calif. – For the past three years, Walker & Lee, a sales organization, has been putting data on every home it has sold (some 10,000 a year) into a data bank to aid the firm's salesmen and developers.

Data on the home buyer includes income, profession, family size, age and former residence specifications. Data on the homes the firm sells includes specifications such as lot size, number of bedrooms and baths.

Each member of the sales force is coded along with his individual sales to indicate what kind of buyer he functions most effectively with.

To aid developers, George Fulton, director of research and development for the firm, said: "We look at the demographics of the population segment in question – study the information available from the census department, review population projections, building permit trends and occupancy rates – to determine supply versus demand, both current and potential.

"We can then tell the developer what type of homes in what price range is most suited to his market, and, if we are going to handle the sales for the project, who in our sales force will function most effectively in that market.

"There are other ways we can use the data," Fulton said. "If we see a large number of $24,000 to $28,000 homes on the market, we can ask the computer what kind of homes these sellers are likely to buy.

"If we see a large number of $24,000 to $28,000 homes on the market, we can ask the computer what kind of homes these sellers are likely to buy.

"And if we see a high occupancy rate on a given rental base, we ask the computer what kind of a house does that renter typically buy."

Commuters Match Up

ANDOVER, Mass. – Two commuters have planned a computerized car-pool system for traveling into and out of Boston every day.

The basis of Commuter-Match is a list of commuters' names in specific locations, matched by computer, which is supplied to a member for a small initial fee, the planners said.

Armed with the list, the buyer can make his own traveling arrangements.

DP on TV

AMSTERDAM – It's DP on TV in The Netherlands.

About 8,000 Dutch students have paid a $46 fee to enroll in a 36-lesson television course in basic computer science that began last September.

One thousand students plan to take an exam supervised by the Dutch Government in addition to their regular course work.

To prepare for the exam, the students meet on eight Saturdays when 30 teachers instruct them.

The students regularly do their homework assignments, a Dutch spokesman reported. Each student puts down his answers to the multiple-choice homework questions on mark-sensing cards. A computer checks the answers, computes each student's average and a class average.

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TELEX subsystems offer self-contained micro-programmed diagnostics. This means that potential and actual failures can be quickly and accurately isolated and the information necessary to correct errors is provided so that interruption is minimized. With our 6360 memory subsystem, for example—when multiple basic storage modules are employed—an error condition can be diagnosed off-line in one unit while the remainder of the memory is still available to the user.

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Secret Documents Reveal

IBM's Pollution Control Efforts Cut Back

TULSA, Okla. – IBM had cut back so deeply to increase profits in 1970 and 1971 that some of its efforts in the pollution control field – a pet project of top management – had been eliminated or slowed down.

Secret documents from the Telex suit against IBM revealed the deficiencies were so serious, the top IBM management committee, the Management Review Committee, was told in March of 1972 that IBM had in fact been in violation of some state and local regulations in the field.

However, on learning of the violations, the Management Review Committee reinforced the IBM commitment to a "pollution-free environment" and told the various parts of the company to expend the necessary resources to meet these goals.

At that meeting, the MRC received a report that indicated "IBM was now operating on a minimum program to meet state, local and federal government requirements. As a result of being so close to the line, we have had intermittent violations."

The minutes add: "The committee expressed some surprise at our lack of leadership in this area in light of their previous understanding that we were totally pollution-free in the sense of being in compliance with existing regulations, and the current issue was thought to be one of how to move beyond our current position on a prioritized basis."

The Committee also reprimanded the people involved for their failure to bring the matter to its attention and "in light of the attendant delay, it was deemed more important than ever to move quickly toward attainment of the previously stated goals."

Overall the firm plans to spend $52.5 million during the 1972 to 1976 time period in order to meet its goal of a totally pollution free manufacturing environment, the minutes show. Of that figure $7.1 million was slated to be expended in 1972 and $23.5 million this year.

The committee asked the people involved in the effort if it could be speeded up by the expenditure of more funds earlier in the program, but they were assured that the firm was moving as fast as possible under the revised plan re-emphasizing the commitment to the idea of a pollution-free environment.

MIS Gives Firemen Relief

NEW YORK – A multimillion-dollar computerized management information and control system will provide extensive information for the New York City firemen.

The system will be required to keep constant track of all equipment so fire companies can be moved into unprotected areas if the home company is out for a long time at a multiple-alarm fire. It will also inform the personnel department when a fireman should be rotated out of a busy house because of age or other handicaps, and will provide injury reports.

The system will also keep inventory on apparatus and parts.

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Societies/ User Groups

Canadian Conference Views Past, Future

EDMONTON, Alta. – The 1973 Canadian Computer Conference, to be held June 20-22, will concentrate on the theme "Focus 20/20."

As keynote speakers, C.C. Gottlieb will review the accomplishments of the last 20 years, and H.J. Von Baeyer will anticipate developments of the next 20 years.

Applications sessions include "ABC – Using computers without programmers," a system which lets non-technical people use computers without the help of programmers by V.W. Ruskin of Stevenson & Kellogg, Ltd.; "some underlying reasons for excessive computer systems implementation costs" by J.J. Leppik of IBM; "design considerations for commercial RJE applications" by D. Hathaway, Placer Development Ltd., Vancouver; and "the Canadian computer network: evaluation, the alternatives using simulation and queuing networks" by D. Selby and M. Alemparte, Department of Computer Science, University of British Columbia.

Software sessions include "controlling and accounting of use on a multipurpose computing system" by W. Dietiker, Carlton University, Ottawa; "storage hierarchy design concepts" by M.S. Doyle, University of Manitoba and J.W. Graham, University of Waterloo; "data management in the virtual machine environment" by M.W. O'Reilly and W.D.M. Sawyer of Bell, Northern Research, Ottawa; and "small business systems" by M. Brodie and D. Tsichritzis of the University of Toronto.

Workshop Series

Concurrent with the main technical sessions, a series of workshops include "features that may humanize or dehumanize an information system" chaired by Dr. Theodor D. Sterling of Simon Fraser University, and "computer control and audit guidelines" chaired by R.J. Rosen of Fuller Jenks Associates, management consultants.

The conference is being sponsored by the Canadian Information Processing Society, which can be reached through P.O. Box 1881, Edmonton, Alberta T5J 2P3, Canada.

Meeting Focuses On College DP

CLAREMONT, Calif. – The Fourth International Conference on Computers in the Undergraduate Curricula, co-sponsored by the National Science Foundation (NSF) and The Claremont Colleges, will be held at the Harvey Mudd College June 18-20.

The conference will include 16 paper presentations and three panel sessions covering "the role of the computer science department in the use of computers in the undergraduate curriculum," "the pedagogy of undergraduate education," as well as a presentation by NSF's Conduit Group on "procedures for disseminating computer-based curriculum material for the social sciences."

Registration fee is $40 for educational institution faculty members or government agency members, and $75 for others. The conference coordinator is Bill Koteff, The Claremont Colleges, 91711.

Simulation Conference Planned

GAITHERSBURG, Md. – The ACM-Sigsim/NBS Conference on Simulation of Computer Systems, to be held at the National Bureau of Standards June 19-20, will provide a forum for state of the art information in the area of the application of simulation to computer systems' performance prediction.

Dr. Ruth M. Davis will present the welcoming address. The eight sessions of the conference include "languages for computer system modeling," "hardware and software monitors in support of simulation" and "trace-driven modeling."

Registration fee for the conference is $35 for ACM, Sigsim or NBS staff members, and $40 for others.

General Chairman of the program is Paul F. Roth, A265 Technology Bldg., National Bureau of Standards, Washington, D.C. 20234.

ACM Group Highlights Personnel Research

COLLEGE PARK, Md. – Daniel Freedman of the State University of New York at Binghamton will be the keynote speaker at the Eleventh Annual Computer Personnel Research Conference, sponsored by the ACM Special Interest Group on Computer Personnel Research, to be held at the University of Maryland conference center June 21 and 22.

Seven sessions will cover topics such as "managing computer personnel," by professors Richard L. Nolan and Cyrus Gibson of Harvard University, "research needs for the next decade," by Robert N. Reinstedt of Rand Corp., and "careers for youth in computer occupations, 1971-1976," by Professor John L. Fulmer of the Georgia Institute of Technology.

Friday morning will be devoted to workshops, and in the afternoon there will be panel discussions on the problems of certification.

Registration fees are $55 for ACM members, $65 for non-ACM members and $10 for students.

Program chairman is A.W. Stalnaker, College of Industrial Management, Georgia Institute of Technology, Atlanta, Ga. 30332.

Call for Papers

RENO, Nev. – The National Council of Juvenile Court Judges is soliciting papers for presentation at its meeting in Atlanta Dec. 6-8.

The theme of the meeting will be the status and potential of computers in the juvenile justice system. Emphasis will be on both the theoretical and practical applications in research, administration, and decision making in courts and agencies working with juveniles.

Papers may address problems, solutions, research, requirements, demonstration projects and other categories related to the theme of this symposium.

For additional information, contact: Lawrence A. Boxerman, Project Director, National Council of Juvenile Court Judges, Box 8000, University of Nevada, 89507.

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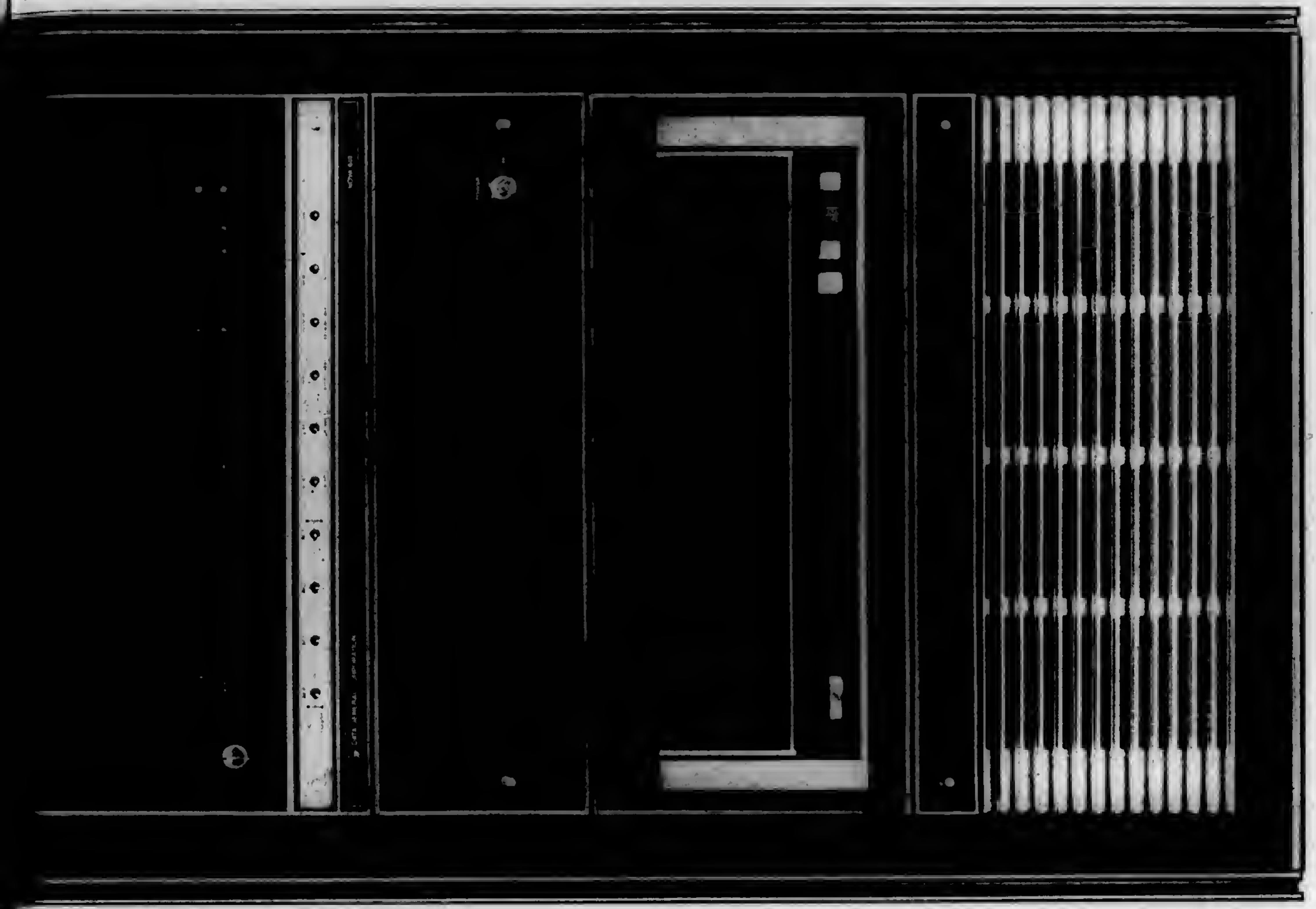

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The picture doesn't show lots of the other things you can get with Nova 840: line printers, card readers, Novadisplay terminals, fixed-head Novadiscs, moving-head discs, Nova Cassette tape, communications interfaces.

Nor could we show you the applications and service experience we've developed in the course of building, installing, and supporting over 6,000 Nova computer systems all over the world.

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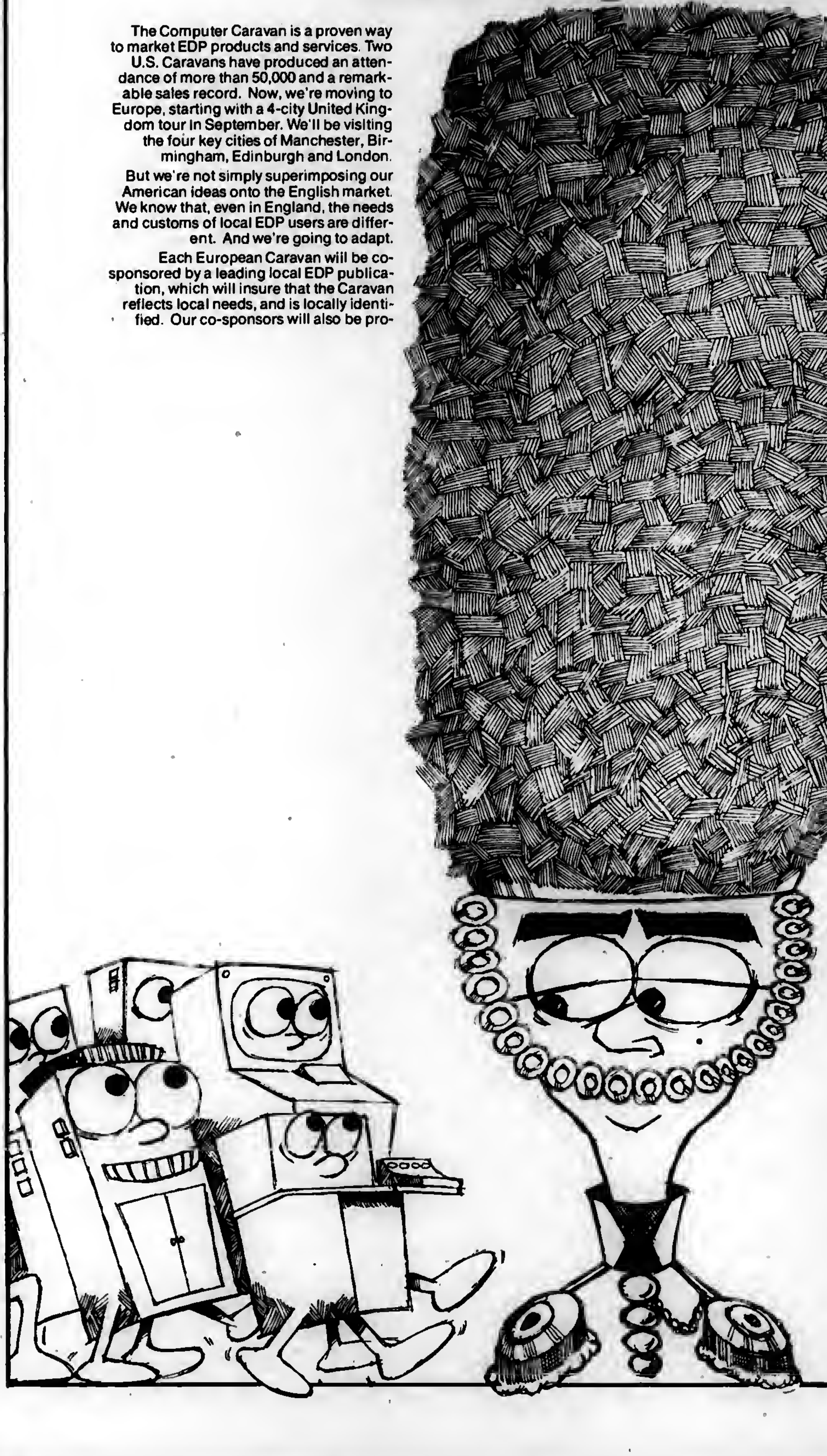

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Long-Range Support Doubted

Present Programming Systems Had to Be 'Obsoleted'

(Continued from Page 1)

System/360 was designed to solve the problem, they said, since the goal of that system was to develop a compatible hardware and software line to bridge the entire IBM product line.

"Unfortunately, this goal was not attained. The hardware succeeded reasonably well in maintaining product line compatibility, while achieving its price/performance objectives," the planners said.

"The software was not so fortunate," they admitted, however. "The state of the art in software simply did not allow the creation of a single programming system that could survive within the space constraints of the small hardware configurations and still provide the sophisticated facilities required by the large-scale community."

Therefore, they said, three systems were developed: DOS for the small-scale user; OS for the larger scale; and TSS/360 to explore the technology of virtual memory.

The System 370 presented new problems because it was designed largely to run the same software. "However, the software must be upgraded to recognize certain hardware anomalies, support the new line of I/O equipment peculiar to the System 370 and to support the extended precision arithmetic hardware."

The addition of virtual memory (or the "relocate" function as it is called internally in IBM with relocate apparently synonymous with dynamic address translation) will lead to fragmented software systems in the 1974 time frame, the planners indicated, noting that TSS/360/370 will still be in use as well as AOS-II (VS-II), OS/360/370, AOS-I (VS-I) and DOS 360/370.

Relocate Unsupported

At the time of the study IBM, they noted, had already abandoned plans to develop the Leos system which would have been a method for supporting relocate on the 145. Without it, they said, "the current programming system plan does not yet address the proper method of supporting relocate on the 370/145.

"This is particularly unfortunate at this time since the 370/145 has the relocated hardware built into it."

The widespread use of many different programming systems, the planners said, presents the same type of problems that were found with the great deal of hardware incompatibility during the period right before the 360 – except they were in software.

At the same time, they noted, "functional deficiencies exist in the current software systems. Most of these facilities are required by the medium- and large-scale users during the 1970-1974 strategy period; however, the small-scale users are also affected."

OS Inability

The deficiencies, the planners said, are primarily in the mainstream of the product line – that is OS/360 and its derivations – and have caused the marketplace potentials of such things as remote computing, data base/data communications and sensor-based application to remain "relatively undeveloped because of the inability of OS/360 to react to these needs in a timely manner."

Even though the operating systems have "struggled manfully with the problem of satisfying current demand," the planners said that "nonetheless it remains true that it is increasingly expensive to make further additions to them.

"Indeed, it is increasingly expensive to keep them in good repair," the planners noted, claiming that user surveys showed many users would continue to use the outmoded systems through the 1975 time period.

Shape Up!

The continued inability to meet the needs of the market "will enable our competitors to attack our installed base, and seriously reduce our revenue-generating capability," the planners said.

Because of these factors, the firm put together a team to design the functional requirements for a new system that was to become Q, a combination of hardware and software elements or subsystems designed to meet the user needs of the late 1970s and early 1980s as IBM forecast them at that time.

Profiles Built To Block Abuse

VANCOUVER, B.C. – The Unemployment Insurance Commission here has instituted computerized "abuser profiles" to help eliminate cheating in the system.

The commission hopes that by breaking down into categories the different types of abusers – such as those who collect checks while on holiday in Europe – it will be able to determine those people who the commission feels are most likely to cheat.

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Extend Features to Non-Programmers

'Q' Must Be Usable by the Public

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – One of the major requirements for System Q, as seen by the IBM researchers in 1970, is that it be a "usable" system, not just by programmers, but also by the general public.

This requirement "will have the most profound effect upon the entire system. Every other requirement for System Q will be subordinate to this requirement," the planners agreed.

In addition, they said, "Every function and feature proposed for System Q must be evaluated in this regard to assure the system will not become surrounded by the jargon characterizing the human interfaces today.

"The system must be usable by people who are not programmers, not professionals, not college graduates and not necessarily high school graduates," they said.

Usability must be considered at least on an equal footing with performance by the designers of the system, they added.

The designers also made it clear that the system's goal was to be more useful to programmers and general installation management, the System Q functional specifications showed.

How did the designers plan to accomplish this usability goal?

Extensions Needed

"To meet this objective, extensions must be made in the areas of languages, data handling and system facilities," the designers pointed out.

To extend the features of the system to non-programmers, the study group recommended that "the following language capabilities be provided:

"1. A layman's language to facilitate system use.

"2. A general-purpose query update language (a proper subset of the layman's language).

"3. A Common Command Language by which, with equal facility, operators may effectively manage both simple and complex installations.

"4. Language facilities that emphasize simplicity of user, provide inherent tutorial capabilities (e.g., leading by hand, etc.), allow natural subsetting into learner languages and natural extensions for complex applications, etc. for items 1 to 3 above.

"5. Facilities to implement occupational or problem-oriented languages designed for specific users or applications and based on industry terminology."

In addition, the system will have several new features to aid the programmer, if the goals of the designers are met by the implementation team even now at work on the project.

Data Independence

First it will have "extensions to current languages to facilitate the implementation of data independence, the identification of parallelism within programs, the variable binding of programs to system resources, and to provide data flexibility to meet user requirements."

Another programmer-oriented feature will be the "expansion of compilers to provide interactive execution for computer-assisted problem-solving, program development and debugging," and "the introduction of all new functions via the primary higher-level languages of the marketplace."

There would also be the "minimization, if not the elimination, of requirement to use lower-level languages for new functions."

In addition, System Q will be designed for "complete compatibility within a language whether it is used in conversational or batch mode," and will have learner languages as proper suhsets of the full programming languages offered," the planners said.

"To increase the general usability of a system, it is necessary to eliminate or minimize those artificial constraints or inherent problems associated with the processing of data," the planners continued.

"To this end, five essential requirements have been established: data independence, variable binding of data to procedures (programs); data migration and interchange; data integrity/security; data journaling and recovery."

In the area of data independence, the planners noted this is a general term for freeing a program from the external conditions upon which it is not logically dependent and found that there were many ways to do this.

"However, the gross market requirement is viewed as separating the application procedures (programs) from the physical data representations, relationships, addresses and ownership," they said.

The requirements call for a system that would be data independent in the areas of data manipulation, data representation and data addressing.

Variable binding, the planners said, "refers to the time at which the logical data and the physical addresses are bound . . . The marketplace of the

(Continued on Page 46)

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Programmer, Installation Manager Aids Featured

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – The plans for System Q call for the inclusion of special features to aid programmers and to help installation managers configure and manage their systems.

The programming aids will primarily be to help the programmer "in developing facilities for the non-programmer to use.

"This prime emphasis is in the area of improved program debugging tools, including symbolic debugging facilities for applications programmers, a support system which provides for control of program executions during debugging tools, and a systems debugging package for the system control program which can be invoked dynamically as well as statically."

In addition, the planners said environmental dependencies within the system should be transparent to the user such that "changes in the configuration of the systems do not affect previously checked out and properly running programs."

For the installation manager, IBM is planning a whole bagful of useful new tools for the System Q environment.

The first will be aids that help in selecting systems and configurations to "assure the selection of a configuration that is optimal with respect to installation requirements."

To do this, the planners said, "a series of system design tools must be provided to assist the customer in evaluating his system design and operational algorithms so that he can intelligently construct a system to meet his needs.

"These tools must include a set of system performance profiles that identify and quantify the performance characteristics of critical components within the system.

"The performance of these components might be measured and expressed in terms as size of data base, number of accesses per transaction, number of terminals per system, etc.

"In addition, performance might be further delineated in terms of system environment with separate quantifications for batch, interactive and event driven processing, and for any combinations thereof.

"In this way, it should be possible to determine the impact of one environment on another when they cohabit the same system and share critical resources," the designers said.

Simulation Model Support

To provide this type of information, the planners said the system must be supported by simulation models "which are based upon the figures of merit and properly demonstrate the interrelationship of these performance criteria so it is possible to accurately predict the performance of a given configuration in a given environment."

Input to the simulation models could be either manual descriptions of expected requirements or statistical and trace data collected by the system during the course of actual operation, they added.

In addition, the planners said, after a system is installed it should have facilities for measuring its performance in actual operation. These measurement tools, they said, should be integrated within the system.

"The system must be capable of maintaining and displaying, on a dynamic basis: its own status and that of tasks, jobs, data sets, etc.; system performance; the utilization of components – hardware (CPU, core, channels, DASD, terminals, etc.); system workload and other statistical information as may be required."

The planners also indicated the new system must have provisions that allow the computer configuration to react dynamically to its environment "so that it remains in concert with installation requirements no matter how rapidly or drastically they change.

Maintaining Balance

"This responsiveness should include both a self-adaptive capability and a sensitivity to operator stimuli that enhances the system's facility for maintaining the balance between resources and requirements."

To meet this need and to minimize human intervention in the process, the planners said that "system should dynamically allocate resources and schedule activities against varying workloads so that the installation's throughput, turnaround time and/or response time requirements are satisfied."

Furthermore, there will be automatic error recovery procedures built into the system which would be started automatically and would include system reconfiguration, and would have on-line analysis of the parts in the system that failed.

'Q' Must Be Usable For Non-Programmers

(Continued from Page 45)

seventies will manifest both batch and interactive data processing [the two extremes for binding]; thus both extremes are required with degrees of early or lateness in-between so that customers in application development of casual users can select the appropriate option with its flexibility/performance trade-offs," they said.

The requirements of data migration and data interchange must be facilitated on System Q, the planners said, so that users can have their existing application "data transverse from the source system to the target system dynamically," and the portability of the systems and programs should be improved.

In the areas of data integrity and data security, users will require more of their operating systems in the seventies, the planners noted.

They said provisions should be built into Q to help insure the accuracy of data in data bases (so that, for example, two concurrently operating programs using one data base cannot both update it simultaneously).

In addition, data security provisions should provide that "the use of data . . . be selective by specific programs, terminal users, operators, etc." at the option of the using installation.

Lastly, the planners said there should be more provisions for data journaling and data recovery in the new system.

"Data journaling and data recovery are interdependent In that customers require the capability to journalize the data entries to the data base in a chronological sequence to be able to reenact the transactions with the 'original'. data base for recovery and recreation."

Keeping River Quality High

RICHLAND, Wash. – Batelle-Northwest scientists are making a computer model of a 100-mile stretch of the Chehalis River to help local planners predict what new waste sources or water treatment plants would do to water quality.

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Security, Privacy Major Parts Of 'Q'; IBM Will Provide 'Tools'

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Privacy and security features will be a major part of System Q if the software designers can meet the functional specifications laid down by the planners who set the requirements for the system.

Noting that "privacy becomes increasingly important as customers capture more data and increase the availability of the data to multiple users," the designers decreed that System Q "should provide the customer the necessary tools for privacy in his data processing installation.

"However," they claimed, "IBM cannot realistically provide generalized 'privacy' in our products, but can assist the user customer in achieving his desired degree of privacy by giving him the tools to accomplish this task."

User Prerogatives

To do this, the entire system "should be constructed with the point of view that data is private to its creator (owner) until and unless he stipulates otherwise, that the users of the system are granted certain prerogatives by the management of the installation beginning with the right to access the facility in the first place, etc.

"The system must be constructed in such a way that its own integrity is assured and any compromises of that system security must be chosen explicitly and overtly by the customer in the interests of achieving some other objective, such as improved performance or operation flexibility."

One of the methods of providing greater security will be multiple-level authorization schemes in the system.

The authorization schemes will include authorizations for fetching, storing, deletion, execution and exclusion, the planners said.

"These options would include authorization at log-on, sign-on and at the applications level. The system must enforce its own security in each of its major areas including batch operations. The installation management will be given methods of prohibiting certain users from operating in one or more of the supported modes of operation, such as batch, conversational, remote job entry, remote network, etc.

"Further, the customer shall be able to restrict certain users from accessing certain devices, executing certain programs, and, in general, using the system in other than the way the installation intends."

There will also be ways to insure the integrity of the system built into it, the planners said, but they were not specific on methods of obtaining this.

In addition, there will be an audit function within System Q.

As "an installation option the user should be able to record and analyze all attempted breaches of security to facilitate detection of security problems and alteration of security procedures."

There will also be provisions for network security, the planners said, covering "all" the security aspects of networks.

This type of security becomes increasingly important "when considering multiple-node networks with programs and data being transmitted and perhaps being executed at 'unknown' nodes of the net.

"A simple case is where two enterprises in a related industry who are potential competitors might be executing programs on the same node of a network and the isolation problems that occur for their data and programs . . . Security is a prerequisite to the widespread use of networks in the seventies."

RAS Features Must Be Integrated

TULSA, Okla. – "The reliability, availability and serviceability (RAS) aspects of the system are among the most significant" requirements of System Q, according to the designers of the system.

"The inevitable consequence of a system such as Q is that people come to expect it to be there in a fully operational condition at all times, rather like the telephone or telegraph or television industry equipment," they pointed out.

This is especially true, the planners said, as the system becomes more widely used in such areas as interactive processing and in the sensor-based applications areas such as process control.

"Because of the significance the users will attach to RAS, these features of the system should be fully integrated into the hardware/software package so as to provide predictable levels of availability for a given configuration."

In addition, they told the programmers that "provisions should be made for the graceful degradation of system performance when components fail and for the automatic reconfiguration of the system to isolate and bypass failing components."

Also, the system "should provide for automatic journaling and for the recovery of damaged data bases in the event of major system failure. System restart should be fully automated so that minimal operator action is required. Fully automatic restart, possible with reconfiguration, should be available as a system option with operator-dependent factors (such as date and time of day) maintained externally from the system."

Also, "a system debugging package with local and (at customer option) remote access must be available which permits the customer to properly initiate, identify, log and document problems to his program support customer engineer."

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Users Benefit as Competition Improves A/V Courses

J. Daniel Couger On *Education*

Comparing the newly released sixth edition of the *Guide to Audio/Visual Materials for Data Processing Instruction* to prior editions reveals almost two-thirds of the training firms born by IBM's unbundling no longer exist. Despite the fall-out of firms, however, the scope of courses available continues to widen.

This year's edition of the annual guide shows three independents expanding their libraries of products. Advanced Systems Inc. (ASI), Deltak and Edutronics now provide courses on all the major and many of the minor topics in the DP field.

Most courses cover state-of-the-art subjects: all three vendors have released courses on virtual storage. Nevertheless, general-purpose courses such as Fortran, Cobol, system analysis and design are available too.

In addition to the products listed in the new A/V Guide, the chief executive of each firm has revealed courses or product changes which will be released during the next six months.

ASI Converts to Color

ASI has joined the color ranks, making its library available on reel or cassette form. This step is important for users who can now utilize the offerings of all three vendors through one viewing unit.

George Ravazzola, ASI president, reported a cost/benefit analysis course will be available in 90 days. The 4-module course will sell for $1,200. The entire System Analysis and Design series of 36 modules is being revised and will be released throughout the next year as each module is completed.

ASI is also expanding its applications courses. Although now confined to manufacturing, the series will be enlarged in the fourth quarter to include units on purchasing, inventory control and shop floor control.

ASI's Introduction to IBM S/370: Concepts and Facilities should be released by July 1. The 5-module course will sell in the $1,000 to $1,200 range.

The S/370 course on computer operator training will be available in August. This 5-module course will also sell for somewhere in the $1,000-$1,200 range.

Deltak's 80-module VS series will be completed before the year ends. Robert King, Deltak president, has announced availability of the VS1 Operators course (7-module) by mid-June and the VS2 (Release 1) Operators course (7-module) by August. The VS Programmer course (25 modules) will be released by module, starting in July.

Ed Musselwhite, executive vice-president, reported the ANS Cobol series will be ready in June. Deltak's course is aimed at the entry level programmer.

A new 4-module database course will be ready this month and two DOS courses will be released in the fall. The 12-module operators course should be ready in September and the 15-module programmers course should be ready by January.

A new system analysis and design course will be produced by Edutronics. The 22-module course will be based on my own book, *System Analysis Techniques* (John Wiley and Sons, Inc.). George Howard, president of Edutronics, has also announced an eight-film course in data communications, produced in cooperation with Eastern Airlines.

State-of-the-art courses in IBM S/370 I/O devices and VS1 and VS2 will be released in the near future. A new 10-module Job Control Language course equips the student with a working knowledge of JCL.

The course is divided into two sections: Elements of JCL and JCL Coding Techniques, making it possible to run classes in parallel for two levels of students. A pragmatic course, the JCL series gives suggestions for avoiding problems as well as covering proper operating procedures.

The sixth annual guide to A/V materials for data processing contains descriptions of products of 12 firms. The guide may be acquired for $3 from the University of Colorado, Cragmor Road, Colorado Springs, Colo. 80907.

Couger is professor of computer sciences and management at the University of Colorado.

Course Reviews 'CPUs-on-Chip'

SILVER SPRING, Md. – Designers and others familiar with digital circuitry can get a better understanding of the various "CPU-on-a-chip" computers through a course on microcomputer selection and programming offered by Software Technique Inc.

The course includes a seminar and workshop sessions. The seminar provides an overview, with discussions and comparisons of all the known microcomputers. Each is then individually covered and made available for hands-on experience in a workshop environment.

Presentations at client offices start at $1,000. This works out to an average cost of about $75 per student based on expected class sizes, a spokesman said at room 1125, 8811 Colesville Road, 20910.

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The Wiltek difference. The Wiltek terminal combines high speed with the ability to batch data and transmit it *automatically* over standard dial-up facilities. Two unique 50,000 character storage buffers are built into the Wiltek terminal. One temporarily stores incoming data, the other outgoing data. The buffers enable the terminal to send and receive large amounts of data during a single call – *and with no interruption of data entry*. Data moves fast, phone calls are brief. Transmission costs go down more than 50%!

The Wiltek Model 300 is the most economical Wiltek keyboard entry terminal, suitable for low to medium volume locations. Like all Wiltek terminals, the Model 300 automatically makes error checks during transmission. At a large oil company which recently installed 300's in its regional field offices, terminal operators used to spend hours each day re-entering garbled messages. Automatic detection and re-transmission has resulted in more efficient operation and considerable cost savings.

The Wiltek Model 400, with its 30 cps KSR, is perfect for high volume locations. Several corporations use the Model 300 (left) at all remote locations and the Model 400 at corporate headquarters. A packaging company uses 400's at a central location to receive reports from offices around the country on the status of shipments in transit.

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Mini Monitors Student Progress

UTICA, N.Y. – The Board of Education here has purchased a minicomputer to monitor student progress in reading and mathematics skills in a pilot education program.

The Comprehensive Achievement Monitoring System (CAM) was developed by Dr. Olcott Gardner of the Jamesville-DeWitt Central School, under special state and federal grants.

The New York State CAM project is the pilot project in the nation for the installation of this particular educational software on minicomputers, Gardner said.

"The purpose of CAM," Gardner said, "is to accomplish program assessment for a particular course or grade level, to determine where certain objectives are taught, the percent mastery after they are taught and where certain objectives lose retention."

The program breaks year courses into individual Learning Activity Projects (LAPs), enabling each student to progress at his own rate. As each LAP is completed, the computer scores the project, prints out a result sheet for the instructor and stores the information.

"One asset of this program," according to Ronald D. Ayer, Utica administrator for research and development, "is the ability to retrieve grading and statistical output for each individual student at any time."

The school uses a 4K PDP-8, with two magnetic tape decks, card readers, teletypewriter terminal and printer.

X-Ray + DP 'Make No Bones' About Assessing Skeletal Health

By Ken Shonk

Of the CW Staff

DAYTON, Ohio – Using an inherited, left-over optical scanner and a Linc-8 computer, neither of which had the exact capabilities needed, a research group at Wright State University here has assembled an automatic system for assessing the health of the skeleton from an X-ray of the hand. The system, which measures bone density, is capable of detecting changes in the amount and kind of bone mineral substance long before visually discernible changes take place, according to Prof. Charles Colbert, director of the project.

"Since we had to make do with what we had, assembling the equipment for the job was one of the real challenges," Colbert explained. "The photodensitometer used to optically scan the X-rays, for instance, was never designed to talk to a computer, and the Linc-8 was never designed to handle the multiprogramming mode we needed to operate in."

Colbert's graduate assistant, Henk Vanhulst, a physics graduate from Antioch College who had no computer experience before the project began, designed a way of swapping parts of the program between the disk and the memory. He also designed the multiprogramming system for the Linc-8, a laboratory-oriented computer from Digital Equipment Corp. which was the predecessor to the PDP-12.

The photodensitometer scans the X-ray of the three middle fingers of the left hand, taking gray level readings for the middle bone of each finger and transmitting the data on-line to the computer.

"The computer, which senses when the beam crosses and leaves the bone image, then uses an algorithm based on the physics of what happens to X-ray photons when they penetrate a body part and expose film, to calculate the radiological weight and the area of the bone (a measure of the size). By simple division the computer then gets the radiological density of the bones.

"The computer compares the measured value for a patient to norms we've established from measurements on a large number of normal men and women of all ages and which depend only on sex and age," Colbert stated. "Once we plug in the patient's sex and age, the computer goes to the appropriate density curve, prints out the patient's measurements, the normal values and range and a comparison as either a percentile ranking or a qualitative ranking."

Comparing the rankings to particular patterns found to be characteristic for certain bone disorders, the computer can also make a partial diagnostic evaluation, Colbert pointed out. "A finding of overweight, overdense bones together with normal size and skeletal age might indicate lead poisoning. Overweight, oversize and overdense bones combined with normal skeletal age is characteristic of patients with congenital rickets overtreated with Vitamin D," he explained.

Colbert noted that this project has concentrated on making the sytem a clinically workable tool in both diagnosis and treatment of bone disorders.

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The Wiltek Model 350 is used where many copies are required or where almost continuous operation is expected. A chemical company uses 350's at its regional offices where sales orders are entered on four-part forms, and at its plants where the orders print out on eight-part forms.

The Wiltek Model 820 terminal transmits punched card data from remote locations. A major manufacturing corporation has installed Model 820's to transmit payroll data from forty plants to a single computer center for centralized processing. The same system also employs Model 400 terminals at all locations to handle administrative messages.

The Wiltek Model 500 terminal uses an advanced CRT with 2000-character display. The 500's editing features make entry of formatted data fast and easy. A nationwide delivery service using the Model 500 to enter package tracers increased operator output by 50% over the previously used teletypewriters.

Our new booklet shows how Wiltek's terminal concept can make corporate data communications more efficient and less costly. Write Robert Colette, Commercial Marketing Manager, Wiltek, Inc., Glover Avenue, Norwalk, CT 06852.

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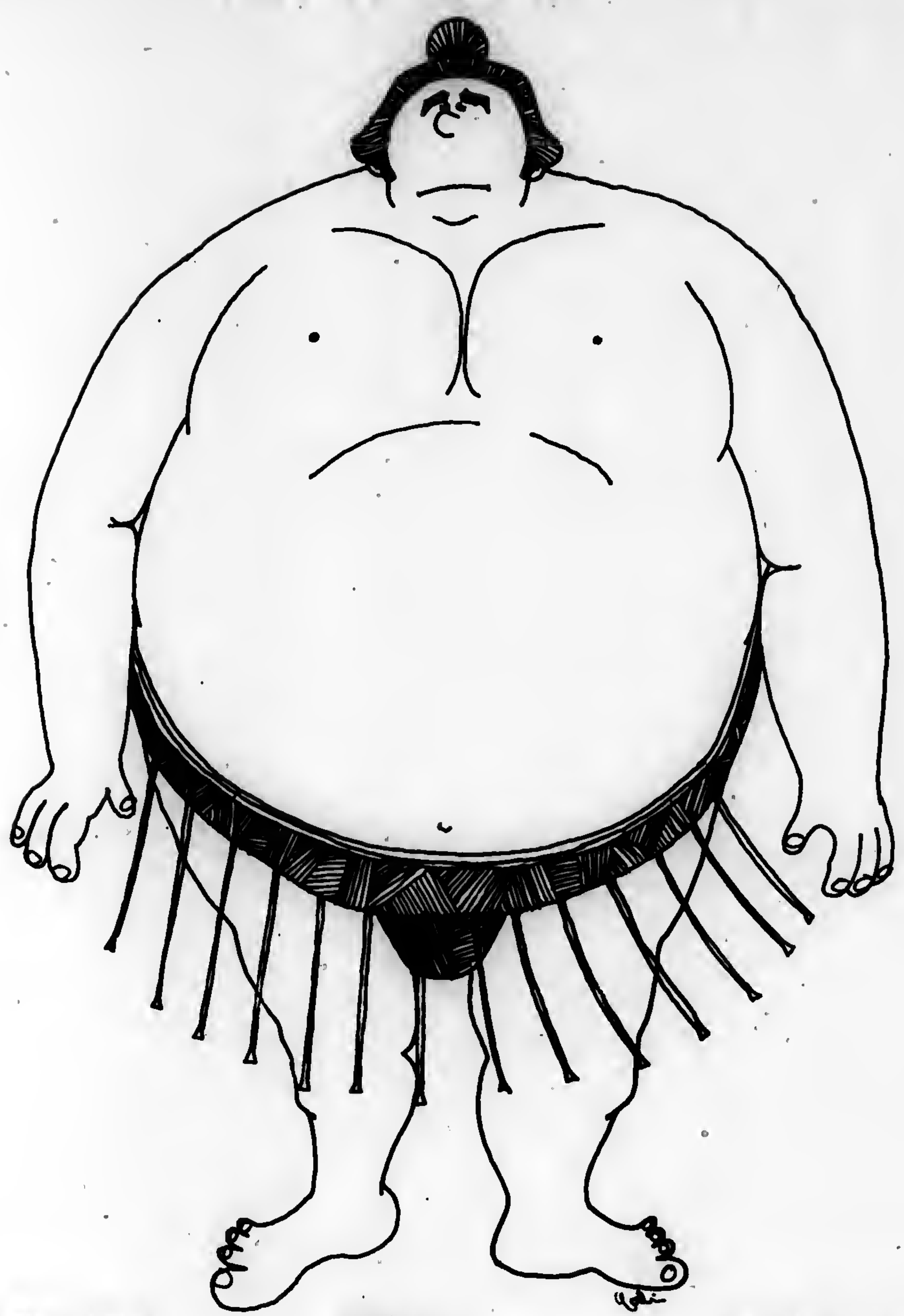

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- Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.
- Shukan lets you in on the action in the world's fastest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 11,237 in 1971; 11,000 minicomputers installed, up from 1,670 in 1971; and 3,000 industrial systems installed, up from 1,086 in 1971.
- Is this growth likely? The latest census of general-purpose systems revealed that there were 14,806 systems installed as of September 1972, a one-year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 23.1%, respectively. And more than 50% of these new systems were American made.
- It is true that there are import restrictions. But Japanese vendors and users can get permission to import almost anything they want and need. As a result, 1972 imports were over $360 million.
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CI Notes

Brokers Order Telequote

TRUMBULL, Conn. – Five national brokerage firms have signed orders totaling more than $6 million with Bunker Ramo Corp. for its System 7 and Telequote stock quotation services.

The contracts include about 3,400 desk units in 286 main and branch offices of Hornblower & Weeks-Hemphill, Noyes, Inc.; Harris, Upham & Co., Inc.; Shearson, Hammill & Co., Inc.; Thomson & McKinnon Auchincloss Inc.; and Hayden, Stone, Inc.

Similar contracts have already been signed by E.F. Hutton & Co. and Dean Witter & Co.

Under the contracts, the firms have the option to interconnect the Bunker Ramo terminals with their own computers.

Tally, Ball Talk Financing

KENT, Wash. – Cash-hungry Tally Corp. and Ball Corp., maker of glass containers and electronic products, have reached preliminary agreement on an arrangement to provide Tally with financing.

Under the terms of the agreement, Tally would issue to Ball warrants to purchase about 1.6 million shares of common at $3 a share.

Tally said the agreement is subject to certain conditions, and if completed is expected to provide "adequate funds to meet the requirements of its current programs."

GTE Unit Seeks Logic

WHITE PLAINS, N.Y. – GTE Information Systems, Inc. is negotiating to acquire Logic Corp., a key-to-disk input system maker.

Any agreement would not exceed $2 million, in cash or stock, and would be subject to approval by the boards of directors of both companies and by Logic's shareholders.

Logic makes key-to-disk units in addition to data collection and preparation systems. GTE Information Services markets data communications equipment, software services and systems.

Wescon OKs Floor Sales

SAN FRANCISCO – The Western Electric Show and Convention (Wescon) has issued a clarifying statement indicating that sales, but not delivery of products, will be permitted to occur on the floor of the show. Previously the permissibility of on-the-floor sales was a grey area.

Supershorts

Data 100 Corp. has shipped its 1,000th Model 70 remote batch terminal, which it started producing in April 1970.

– – –

Computer Services Corp. has created a Software Products Division, and said it will soon announce a new product.

– – –

What the Papers Say

IBM Planning New Data Entry Family

TULSA, Okla. – The 3740 will not be IBM's only data entry product, according to minutes of a 1972 IBM management committee meeting revealed in the Telex-IBM case.

In fact, the minutes show there was a great deal of opposition to the introduction of the 3740 on the part of the IBM Data Processing Group which wanted to wait until the firm was prepared to offer a new modular series of data entry equipment.

Some Dissatisfaction

The group reportedly opposed the introduction of the 3740, known then as the Viking system, and was "driving for a family of data entry units based on the universal controller in SDD (System Development Division) in order to offer the marketplace several related products as opposed to one-of-a-kind units like Viking even though market entry will be admittedly late."

The group argued that the Viking's projected life of 70 months did not take into consideration the new family of systems under development.

Because of this, the group found the Viking program to be one of high risk and one that did not offer "any promise of sustained leadership in the data entry marketplace."

More Intelligence

The group downgraded the Viking system because it felt the data entry marketplace had a very definite requirement for intelligence in the system, "particularly with the principal competition of the clustered key entry systems," the minutes show.

The group had killed the Viking project in late 1971, but World Trade Corp. took the matter to the management committee for resolution.

Both the corporate marketing people and the management committee agreed with World Trade and ordered the program reinstated, the minutes show.

At that time, early in 1972, the company had already invested $7 million in the Viking program and expected to invest another $7 million before the product was released to the market.

However, the profit projections for the system were not up to the usual high levels expected at IBM, the figures show. Based on a 70-month life, the unit would produce a profit of only 11.6% worldwide, with the U.S. profit pegged at 13.7% and the World Trade profit at 9.3%.

The New Family

The new family of systems that will replace the Viking program will be completely modular.

"The plan called for a family of products using standard technologies as basic building blocks in the keyboard, display, control unit and printer areas which will permit both key entry products and customized industry terminals to be developed with maximum commonality and attendant benefits," the management committee was told.

The committee recommended that the work continue on this family of systems in the Systems Development Division during the 1972-73 budgetary period, noting that the "benefits to be derived from different approaches . . . could well justify the duplicate expenditure involved."

Although no target dates for the announcement of the new systems are mentioned in the minutes, it is clear that IBM does have a product that is at least near to the market stage that will compete with clustered data entry stations made by several independents.

The decision to announce the product will apparently be a marketing one, since IBM will have to carefully consider the impact of the new system on the already announced 3740.

The strategy that will be followed probably will be to delay the announcement as long as possible if it appears that the Viking program will meet its goals.

However, if the Viking program is seen to be falling short of those projections, then the firm might rush its new family of data entry systems to the market faster than it would have otherwise.

Dropping of Midas System Hints At IBM's Disk Drive Strategy

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Apparently the Midas disk drive program at IBM did not have the golden touch of its namesake.

Primarily for marketing reasons, IBM has "terminated" the project to market an approximately half-density 3330, and the cancellation of the Midas program may give a significant glimpse at IBM's future disk drive strategy.

The Midas system was part of an overall IBM program to enhance the 3330 during its projected lifetime, apparently to keep independent producers and users off balance.

Midas itself was to have a maximum capacity of 60M byte/drive as compared to the 3330's 100M byte/drive and was to have had eight of the 3330's read/write heads removed for its operation.

However, the IBM marketing department discovered that the Winchester drive, announced as the 3420, would have a 30% to 35% price advantage over a Midas system with four to five spindles.

Therefore Midas was dropped even though the project had been fully developed at the firm's San Jose disk development facility.

It is clear from some documents that IBM wants to press its Winchester technology now while it has little competition in enclosing all of the read/write heads in the disk pack rather than the disk drive.

Presently the firm has a clear edge in this area, and it is known that the independents will probably have a hard time finding disk pack suppliers capable of integrating the heads into their packs, which will force them to develop the packs themselves.

This could be an expensive and unrewarding process for the smaller firms in the business, and in fact could force several of them to the wall if indeed IBM is successful in making Winchester and its follow-ons the standards for the industry.

With their development dollars tied up in the 3330 area and with a large inventory of 3330-like devices the independents will be hard-pressed if IBM cuts off its 3330 enhancement program as it appears to be doing.

The independents would have been able to fight further 3330 enhancements because it is a technology they are familiar with, and they have an inventory of 3330-like devices that could have been reworked into machines of the Midas or Iceberg type.

It is not yet clear whether the Iceberg program – essentially a double-density 3330 – is still in the IBM game plan.

Analysis

However, it is clear that one of the problems from the IBM viewpoint – with both the Iceberg and Midas programs – is the systems could be readily duplicated by the independent peripherals industry that has now gained experience with the 3330-equivalent disk drives.

All of the recently released secret IBM documents show the firm is conscious of the competition and is constantly urging its engineering departments to come up with ideas that cannot be easily duplicated by the independents, therefore keeping the independents off balance and their markets relatively small.

The independents who hope to survive if IBM is successful in downplaying 3330s in favor of the Winchester concept will have to start working on the new devices now or convince computer users that their planned 3330-like enhancements are reasonable alternatives to the Winchester-type drives.

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NCR Sees More Internal Changes On Road to Systems Capability

By Marvin Smalheiser
CW West Coast Bureau

SAN DIEGO, Calif. – National Cash Register Co. (NCR) has successfully come through an important period of change and more change is in the offing to make it stronger and more profitable, according to William S. Anderson, NCR president.

Anderson told a recent users meeting that most of the necessary transition had been accomplished by NCR but more change is due in both organization, including marketing and support groups, and products.

He said NCR is pointed in the direction of building systems capability.

"In the future, it will be systems capability, orientation toward the customer's needs and new directions in support and services which will be decisive in the marketplace."

Anderson said despite a loss in 1972, NCR was in the black with record revenues in the first quarter of this year.

"We were able to report that incoming equipment orders for the first three months of this year were up 22% over the comparable period of last year," Anderson said.

'...a Sense of Unity'

SAN DIEGO, Calif. – For William Anderson, the most important accomplishment of his first year as president of NCR is creating a "sense of unity in the company . . . a sense of dedication to be in the computer business."

In the past, "we felt maybe we were, maybe we were not . . . but if we're not in the computer business we're out of business, period."

The major obstacle now, he said, is assuring profitability.

"Now that we have tightened our belt, we have to make more money."

He noted the increase was paced by the DP business. When all computer-related equipment and services are taken into account, he said, NCR is profitable in computers.

Regarding NCR and Control Data Corp., its partner in a joint venture, Anderson said: "We are also making encouraging progress toward achieving compatibility between future NCR systems and future CDC systems so that both partners can offer a full range of computing power."

NCR's development of the next generation of Century computers is on schedule, he said, but declined to disclose any features.

There will be further expansion of the new family of satellite computers, the 399 series, plus release of more data terminals and associated communications equipment, he said.

Software a Sore Spot

Anderson expressed some dissatisfaction with NCR's software effort despite an investment of "over $25 million in Century software during the past three years alone."

He told of a new General and Applications Software Development Division, which he personally will monitor.

In the near future, he said, a number of important new packages will be announced.

Anderson, who took over the helm at NCR a year ago, said "virtually every aspect of NCR's operations" has been reshaped and reorganized.

But he added: "In the future I shall be announcing a similar reorganization of our marketing and support groups.

Orders & Installations

Industrial National Bank of Rhode Island has purchased a Financial Information and Control System from Management Science America, to automate financial reporting.

Pan American World Airways has ordered a communications system from Collins Radio Co. as part of its worldwide reservation system. The order includes dual C-8500 communications processors and program switching equipment.

The New York General Post Office has purchased an Advanced Optical Character Reader (AOCR) system from Recognition Equipment Inc., for use in postal letter-sorting applications.

Temple University has ordered a Student Scheduling System from Systems and Computer Technology Corp. to provide computer support during the pre-registration, final registration and scheduling process.

Hecht Co., a department store firm, has ordered an additional 290 NCR 280 terminals and an NCR 725 in-store computer, to convert its stores to point-of-sale equipment.

The Commonwealth of Virginia has ordered a Qwik-Draft system from Aspen Systems Corp. for legislative bill drafting. The system uses CRT terminals on-line to a computer for text editing.

The State of Wisconsin's Internal Revenue Department has ordered an LC-720 key-to-disk system from Logic Corp.

Old Stone Bank of Warwick, R.I., has installed a second NCR Century 200 to monitor demand deposits, savings accounts and installment mortgage loans.

Wells Fargo Bank, San Francisco, has ordered a Trace check processing system from Recognition Equipment. The bank will use this system for positive item control and high-density microfilming in its check-processing operations.

Dow Chemical has purchased a MicroSum computer performance measurement system from Tesdata.

CPI Plans to Deliver $100 Million in '73

EDINA, Minn. – The year-old Computer Peripherals, Inc., a joint venture of Control Data Corp. and NCR, expects to deliver over $100 million worth of products to the parent firms during 1973, according to President Paul J. Bulver.

The firm was established to engineer and manufacture printers, tape drives and punched-card equipment for use with both CDC and NCR systems.

"Already both CDC and NCR have achieved significant savings in the form of lower-cost computer peripherals and in shared research and development costs," Bulver noted.

CPI's product line includes a 1,200 line/min train printer and 150-, 300- and 600 line/min drum printers.

In the tape line, CPI produces single and dual-capstan tape transports. CPI also makes a high-speed card reader, a high-speed punch and a medium-speed reader/punch.

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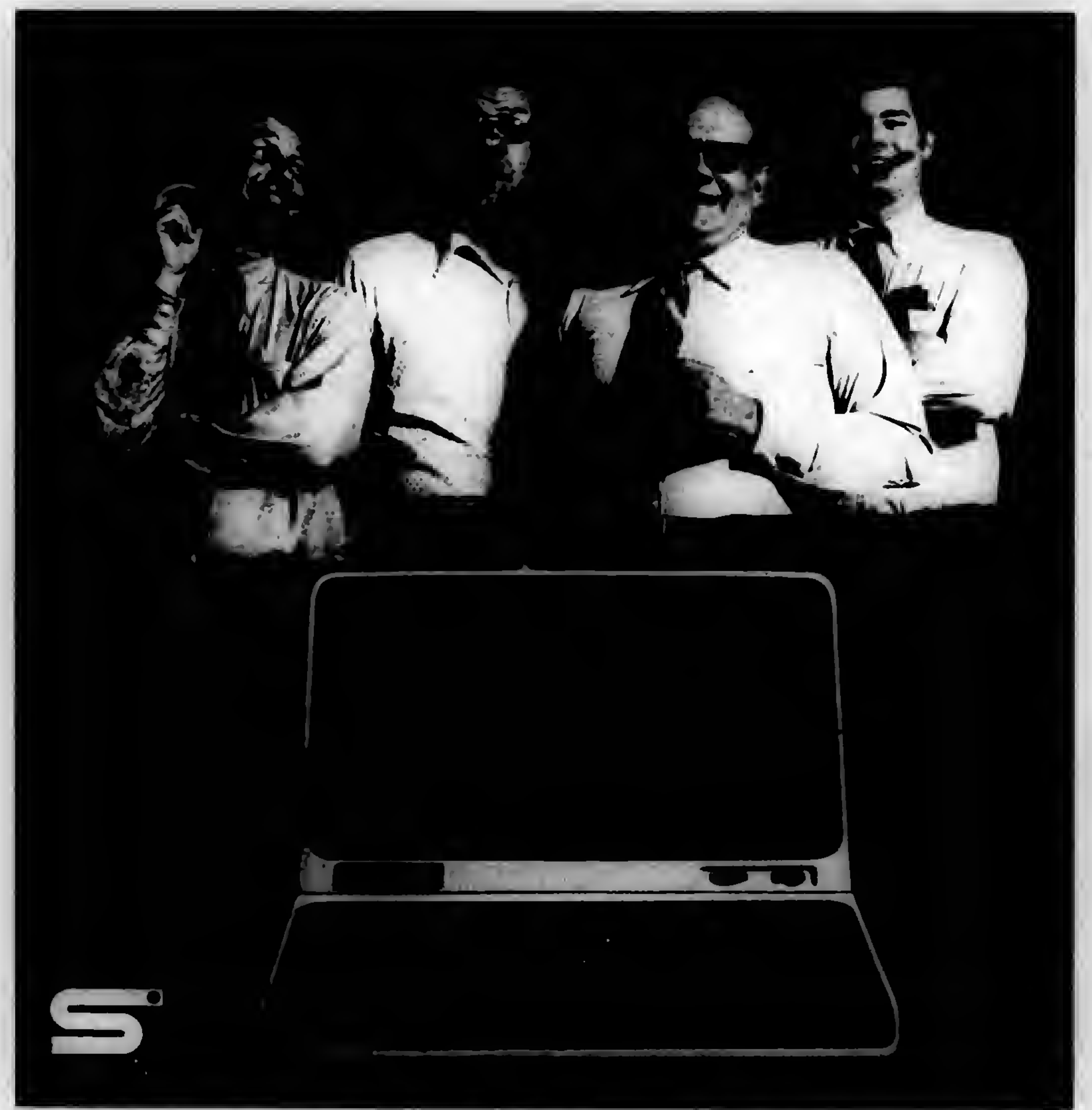

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Japan Market Share Falling

Liberalization Move Seen as Mixed Blessing for IBM

By Molly Upton
Of the CW Staff

TOKYO – The proposed liberalization policy permitting up to 100% of foreign capital investment of computer firms here [CW, May 30] could have several effects on the DP race, according to *EDP Japan Report,* a publication of International Consulting Corp.

While largely benefitting several U.S. makers who now fall under the classification of foreign firms, the results would be mixed for IBM, which has the distinction of being a wholly owned subsidiary of a foreign company allowed to engage in production in Japan, the report said.

Plus for IBM

IBM will benefit since it will be freed from the controls of the Ministry of International Trade and Industry (Miti), which has limited the production of the 360 Series to two models, the 20 and the 40, and classified the 370 Series as products of a "foreign-capital enterprise" although manufactured in Japan (thus excluding IBM from the large government-controlled market).

On the negative side for IBM, however, the other U.S. makers are expected to escalate their Japanese sales efforts and to begin production in Japan, so IBM will "lose its biggest advantage, domestic production, which has so far been its exclusive privilege," the newsletter noted.

Miti is currently studying how to protect the domestic industry after the liberalization, and plans to take the following measures, according to *EDP Japan Report:*

- Readjustment of conditions and procedures for invoking emergency tariffs and dumping duties and a reexamination of the tariff system.
- Establishment of a "tariff investigator system" to guard against foreign firms "dumping" computers in Japan.
- Revision or enactment of a new antimonopoly law in order to keep IBM-Japan's market share within a reasonable percentage, "even if the firm should take no unnatural measures to attain monopoly."

IBM's Share Falling

Although IBM may have been the first and is now the largest foreign DP enterprise in Japan, its market share has been falling in the last five years, according to the newsletter.

IBM has the giant size of the Japanese market pie, 30%, but its share in the Japanese market is the smallest of its shares in major countries of the world, the newsletter said.

Its sales have also tended to level off as market share declined.

Government regulation is cited as being largely responsible for the decline from about 34% in 1968.

System 370 is not recognized as a Japanese-made computer, as IBM-Japan is more than 50% owned by foreign interests.

This precludes IBM products from being handled by Japan Electronic Computer Co., a joint rental firm formed by Japanese manufacturers.

Home Sweet Home

Additionally, domestic products enjoy various financing and tax benefits under Miti's policy of promoting the domestic industry, the newsletter pointed out.

IBM-Japan is currently excluded from the government and related organizations market, whose installed base at the end of September 1972 was valued at $516 million.

The firm must export 50% of its products.

Miti also excluded IBM-Japan from producing the Model 30 in Japan, while levying 15% tariff on imported mainframes and 25% on peripheral terminal equipment. In April 1972, the rates were lowered to 13.5% and 22.5% respectively.

IBM-Japan must obtain prior authorization from Miti to sell products in Japan made by any of the affiliates of IBM-World Trade in other countries.

Contracts

Quotron Systems, Inc., Los Angeles, has received a $4.4 million contract from Dun & Bradstreet, Inc. for its Model 801 communications equipment to be used as part of Dun & Bradstreet's Advanced Office System.

Daconics has received a contract valued at over $1 million from the Department of Commerce for 59 additional minicomputer systems for use at National Weather Service stations.

CAE Electronics Ltd. of St. Laurent, Que., has been awarded a contract by Canaton Mon-Max, valued at more than $400,000, to provide the DP system for the heavy water plant at Glace Bay, Nova Scotia.

Logicon, Inc. is developing a preliminary software design for an advanced ballistic missile reentry system under a $643,000 contract from the Air Force Space and Missile Systems Organization in Los Angeles.

Pulaski Savings and Loan Association and Quincy-Peoples Savings and Loan Association have contracted for on-line savings and mortgage accounting services from Financial Data Systems, Inc.'s St. Louis data center.

Keane Associates, Inc. has received a contract worth over $300,000 from Northeast Utilities, Inc. of Berlin, Conn., for development of a computer-based financial and accounting system.

Digi-Log Systems, Inc. has received a $48,000 contract from Xonics, Inc. of Van Nuys, Calif., for 20 custom-designed terminals.

Informatics, Inc. Western Division has been awarded a $133,000 software contract for data acquisition and recording at Nasa's wind tunnel test facilities at Ames Research Center.

The Naval Electronics Laboratory Center in San Diego has awarded Control Data's Professional Services Division a contract valued at $281,000 for systems engineering and documentation services.

Computer Corp. of America, Cambridge, Mass., has received a contract from the Department of Defense for its Model 204 on-line data base management software system.

Computer Sciences Corp. has received a $1.2 million Navy contract to develop programs for a tactical support center aboard aircraft carriers.

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Potter to License Patent On Group Coded Recording

PLAINVIEW, N.Y. – Independents may have an opportunity to manufacture 6,250 bit/in. tape drives using group coded recording, the same technology IBM uses in its 3420 Models 4, 6 and 8, through a licensing agreement offer from Potter Instrument Co.

While IBM would not confirm that it uses patent No. 3,226,685 in the manufacture of these units, it did say that patent was one of a number of patents licensed to IBM by Potter in 1971. IBM paid a fixed price of about $3.7 million for the patents, according to George W. May, president of Potter.

The patent was issued in the name of John T. Potter, in 1965.

'Of No Concern'

IBM said: "The coverage of Potter's patent No. 3,226,685 has not been determined by IBM and is of no concern since we are licensed on a fully paid-up basis."

May explained that Potter "was anxious to have them [IBM] use some of our patents. Then it becomes some sort of standard. If we said no to them they might have figured out another way of doing it.

"Obviously, some patents are more valuable than others. And they paid us a substantial fee, so we felt there was one in there that they really wanted, and we know which one it was."

Use Not Foreseen

But May admitted "it was only when they introduced the 6,250 [bit/in.] system that we realized that one of the patents we licensed them could be used to develop such a system.

"The more we looked at it the more we realized that in our opinion they did use this technique covered by this particular patent," he said.

Agreements with other firms would be negotiated, and might involve arrangements such as Potter manufacturing and selling on an OEM basis key parts of the tape drives or a straight development effort, May said.

Wema Files Software Tax Motion

SACRAMENTO, Calif. – The Western Electric Manufacturers Association (Wema) has stepped up its participation in the California battle over taxation of software.

The group has proposed an amendment that would narrow the definition of taxable software and has established full-time representation in Sacramento to lobby for its amendment.

California bill AB 69, introduced by Assemblyman Joseph Gonsalves, seeks to extend permanently the two-year moratorium on taxation of all software except "basic operational programs."

This bill leaves the definition of that phrase up to the Board of Equalization, which Wema claims has applied too broad an interpretation.

The Wema amendment to AB 69 defines basic operational programs as only those programs that are "fundamental and necessary to the function of a computer."

This definition, Wema said, would exclude such programs as language translators, service programs and applications programs from the definitions issued earlier by the state Board of Equalization.

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Cutbacks Affect Exchanges' Unit

NEW YORK – Low volume of securities trading has caused a cutback in the personnel and a delay in projects at the Securities Industry Automation Corp. (Siac), the computer subsidiary jointly operated by the American Stock Exchange and the New York Stock Exchange.

Siac performs DP work for the two exchanges, and much of its business is related to trading volume.

A total of 61 persons, or about 6% of the staff, have received notices during May.

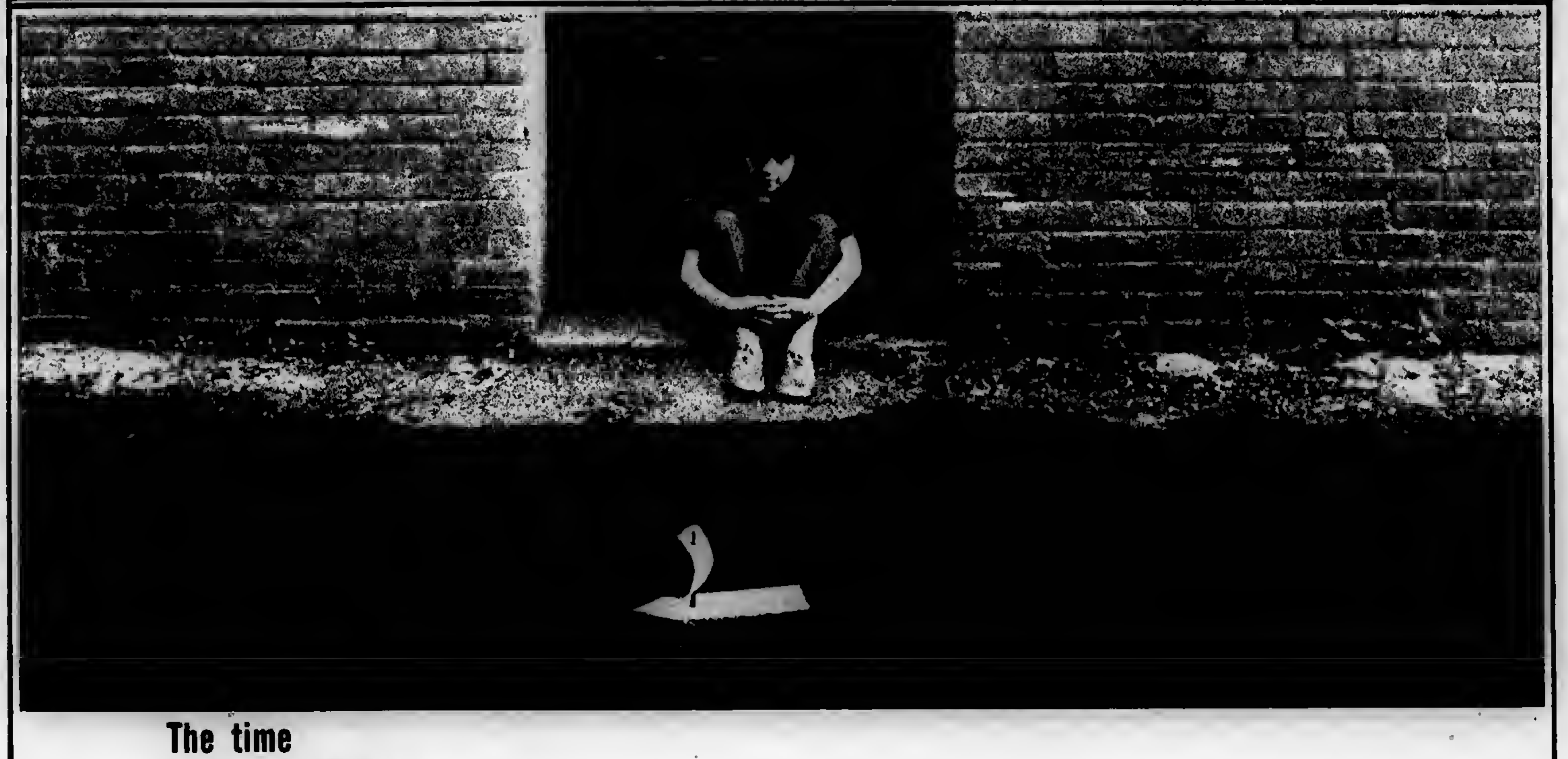
The latest round of cuts involves managerial and professional people, according to a spokesman, whereas the first layoffs were mainly technical personnel.

In addition to the layoffs, the program to expand computerized execution of odd-lot orders is expected to be delayed.

In the first quarter, Siac spent $1.3 million more than it received. Revenues stem from such items as charges for the exchanges' stock-ticker services.

Singer Forms Support Unit

NEW YORK – Singer Business Machines has formed a new marketing support organization to consolidate all functions related to the sale, installation, maintenance and software support of its products.



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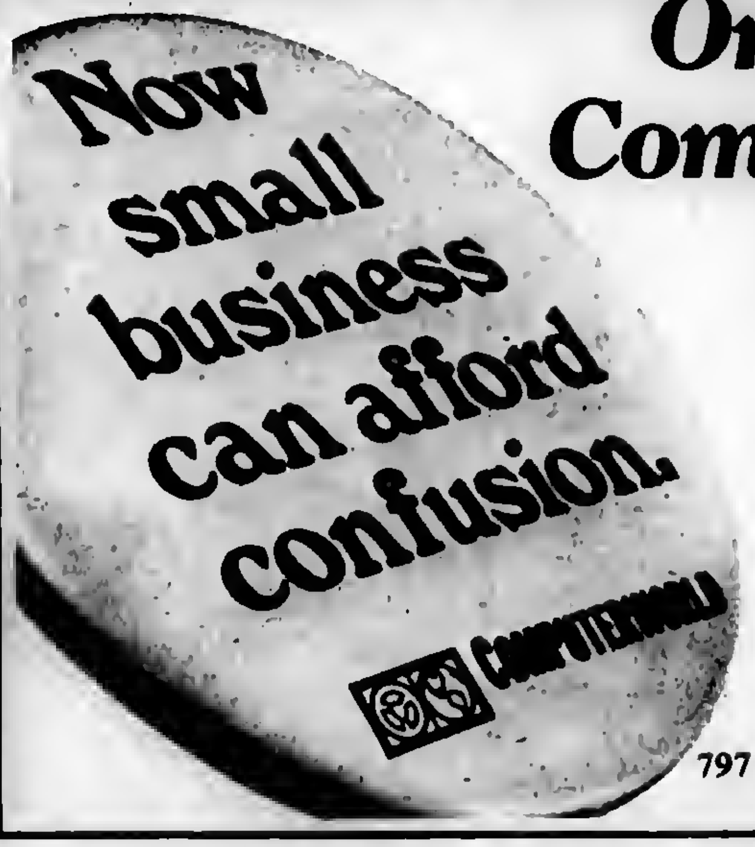
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Sales Off to End Users

STC Earnings, Revenues Rise in Quarter

LOUISVILLE, Colo. – Earnings and revenues were on the rise during the first quarter at Storage Technology Corp. despite the slackened pace of sales to end users compared with the previous two quarters.

In the period ended March 30, earnings rose to $1.7 million or 49 cents a share, including a $645,000 special creidt, compared with $207,000 or 7 cents a share, including a $98,000 special credit, in the comparable 1972 period.

Revenues rose to $11.3 million from $3.7 million in the same year-ago period. Of this amount, $7.9 million was obtained from sales and $3.4 million from rental and service income.

As of April 30, annual revenue from rental and service fees had increased to $15.2 million from $6.2 million a year earlier, the firm said.

Profitability, a spokesman noted, continues to remain heavily dependent upon the sale of equipment to end users, distributors and leasing companies.

End-user sales were below those of the past two quarters which the firm attributed to the "adverse effects of a rumored announcement by IBM of a new line of high-density tape equipment." After IBM and STC announced their products, "orders and shipments increased significantly," the spokesman said.

Of the $7.9 million revenues from sales, $7.5 million represented sales to leasing companies.

Hewlett - Packard Earnings Rise 70% On 40% Increase in 2d Quarter Sales

PALO ALTO, Calif. – Hewlett-Packard Co. reported a 40% increase in sales and a 70% increase in earnings for the second quarter ended April 30.

Revenues for the quarter totaled $163 million compared with $116.6 million for the corresponding 1972 quarter.

Earnings amounted to $14.6 million or 54 cents a share compared with earnings of $8.6 million or 33 cents a share in the year-ago period.

Incoming orders for the quarter rose 37% to $175.4 million compared with $127.9 million in the same period of 1972.

For the six months, orders totaled $331.5 million up 39% from a year ago.

Revenues for the six months amounted to $290.6 million, a 36% increase over the first half of 1972.

Earnings rose 53% to $23.3 million or 87 cents a share compared with $15.2 million or 58 cents a share, during last year's first half.

Virtually all of HP's operating divisions are reporting a higher level of business in 1973, President David Packard said.

"International markets have been particularly strong," he noted, "with orders from international customers amounting to $139.2 million for the six-month period.

"This represents a gain of 46% over the corresponding period of 1972.

Itel Posts Turnaround In First Quarter

SAN FRANCISCO – Itel Corp. posted a turnaround in its first quarter report for the period ended March 31.

Earnings, inlcuding a $254,000 tax credit, totaled $721,000 or 10 cents a share compared with a loss of $1.5 million or 21 cents a share in the year-ago period.

Revenues rose to $33.3 million from $19.4 million.

Nickels & Dimes

Although Xerox expects 1973 profits to match its 17% increase in 1972 earnings, President Archie R. McCardell told shareholders the cost of introducing new products would make it difficult for the second half of 1973 to equal the "excellent financial results" expected for the first half.

Xerox directors voted an increase in the quarterly dividend to 22 cents a share from 21 cents payable July 2 to holders of record June 8.

$$$

Adverse market conditions: Advanced Memory Systems has withdrawn its registration statement for 150,000 shares by the company and 313,500 shares by stockholders. Signetics has postponed its public offering of 715,000 shares of common.

$$$

Electronic Computer Programming Institute's annual meeting has been postponed because of negotiations through which the chairman and vice-chairman of the board might transfer control of the company through sale of their stock.

$$$

Tri-Data's profitability in 1972 was attributed largely to the "increasing acceptance" of new models of Cartrifile digital cartridge systems. The firm has procured a new $500,000 unsecured line of credit from Union Bank of Palo Alto.

$$$

TRADE QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLDSINO PRICES 7HURSO4Y, N4Y 31, 1973

SOF7WARE & EOP SERVICES

EXCH		1973 RANGE (1)	CLDSE MAY 31 1973	WEEK NE7 CHNDE	WEEK PC7 CHNGE
O	ADVANCEO CDMP TECH	1- 2	1	- 1/8	-11.1
A	4PPLIED O4T4 RES.	2- 4	2 1/4	+ 1/4	+12.5
D	4PPLIEO LOGIC	1- 3	1 3/8	- 1/8	-8.3
N	AU7OMA7IC OATA PHDC	56- 94	56	-10	-15.1
O	8R4NDDN 4PPLIEO SYS7	I- 1	5/8	0	0.0
O	CONPU7ER OIMENSIUNS	2- 5	3 1/4	- 1/4	-7.1
D	CDMPUTER OYNANICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	I- 5	1 1/2	+ 1/4	+20.0
N	COMPU7ER SCIENCES	2- 6	2 5/8	+ 1/8	+5.0
O	CUMPU7ER 74SK GNOUP	1- 2	1 1/2	0	0.0
O	COMPU7ER TECHNOLOGY	1- 3	1	0	0.0
O	CUNPUTER USAGE	4- 9	4 5/8	+ 1/4	+5.7
O	COMRESS	1- 2	1/8	0	0.0
O	CONSH4RE	4- 9	4 3/4	+ 1/4	+5.5
N	COROUR4 CURP	6- 15	5 7/8	- 5/8	-9.6
O	D47A7A8	2- 4	1 3/4	- 1/4	-12.5
O	EDP RESOURCES	1- 3	1	0	0.0
A	ELECT COMP PRDD	1- 2	1 1/8	+ 1/8	+12.5
N	ELEC7RONIC 0474 SYS.	35- 56	37 3/4	-2 1/4	-5.6
O	INFORMA7ICS	2- 6	3	+ 1/8	+4.3
O	1.O.A. OA7A CORP	1- 1	5/8	- 1/8	-16.6
D	KE4NE ASSOCIATES	3- 4	3	0	0.0
O	KEYO47A CDRP	7- 12	6 5/8	+ 1/8	+1.9
O	LOGICON	4- 7	4	0	0.0
A	MANAGENENT OATA	2- 5	1 3/4	0	0.0
O	N4TIONAL CSS INC	8- 41	18	-5 1/4	-22.5
O	N47IDNAL INFO SRVCS	1- 2	1	0	0.0
P	DN LINE SYS7ENS INC	13- 17	13 1/2	0	0.0
N	PLANNING RESE4RCH	3- 7	2 5/8	+ 1/8	+5.0
O	PROGN4MNING METHDDS	22- 24	22 3/4	0	0.0
O	PROGR4NNING & SYS	1- 1	7/8	0	0.0
O	R4PIDAT4 INC	6- 24	5 1/2	-1	-15.3
O	SCIEN7IFIC CDNPUTERS	1- 2	1	0	0.0
O	SIMPLICI7Y COMPUTER	2- 4	2 3/4	0	0.0
O	7BS CDNPU7ER CENTERS	3- 4	2 3/4	0	0.0
O	7CC INC	1- 1	3/8	0	0.0
O	7YMSHARE INC	6- 12	7	+1	+16.6
O	UNI7EO OATA CEN7ER	5- 6	4	0	0.0
N	UNIVERSITY COMPU7ING	5- 11	5 1/8	0	0.0
A	URS SYSTEMS	4- 8	4	0	0.0

PERIPHERALS & SUBSYS7EMS

EXCH		1973 RANGE (1)	CLDSE MAY 31 1973	WEEK NE7 CHNDE	WEEK PC7 CHNGE
N	4DDRESSDGRAPH-MULT	14- 34	13 1/2	- 1/2	-3.5
O	AOVANCEO MENORY SYS	6- 23	6	-2	-25.0
N	AMPEX CORP	4- 7	4 1/8	+ 3/8	+10.0
O	ANOENSDN JACO8SDN	3- 6	3 1/4	+ 1/4	+8.3
O	8EENIVE MEOICAL ELEC	6- 10	7	+ 1/2	+7.6
4	8OLT+8ER4NEK & NEW	7- 12	6 5/8	- 1/8	-1.8
N	8UNKER-RAMO	6- 18	10	+ 7/8	+9.5
A	C4LCOMP	5- 13	7 1/4	+ 1/8	+1.7
O	C4M8RIOGE NENDRIES	10- 15	9 3/4	- 1/2	-4.8
O	CEN7RONICS OA7A CONP	13- 28	18 3/4	- 3/4	-3.8
O	COOEX CORP	10- 19	10 1/2	- 1/2	-4.5
O	COGNI7RONICS	1- 3	1 3/8	- 1/8	-8.3
O	CONPU7ER COMNON.	1- 4	1 3/8	- 1/4	-15.3
A	CUMPU7ER EQUIPMEN7	2- 3	2 1/4	- 1/8	-5.2
O	COMPU7ER NACHINERY	7- 13	6 3/4	0	0.0
O	CONPU7ER 7R4NSCEIVER	2- 6	2 1/8	+ 3/8	+21.4
A	CONPU7ES7	0- 0	N/4	0	0.0
N	CONR4C CORP	15- 32	16 3/8	- 1/4	-1.5
4	OAT4 PRDOUC7S CORP	2- 4	2 7/8	+ 5/8	+27.7
O	D4T4 RECOGNITION	2- 3	1 1/2	0	0.0
O	DA7A 7ECHNOLOGY	2- 5	2 5/8	+ 1/4	+10.5
O	OI/4N CON7ROLS	2- 4	2 1/8	- 1/8	-5.5
N	ELECTRONIC M & N	3- 6	3 1/8	+ 1/8	+4.1
O	FA8RI-TEK	3- 5	2 7/8	+ 3/8	+15.0
O	GENER4L COMPUTER SYS	6- 9	6 1/4	+ 3/4	+13.6
N	GENERAL ELECTRIC	56- 76	59 1/2	0	0.0
N	H4ZELTINE CDRP	6- 9	6 1/8	0	0.0
O	INFOREX INC	9- 23	8 3/4	-2	-18.6
O	INFORMATION OISPLAYS	1- 2	3/4	+ 1/8	+20.0
O	INFORNATION IN7L INC	10- 15	10 1/4	+ 1/4	+2.5
A	LUNOY ELECTRONICS	4- 9	4 1/8	+ 3/8	+10.0
O	NAN4DEMEN7 ASSIST	1- 1	1/4	0	0.0
A	NILDO ELEC7RDNICS	15- 28	15 1/4	-2 1/4	-12.8
N	NDHAWK O47A SCI	4- 13	4 7/8	+ 3/8	+8.3
O	ODEC CONPUTER SYST.	2- 6	2 1/4	+ 1/4	+12.5
O	DP7IC4L SCANNING	2- 7	3	+ 1/4	+9.0
O	PER7EC CDRP	5- 8	5 5/8	+ 1/8	+2.2
O	PHOTON	3- 7	3 3/4	0	0.0
4	PO7TER INS7RUNEN7	4- 9	3 7/8	- 1/4	-6.0
O	PRECISION INS7.	2- 6	2 1/2	+ 1/4	+11.1
O	RECOGNI7ION EQUIP	4- 8	4	- 5/8	-13.5
N	SANOERS ASSOCIA7ES	7- 18	8	- 1/4	-3.0
O	SCAN OAT4	2- 6	1 3/4	0	0.0
O	STDRAGE TECHNDLOGY	12- 34	12 1/4	-2	-14.0
O	SYCOR INC	9- 14	12	- 1/4	-2.0
O	TALLY CORP.	2- 14	3 5/8	+ 7/8	+31.8
N	TEKTRDNIX INC	31- 53	31 1/2	- 3/4	-2.3
N	TELEX	3- 6	3	0	0.0
O	WILTEK INC	10- 18	10	-1	-9.0

SUPPLIES & ACCESSORIES

EXCH		1973 RANGE (1)	CLDSE MAY 31 1973	WEEK NE7 CHNDE	WEEK PC7 CHNGE
O	RALTIMDRE BUS FDRMS	5- 9	6 1/2	0	0.0
A	8AHRY WRIGNT	6- 13	6 3/4	- 1/8	-1.8
A	O47A OOCUNEN7S	18- 22	18 3/8	- 1/4	-1.3
O	OUPLEX PROOUC7S INC	8- 10	7 1/2	0	0.0
N	ENNIS 8US. FONMS	5- 8	5 3/6	+ 3/8	+7.5
O	ORAHAN M4GNE7ICS	10- 20	10 1/4	0	0.0
O	GN4PHIC CON7RDLS	9- 12	8 3/4	0	0.0
N	3N CDNP4NY	76- 89	82 3/4	-2 1/2	-2.9
O	MOORE CORP LTD	53- 60	54 1/4	- 1/4	-0.4
N	N4SHUA CDRP	42- 58	47 1/2	+1 1/8	+2.4
D	REYNOLDS & NEYNOLU	40- 51	44	+1	+2.3
O	ST4ND4RO NEDIS7ER	14- 20	15 1/2	0	0.0
D	T4B PRDDUCTS CD	10- 23	11 1/2	+2	+21.0
N	UARCO	17- 23	18 1/8	+ 7/8	+5.0
A	W48ASN M4GNE7ICS	5- 7	5 1/2	+ 1/2	+10.0
N	W4LL4CE 8US FORMS	19- 26	18 7/8	- 1/8	-0.6

CONPU7ER SYSTEMS

EXCH		1973 RANDE (1)	CLDSE N4Y 31 1973	WEEK NET CHNGE	WEEK PC7 CHNGE
N	BURROUGHS CDRP	211-245	221 3/8	-6 5/8	-2.9
N	COLLINS R4OID	18- 26	19 1/4	+ 3/8	+1.9
N	CON7RDL U474 CDRP	36- 62	36	-4 3/4	-11.6
O	0474 GENERAL CORP	28-131	28 3/4	-4 1/4	-12.8
O	OIGI7AL CDMP CDN7ROL	2- 6	2 3/8	+ 1/8	+5.5
N	OIGIT4L EQUIPNEN7	73-105	84 1/8	-1 3/8	-1.6
N	ELECTRDNIC 4SSOC.	4- 9	5 1/8	+ 3/8	+7.8
4	ELEC7RDNIC ENGINEER.	6- 11	6 1/4	0	0.0
N	FOX8URO	23- 32	24	-1	-4.0
O	GENER4L 4U7ON47ION	26- 55	29 1/4	-2 1/4	-7.1
O	GRI CDNPU7ER CDRP	1- 3	1	0	0.0
N	HEWLET7-PACKARD CD	74- 95	81 1/4	-1 1/4	-1.5
N	HONEYWELL INC	101-139	103	+ 1/8	+0.1
N	IBN	315-457	314 3/4	-85 3/4	-21.4
O	IN7ERD474 INC	7- 13	8 1/4	-1 5/8	-16.4
N	MENOREX	2- 19	4	- 1/2	-11.1
O	NICRDD4TA CDRP	3- 10	3 1/2	+ 1/8	+3.7
N	NCN	27- 35	33 3/8	-1	-2.9
N	R4YTHEDN CO	26- 34	26 1/4	-1 1/8	-4.1
N	SPERRY R4ND	36- 50	38 7/8	-1 5/8	-4.0
4	SYS7ENS ENG. LABS	3- 8	3	0	0.0
N	V4RIAN ASSOCIA7ES	10- 20	12	+ 1/2	+4.3
N	W4ND L48S.	14- 34	15 1/8	+ 1/8	+0.8
N	XEROX CORP	141-169	147 5/8	-5 7/8	-3.8

LEASING CONP4NIES

EXCH		1973 RANDE (1)	CLDSE N4Y 31 1973	WEEK NET CHNGE	WEEK PC7 CHNGE
4	8DO7ME CDNPU7ER	1- 5	1 3/8	0	0.0
D	BRESNAHAN CDMP.	1- 2	2 1/8	0	0.0
O	COMOISCO INC	8- 17	7 1/2	- 1/4	-3.2
O	COMMENCE ORDUP CURP	3- 4	4 1/8	+1 3/8	+50.0
O	CUNPUTER EXCH4NGE	1- 1	1/2	0	0.0
A	COMPUTER INVSTRS GRP	2- 8	3	+ 1/4	+9.0
O	CUNP. INST4LL4TIONS	1- 2	1 1/8	+ 1/8	+12.5
N	DPF INC	5- 9	5 5/8	+ 1/4	+4.6
M	OATRONIC RENT4L	2- 3	2 1/4	0	0.0
A	OCL INC	2- 3	1 1/2	- 1/8	-7.6
4	DE4RBDRN-S7DRM	14- 26	15	- 5/8	-4.0
A	DP4. INC.	5- 8	5 1/4	0	0.0
4	GR4NITE MG7	2- 6	2 5/8	- 1/4	-8.6
4	GREYMDUNO CUNPUTER	3- 6	3 3/4	+ 3/8	+11.1
4	ITEL	4- 12	5 1/8	+ 1/2	+10.8
N	LEASCO CORP	9- 18	9	- 1/4	-2.7
O	LEASPAC CORP	2- 8	1 3/4	- 1/4	-12.5
U	LEC7RU MGT INC	1- 2	1 1/4	+ 1/4	+25.0
4	ROCKWODO CUNPU7ER	I- 3	1 1/4	0	0.0
O	SYS7EMS CAPI74L	6- 15	6 1/4	+ 1/8	+2.0
N	U.S. LEASINO	16- 36	17 1/2	+1 3/4	+11.1

EXCH: N=NEW YORK EXCH4NGE; 4=4NERICAN EXCH4NDE
L=NA7IONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-8AL7-W4SH
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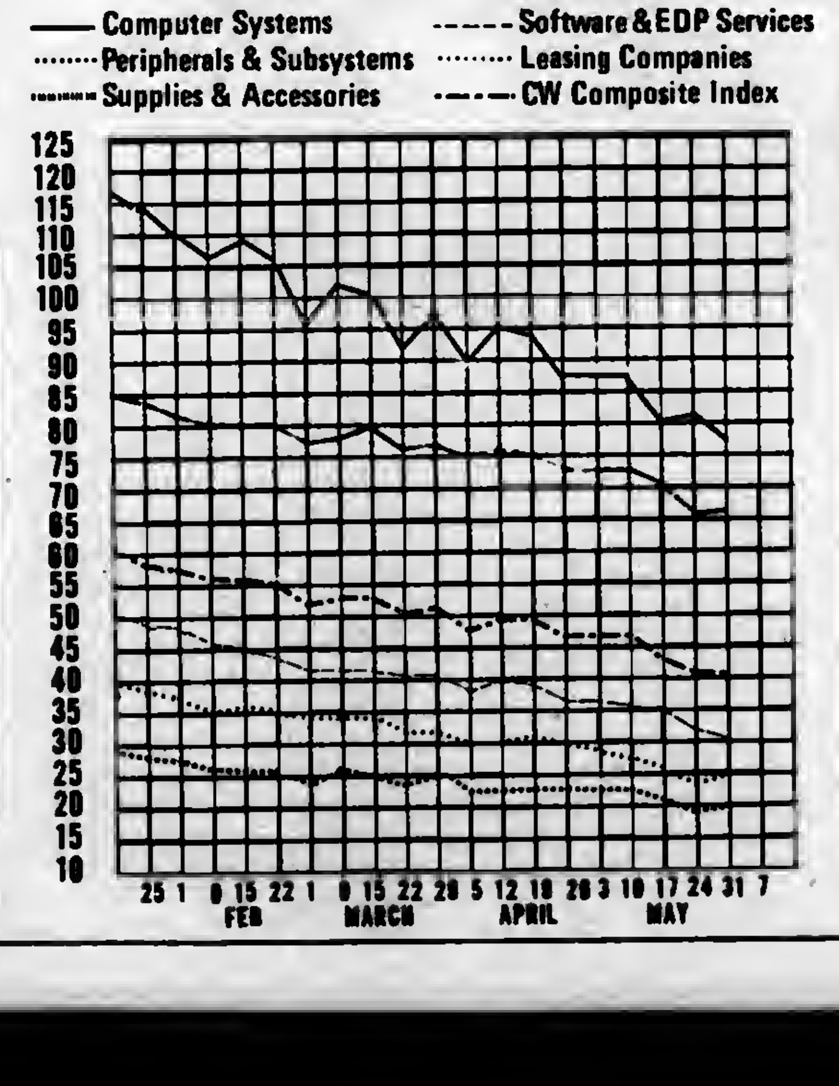

Earnings Reports

CAMBRIDGE MEMORIES
Three Months Ended Feb. 28

	1973	1972
Shr Ernd	$.11	$.08
Revenue	2,789,748	872,183
Tax Cred	5,880	38,227
Earnings	140,078	79,839
6 Mo Shr	.20	.05
Revenue	4,668,327	1,531,888
Tax Cred	62,880	22,971
Earnings	258,488	47,857

COMPUTER EQUIPMENT
Three Months Ended March 31

	1973	1972
Shr Ernd	$.09	$.08
Revenue	6,383,000	5,029,000
Spec Cred	50,000	47,000
Earnings	211,000	189,000

COMPUTER SCIENCES
Year Ended March 30

	1973 (000)	1972 (000)
Shr Ernd	$.03	.....
aRevenue	120,500	a$107,498
Spec Cred	c8,100	.....
Earnings	367	(35,749)
3 Mo Shr	.18	.....
aRevenue	35,385	25,503
Spec Cred	c8,100	.....
Earnings	2,447	(39,238)

a-Excludes revenues of a subsidiary sold Feb. 28, 1973. b-Includes $7.2 million from sale of company's interest in Computax Services, Inc. c-From sale of a subsidiary.

INFOREX
Three Months Ended March 30

	1973	1972
Shr Ernd	$.29	.....
Revenue	7,753,000	$4,256,000
Tax Cred	339,000	.....
Earnings	813,000	(194,000)

COMPUDYNE
Three Months Ended March 31

	1973	1972
Shr Ernd	$.03	$.02
Revenue	6,284,428	5,697,223
Tax Cred	.....	60,000
Earnings	141,561	123,504
6 Mo Shr	.06	.05
Revenue	13,503,062	11,406,471
Tax Cred	68,000	122,500
Earnings	309,075	255,011

COMTEN
Three Months Ended March 31

	1973	1972
Shr Ernd	.....	$.03
Revenue	$1,487,000	1,853,000
Earnings	(60,642)	58,624

MEMOREX
Three Months Ended March 31

	1973	1972
Shr Ernd	$.16	$.04
Revenue	41,923,000	34,465,000
Earnings	889,000	158,000

ALGOREX DATA
Nine Months Ended March 31

	1973	1972
Revenue	$1,124,761	$718,428
Loss	15,406	137,902

NUCLEAR DATA
Year Ended Feb. 28

	1973	1972
Revenue	$14,085,093	$9,597,719
Loss	4,109,802	3,495,590

POTTER INSTRUMENT
Three Months Ended March 31

	1973	a1972
Revenue	b$10,862,289	$8,580,909
Loss	787,200	2,150,745
9 Mo Rev	b35,156,997	24,179,044
Loss	420,676	2,709,053

a-Restated. b-Includes royalty income.

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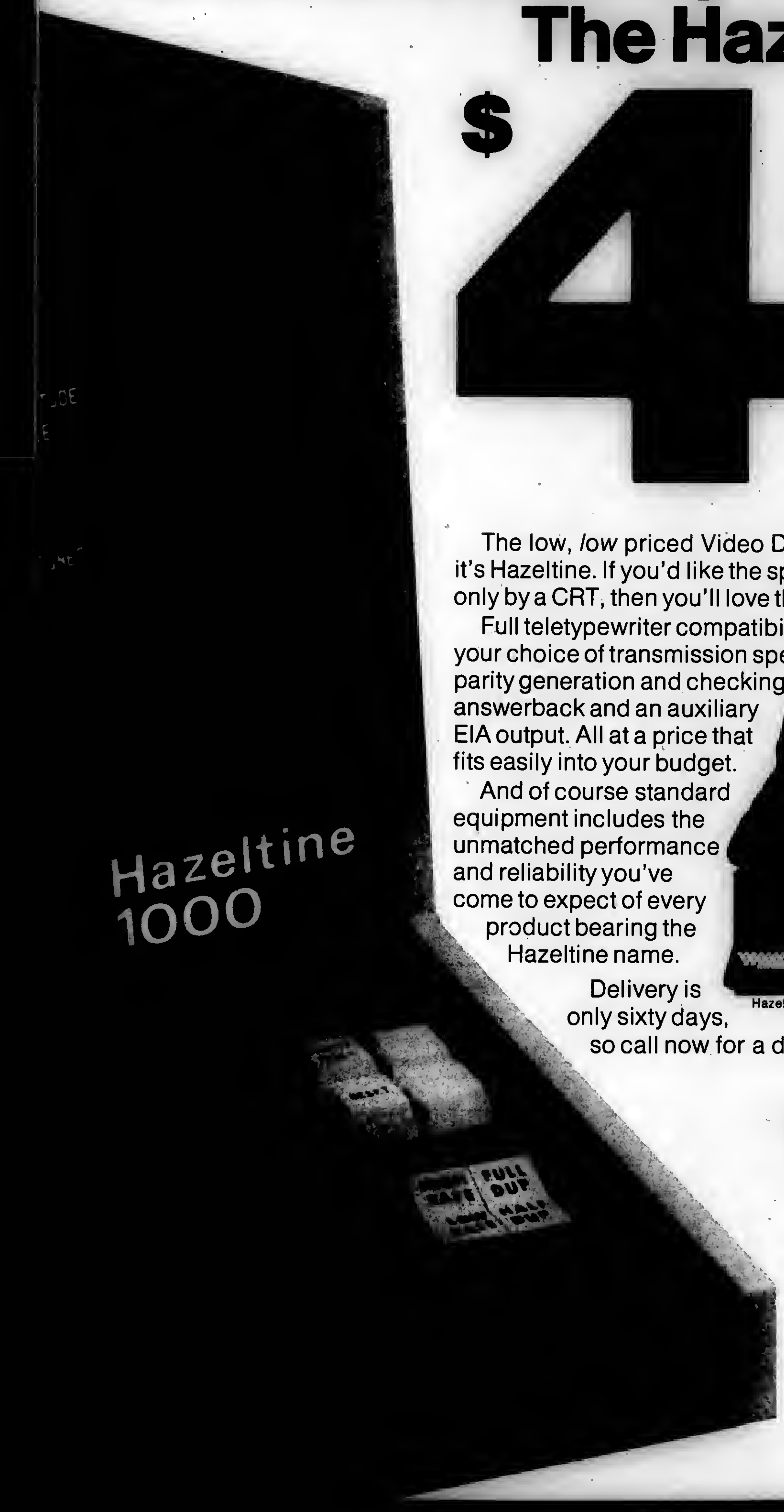

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IBM, Security Test Sites Vie on Software Strength

By Edward A. Bride

Of the CW Staff

NEW YORK – IBM and its test sites for its data security project disagree on the effectiveness of the Resource Security System (RSS), the software now being tested to protect operating systems.

Users can expect the first results of IBM's five-year, $40 million security study next spring.

By that time, tests will have been completed at four data centers, but some preliminary results were discussed during a session at NCC here last week.

The IBM RSS will cost users about 2% in overhead costs, it was suggested, but an official of one of the test centers said the security software degraded response time anywhere from eight to 25%.

William Mancina, manager of information processing operations at TRW, Inc., noted RSS is installed on two 370/145s at TRW, and is being installed on a third system.

Software 'Holes'

Two "holes" continue to exist in the software, hut TRW has managed to plug 108 weak spots, Mancina related. Session chairman C.L. Foster of IBM disagreed with Mancina on whether RSS had in fact been "penetrated" as a result of the remaining holes.

In a later session, Peter Browne of State Farm Mutual said he was "a little disgusted in IBM," claiming RSS was designed in 1968 as an element in IBM's unsuccessful bid for the World Wide Military Command and Control System ("Wimmix").

Browne said State Farm wanted to use RSS, but IBM wouldn't make it available.

He claimed State Farm tried to get into the data security study, but for some unexplained reason it was not accepted by the IBM team, spearheaded by Foster.

While not addressing all Browne's complaints directly, Foster did admit RSS was developed for the Wimmix project, and that IBM had no plans to

(Continued on Page 2)

CW Photo by V.J. Farmer

The Phoenix rises at the NCC in the form of Greyhound Computer Corp.'s enhanced 360/30 with 512K of storage.

Software Makes Phoenix 30 Fly Past 370/125, Lessor Claims

By Ronald A. Frank

Of the CW Staff

NEW YORK – An independently enhanced IBM 360/30 with 512K of storage that is said to better the performance of a 370/125 by 370% was the largest mainframe system operating at the NCC last week.

Called the Phoenix System and demonstrated by Greyhound Computer Corp., the enhanced 360 included the Phoenix Operating System which can simulate the 370 DOS instruction set thereby providing users with 370-to-360 software interchangeability.

Accelerated 30

The Phoenix Model 30 was running with the recently announced 370-compatible version of Edos from The Computer Company. In addition, the 360 was equipped with the accelerator developed by Computer Hardware Consultants and Services.

The Phoenix System was introduced as a leased configuration available to Greyhound users. Although the exact hardware configuration of a Phoenix System will depend on user requirements, it will include independent tapes, disks and other peripherals as required.

The major portion of the storage of the system was supplied by CHCS. A larger version of the Phoenix system has been tested with 1M byte of storage, according to a Greyhound spokesman. The system on display also had Calcomp double-density 2319-equivalent disks, thus adding another 180M bytes. Other peripherals included four independent 3420-5-compatible tape drives, an IBM 1403 N1 printer and an IBM 2540 card read punch.

A Greyhound spokesman said the DOS version of the Phoenix Operating System was an upgrade of IBM's DOS release 26. The software lets users run 13,370 instructions that normally would not be compatible on the Model 30. The Edos software is said to enable the 360 user to operate up to six job partitions.

In addition to the 370-compatible DOS software, Greyhound said it plans to announce an OS version of the Phoenix Operating System for delivery in November 1973. The firm is also reportedly planning to introduce a second Phoenix system based on a 360/40.

(Continued on Page 2)

A Show of Superlatives

A CW Staff Roundup

NEW YORK – Convinced that their "new kind of meeting" was a success, officials of the American Federation of Information Processing Societies (Afips) have reaffirmed their decision to keep national computer conferences in the "population centers" of the country.

Walter L. Anderson, outgoing Afips president, said the decision to move away from the traditional "convention cities" into geographic (and therefore computer) population centers has made the National Computer Conference (NCC) a gathering place for all segments of the data processing community.

A record 100-plus technical sessions, a record five-day con-

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★ NCC at a Glance ★

What Might Have Been

Did the computer industry "blow it" in 1958 and 1964? Panelists agree the infant industry was plagued by missed opportunities – failure to join the Algol bandwagon, IBM's failure to take advantage of the state-of-the-art . . . Page 3

More Power to Users

Performance capability increase is not linear with computer speed improvement, Dr. Herbert J. Grosch says. And top management is to blame for lost power. The users are thus being hoodwinked by vendors and should demand access to the increased power of computers. Page 7

'Stand and Revolt!'

"It's time users demanded what they want . . . We need to standardize the prices." And with that declaration Cmdr. Grace Hopper set the stage for a user revolution to demand that vendors pay more attention to standardization. Page 9

Is Fraud Solvable?

The only visible solution to the prevention of computer-assisted fraud is an all-out effort toward mutual DP official/auditor trust and cooperation. In fact, the DP manager should assume the role of the auditor, while the auditor walks through the computer process. Page 10

'Be Pragmatic' First

Modeling is an effective tool but should be used only after a pragmatic consideration of the value of the output, a session on performance evaluation was told. A preliminary study of the hardware system reliability is necessary because models can only provide approximate answers, not absolutes. Page 11

The Data Explosion

"We gather more information, so we can build larger and more accurate models, so we can get more output, so we can get more information." The data explosion can make DPers crave larger, more sophisticated systems than they need. Instead, systems builders should work harder to pinpoint and cut out unnecessary data. That's one man's assessment of DP and its future. Page 12

What's Really New?

In the previous Joint exhibits new products usually meant new techniques. But not at the NCC. The Exposition floor was marked by a definite lack of products promising new techniques. There were no new systems from major mainframers and much of the equipment shown included enhancements for present systems. Is the industry in a period of stabilization? Page 14.

Hart Warns Industry

The computer industry is now at a crossroads. It must either be restructured or face direct government regulation, Sen. Philip Hart (D-Mich.) told the keynote session. Hart also suggested the best remedy to rejuvenate the free enterprise system: "A very large dose of antitrust." Page 41

Protecting Software

Computer software needs protection but perhaps the current three forms – patent, copyright, trade secret – should be forgotten. Maybe what is needed is new legislation reflecting a new approach. And users and lawyers could be the prime means to carry it off. Page 47

A 'Capital' Adventure

Entrepreneurial endeavors are not for everyone, hut for those with "strong egos, dogmatic confidence and dogged determination" there is capital, though limited, to he had. Would-be entrepreneurs would do well to heed the hard advice of some experienced venture capitalists. Page 54

On the Inside This Week

User Increased Throughput 20% With Key-to-Disk *– Page 31*

Independent Audio Response Has Communications Feature *– Page 25*

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IBM and Its Security Test Sites At Odds Over Software Being Tested

CW Photo by V.J. Farmer

Sen. Hart addresses keynote session. Story on Page 41

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make it available as a product or free package.

Too Technical?

Richard Mills of First National City Bank suggested the discussion on security was too technically oriented, and should instead focus on auditing, planning, monitoring and physical controls.

"Are we building steel doors in paper walls?" he asked.

Several panel members during three security sessions agreed that 100% security is an unattainable goal, and that a major task facing users is knowing how much security they need and how much they should spend for it.

They also agreed witb Dr. Edwin Golding of the U.S. Treasury Department, who stated the "weakest link in the most secure system" is the one person who can be compromised.

He also said computer users are finally getting concerned over data security, but this is a recent phenomenon.

"Up until recently, decision makers were only concerned with operational considerations," and not with security, he noted.

Hilda Faust, of the National Security Agency said current developments in operating systems were "cleaning up" the security "mess," and the "future is promising."

Accepting the fact that 100% security is impossible, she said admitting the security problems exist is a "giant step" toward solving it. Minimizing damage is the proper approach, since she implied that some type of data security damage is inevitable in some systems.

Other panelists later agreed that if a system is deemed 100% secure, that only means that insufficient effort was applied to the testing.

Standing Room Only

The three security sessions drew standing-room crowds to rooms set for around 300 people, with the biggest attendance at the IBM Interim Report on the data security sites.

Foster related that RSS was installed at all of the sites in an operational mode, rather than a test or research environment. The four sites, in other words, are actually operating with RSS installed under OS/MVT on 370 computers.

Foster said the four sites would conclude their studies early in 1974, after which reports would be published. Actual data, however, will remain IBM property, and the reports are expected to be summations.

There were no details on the next steps in the five-year data security project.

As part of the study, the IBM Federal Systems Center in Gaithersburg, Md., which was not represented on the panel, is examining the security problem from the manager's point of view, Foster said.

One element of its interest is the "trauma" of bringing in a secure operating system (such as RSS), and of the transition from a non-secure to a secure environment, Foster said.

However, Robert H. Scott, director of information processing services at MIT, noted that very few of his system's users noticed that RSS had been installed at MIT.

MIT's area of specialization in the study is the problem of authorizing users to access data, including identification of users and terminals on the system.

The state of Illinols is looking at economic trade-offs.

Precautions Listed

TRW's Mancina identified five concepts or categories of security precautions for a computer system:

- Integrity – Does the system do exactly what it purports to do, and no more? Does it run error-free?
- Isolation (Compartmentalization) – Is the operating system completely tamperproof, and can separation of "compartments" in the system help assure this?
- Controlled access – What are the rules for access? Are they enforced at all times? Is access policy consistent?

And there were several security checklists offered at the three-day sessions.

- Identification – Are users uniquely identified? What are the procedures for authenticating this identification?
- Surveillance – When is security violated? Are there alarm procedures to alert managers? Does the system terminate an "offending" program?

Among the other checklists provided Browne of State Farm Mutual suggested users and manufacturers both have responsibilities in solving data security problems.

The user responsibilities include:

- Awareness (recognizing that a security problem exists).
- Risk Management (identifying threats, costing them out).
- Management control.
- Physical security (including backup and personnel procedures).
- Auditing.

The manufacturers, Browne said, must make reliable systems, with access control (identification and authentication) plus audit mecbanism.

CW Photo by Edward J. Bride

Mancina

Faust

Mills

Browne

Foster

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NCC—a Conference of Firsts and Superlatives

(Continued from Page 1)

ference with a record 35 exhibit hours and an upturn in exhibiting companies all combined for a near-record total attendance of 33,000 for a national DP show, Afips reported.

With these superlatives as the rule rather than the exception, Anderson hailed NCC as a "new kind of meeting," recalling that this first of the annual conferences necessitated a tripling of staff activity.

Attendees were often faced with choosing among nine concurrent panel or conference sessions, almost twice the number at the recent Joint Computer Conferences.

Standing-room-only crowds were common during the technical program, which was split between the New York Hilton and Americana hotels, while the 620-booth exposition was held at the New York Coliseum.

Many panel moderators and participants actually took part in two or three sessions, leading to some duplication within the technical program. Nonetheless, most sessions held their audiences to the end of the allotted time, and attendees complemented panel members who became involved in audience interchange.

A few panelists continued the old tradition of reading their papers directly from the *Proceedings*, but this practice appears to be diminishing, making actual attendance more critical for an active DP professional, other users reported.

While there was a lot of new product activity on the floor, it was concentrated primarily on the idea of improving price/performance – an increasing user interest – and less on technology than in the past.

Among the myriad product announcements, few if any employed daring advances in the technology, as exhibitors basically filled in product lines and offered the users more attractively priced units than before.

In the technical session area the subjects ranged from improving performance of computer installations to social issues and new technological developments.

But the primary emphasis here was on improved performance also, and the sessions devoted to helping the user become more efficient and effective drew the largest turnouts.

Phoenix 360/30 'Outstrips' 370

(Continued from Page 1)

In addition to the 370/125 comparison, Greyhound has run a benchmark comparing the Model 30 Phoenix with a DOS 145 system from IBM. The 145 included 384K of 30 msec storage, while the Phoenix System operated with 2314-equivalent 75 msec disks. The same job mix that took 88.9 minutes to run on the 145 took 74 minutes on the Phoenix, Greyhound said.

The Phoenix configuration demonstrated will cost about $12,500/mo on a three-year gross operating lease. Under terms of the lease contract, Greyhound provides 24-hour maintenance through Comma Corp., and pays all required property taxes.

Three users have reportedly ordered the Phoenix System and the first delivery is scheduled for this montb, the firm said. The company is at the Greyhound Tower, Phoenix, Ariz. 85077.

HIS Software in Trouble?

NEW YORK – Software problems are reportedly delaying the P-Series computer systems scheduled for introduction this year by Honeywell.

The first machines in the new series reportedly will fill the low end of the existing HIS equipment line. The byte-oriented virtual storage systems will provide full emulation of the existing 200 and 2000 series. They are being designed and will be supplied by Honeywell's Bull affiliate in France.

Called 'Turning Point' in History

Algol Development in '58 a Missed Chance for U.S.

By Don Leavitt
Of the CW Staff

NEW YORK – The failure of the U.S. computing community in 1958 to join in the development of Algol was one of the major missed opportunities in the 25 years of software development, according to Robert W. Bemer of Honeywell.

Speaking to an NCC session on computer history, the long-time advocate of standards explained that the block structure of Algol would have avoided most of the problems that have been caused by trying to apply "notoriously indefinite" English – notably in Cobol – to solving logical problems.

Today, both U.S. and overseas users spend between $12 billion and $14 billion each year on software. "We just don't build it right, and we can't, with current languages," he added.

Prof. Saul Rosen of Purdue agreed that Algol was a missed opportunity, but in a different way than Bemer had suggested. The U.S. didn't realize Fortran was going to catch on the way it did, he explained, and it didn't realize it could be extended and developed into an Algol-like system, he claimed.

PL/I has been developed fairly recently as an attempt to combine the features of both Fortran and Algol, but typically this "universal" language is not a replacement for either, but a totally new effort. That is symptomatic of the whole DP field, he added.

In 1964, he said, a speaker at one of the Joint Computer Conferences noted the field had grown so explosively that it had been necessary to start whole new projects even before the older ones had been understood or fully exploited. Unfortunately, Rosen commented, the situation is just as true today.

Also in 1964 IBM announced the 360 and so it has to be considered the Year of Opportunity Missed, he continued. Even then, the field had developed far beyond the 360 and the software that eventually became OS, and IBM's failure to stick with the state of the art killed any real impetus to further advancement in software, he claimed.

What Might Have Been

Cmdr. Grace Hopper had a different viewpoint. She told the panel the real problem – in the past, now, and probably in the future – is a "human allergy to change." The idea that "we've always done it that way" is ridiculous in an industry only 25 years old, she said, but it pervades the whole scene.

Looking back doesn't do much good; there haven't been many new ideas since 1954, she continued. Instead, now is the time for users to take charge of the future.

They've got to stand on their own two feet and tell the vendors – hardware and software – what they really need. She urged and begged users to take part in standardization efforts, such as Codasyl.

In addition, she said, research and development are needed in data processing not just in programming languages, but in the study of how data is formatted, created and stored for the most effective use.

Ray of Optimism

Prof. Maurice Wilkes, director of the computer center at Cambridge University, was somewhat more optimistic than the other panelists. He felt the DP community had seized more opportunities than it had missed.

He noted, for example, that developers had broken away from machine-level code and into high-level languages and operating systems, even though some had felt it was "ill-advised, maybe even immoral," to use anything but octal (or binary) machine programming.

He claimed he had discovered the concept of debugging stored programs, but added such an accomplishment is comparable to discovering the Atlantic Ocean. "If you're not careful," he explained, "you'll fall in [and drown]."

He agreed with others that Cobol standardization may have come too early, but in his view it is an "aggressive type of standard" that allows changes to be made, so there is hope. "We are in a period of transition," he concluded, and programming languages are still in their infancy.

Businessmen, Inmates Mated

DOUGLAS COUNTY, Neb. – Computers have long been playing Cupid for hopeful lads and lasses, and now they are turning their matching instincts to prisoner rehabilitation.

County Commissioner George Buglewicz said computers may be used to match businessmen volunteers from the county with jailed prisoners, according to their interests.

"The businessman would try to be a close friend to the prisoner," said Buglewicz, "writing him letters, visiting him and helping him find a job when he is released."

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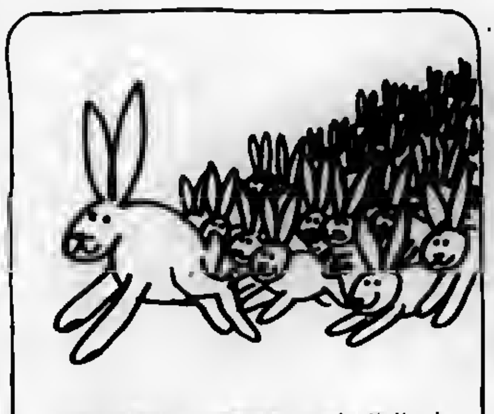
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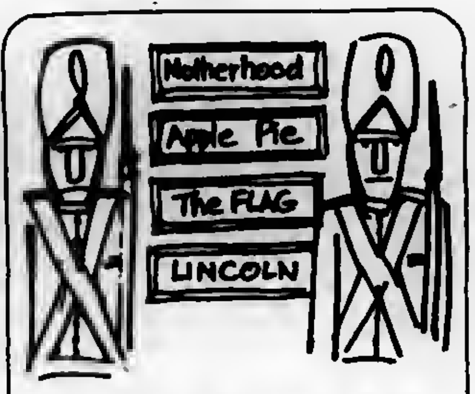

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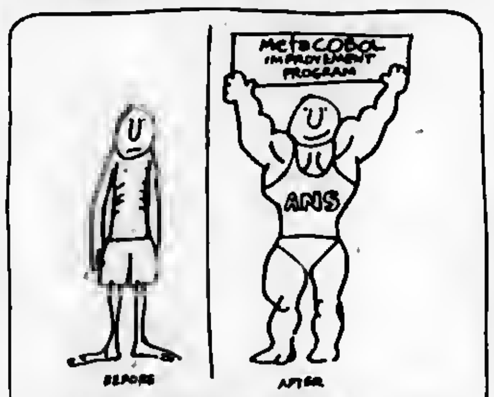

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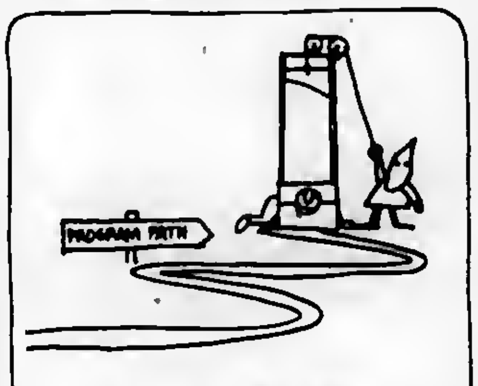

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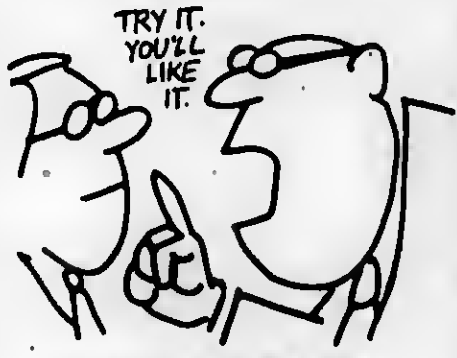
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Grosch Wants Users to Campaign for More DP Power

By Molly Upton
Of the CW Staff

NEW YORK – Users should play a larger role in demanding access to the increased power of computers, Dr. Herbert J. Grosch, senior research fellow of the National Bureau of Standards, told attendees of an NCC session on "Resource Utilization in the Computing Community."

Pressure should be applied on IBM by a gathering of sophisticated users at the chairman-of-the-board level, outlining to the other vendors what they want in the way of hardware capability, Grosch suggested. "Other companies are prepared to build the type of machine we want but are not prepared to sell it.

"IBM will get the word indirectly and be around pronto to call on those users asking for more powerful systems," he said.

Grosch said that for every measure of improvement in computer speed, performance capability is only increased by one-half that amount. "It still takes a morning to run a payroll!" he exclaimed.

He blamed the lost power on laxity of top management, purposeful gameplaying of the profession and "sinister" vendors.

"You can't blame the vendors for maximizing profits . . . . . In the last 10 years it has become obvious to the sophisticated vendor that inefficiency pays off. If they let the power of the computer out to the user, people would turn back machines at a great rate. The number of machines manufactured would drop to zilch," he said.

The profession should have helped alert top management to the reality of trade, and fought against the interposition of factors that prevent user access to this computing power, but "it was fun" keeping up with new operating systems, he noted.

New Resource on Horizon?

Grosch sees IBM coming out with a radically different series of machines in April 1976, which will "crush the last three competitors that are vigorously alive – Univac, Honeywell and a major Japanese combination."

Session chairman Herbert S. Bright of Computation Planning Inc. noted disapprovingly, however, that users seem to be more concerned with system utilization than with throughput.

A key element in improving throughput is management control, observed Thomas E. Bell of the Rand Corp. "It is surprising how concerned with performance people become after they lose their jobs if they exceed their allocation of run time."

Bell outlined several tools for improving throughput, including personal inspection of the center's operation, accounting systems, monitors, benchmarks and performance modeling.

He said their effectiveness varies with the individual situation. "Two tools are better than one," he stressed.

For instance, in general control, accounting systems are the "classic" method used to detect areas for potential improvement. After one suspects the culprit, perhaps through the use of a monitor, this hypothesis should be tested.

Benchmarks Underused

Benchmarks are probably underused at this stage, he noted, while modeling is potentially dangerous as the assumptions need checking.

In deciding on an equipment change, benchmarks as well as modeling are the classic methods.

But how does one determine the size of the machine required? Bell said none of the tools is adequate, but "we don't know anything better." Often the user cannot give a succinct description of the desired capability or even projected workload for the machine, he said.

Interactive Display 'Not Good Enough' Without Graphics

By Toni Wiseman
Of the CW Staff

NEW YORK – "Communication by typing or display is not good enough. A physician should also be able to express his ideas graphically," said Wolfgang K. Giloi, at the NCC session on interactive computing.

"What we have tried to do is develop a low-cost, but flexible system using standard devices which can combine text and computer graphics," said Giloi of the Department of Computer, Information and Control Science, University of Minnesota, explaining the interactive display system he has helped develop for implementation in German hospitals.

Graphic or pictorial representation will serve not only as a convenient medium of communication between system users, but will also provide a means of expressing findings in a most precise way to the computer for further processing and evaluation, according to Giloi.

Such a system, he noted, must include a means of conveying photographic pictorial information – primarily X-rays – to the computer if it is to be a universal graphic communication medium.

The problem of automatic picture information processing and pattern recognition by computers is still far from being solved, said Giloi. He proposed the superimposition of video pictures and computer graphics on the display screen as a viable solution. A light pen would then provide the means of generating and manipulating the graphics interactively, he said.

Giloi advocated the use of dot graphics because they permit representation of line drawings, curved contours and even solid areas. The major drawback of this system, he said, is the excessive transmission time required for information exchange between the terminal and the computer if the content of all memory cells is transmitted and only a low-speed data link is available.

"Therefore," he added, "the resolution of the dot raster should be kept to what is absolutely necessary for a satisfactory performance. In the system we developed, we chose a matrix of 256 x 192 dots, resulting in a memory capacity of 48K bits."

Giloi presented several medical applications as examples of this type of system. Among these was the German Amanda report generation system in which the display consists of a list of symptoms combined with a drawing of the body area in which an "area of complaint" has been marked. Using the light pen, the physician is able to communicate topological facts in an unambiguous fashion, he said.

Other areas of application, according to Giloi, include report generation systems for allergic reactions, evaluation of X-rays, and evaluation of angiographic pictures.

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Panorama of the main portion of the second floor of the NCC exhibition at the coliseum.

Panelists Suggest Team Approach

Good Software Merges User, Programmer Interests

By Don Leavitt
Of the CW Staff

NEW YORK – A deep appreciation of the requirements of the end-user and the psychological interests of the programming staff are both needed to improve most software production environments, panelists at an NCC session on software development agreed.

Panel chairman James Porter, vice-president of Equimatics Inc., noted that any generalized software must meet the needs of a given set of users with minimum or no changes and perform within the limits of a predefined set of boundaries. To do that, he noted, his company always tries to work with a carefully selected sponsor group.

With advice from this group, a DP staff can build software generalized enough to be useful to various end users yet precise enough to be reasonably efficient, Porter explained.

Well-Defined Standards

Programs should follow well-defined standards and this will control the technical aesthetic or "cute" programmer. The standards need not extend beyond the individual development staff, he noted, but they must be enforced to be useful.

This requires talented people who must be well-organized and well-motivated, Porter concluded. And that means, Prof. Gerald M. Weinberg of the School of Advanced Technology continued, that the programming staff must be used as a team.

Such a team represents a programming tool that is effectively greater than the sum of its parts, provided they share their thinking and openly review each other's coding at all steps of the project development.

This egoless programming approach serves to stimulate the individual's effort when otherwise he feels unable to progress, but it also makes him more aware of the cost of his work relative to the whole project, since everyone knows where each worker is at all times.

Improved Productivity Possible

The improved productivity that is possible with the team approach is so dramatic that Weinberg normally will not tell his clients what he expects to accomplish. But tests have shown that costs can be cut by a factor of three when a team rather than individual programmers tackles a job. And the number of errors diminishes by a factor of 10, he said.

Those enhancements are too rich for many managers to believe, and he usually never claims more than a possibility of a 20% improvement. That, the DP manager can "sell" to his management where the more accurate potential savings are unbelievable, Weinberg said.

The Giant's Technique

Steve Lucas, manager of IBM's Medical Applications Group, outlined the giant corporation's software development cycle, including specific efforts to interface with users to determine their needs, and the growing use of advanced programming techniques.

The "chief programmer teams" have designated leaders but in operation are as egoless as Weinberg's teams, he said, with considerable interaction in problem-solving.

One Step Beyond . . .

Beyond that, however, they use structured program logic to define what is to be coded, and "top-down" programming to convert the design into executable code. And they use an automated library system as a report and control system for the entire effort so that all members know the current status of the project and of the individual programmer tasks within the projects.

Structured programming, Lucas explained, limits the number of types of operations that can be included, largely to eliminate as many GO TOs as possible. Top-down programming requires coding from the grossest level down to the finest, always building on code that had been previously written and tested.

By the time the final, detailed code is written and tested, the entire system is tested and there is no separate, often devastating, intergration effort of independent programs.

The chief programmer writes the most technically critical code and gives assignments to supporting programmers. They in turn are able to devote themselves to programming because a librarian or team secretary handles all clerical chores, from arranging keypunching of code, to getting compilations and test runs done and back to the programmer.

Centralization Seen Best Way To Reduce State DP Expenses

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – The only real way to reduce costs of computing for state governments is through some form of centralization, since that is the best way to reduce the people costs associated with data processing, according to Glenn Goodman from the office of the governor in the state of Michigan.

But he noted it is hard to centralize operations because a lot of state agencies have a "vested interest" in keeping their own computer systems and sometimes the centralizers run into political problems in carrying out their goals.

At an NCC session on "Five Year Plans for Computers in State Government," Goodman explained his state's plan for the centralization of hardware and personnel along functional lines, i.e. one computer center specializing in such things as health and welfare, criminal justice, regulatory and licensing matters, engineering and education.

By having the people – primarily programmers – specialize in one area, they are better able to develop an expertise for the subject, he said.

But while the state has developed a modular system based around the different functional areas, he said it is important to have some type of centralized planning, and noted that the full five year plan calls for interconnecting the various functional centers.

"Statewide management information systems depend on standards and policy directions. You have to have someone with central authority in these areas," he told the group.

Program Fragmentation

John Gentile, now assistant U.S. Postmaster General and formerly with the state of Illinois, noted that a problem in many states was one of program fragmentation between the various departments and offices using computers.

Centralization of computer services can help the state get better control over its operations, he said, or could at least serve as a catalyst to get people to think more about the problems of consolidation.

There are several elements necessary for the implementation of any successful consolidation plan, he said, including support of the governor and the legislature.

In addition, the user has to understand what is happening and the central authority needs to have budgetary authority over the computer operations in the state.

To be successful, he said, the central system should spend a good deal of its time finding the elements in different programs that are transferable, and should introduce an efficient audit team into the computer operations of the state.

Technology Problems?

By a CW Staff Writer

NEW YORK – "The new information technologies will prove at least as important to mankind as did the printing technology of 500 years ago – both as a tool and, more importantly, as a catalyst for changing man's view of himself and his place in the universe," Lewis Branscomb, IBM's vice-president and chief scientist, told an NCC luncheon crowd.

Yet, he said, "learning the new lessons, mastering the information tools will be difficult and slow. It is not obvious that there is enough time" for man to apply them effectively to the problems that confront the world.

Used in Club of Rome Project

He noted these tools have been used in recent years to build global models, most notably in the Club of Rome project that led to the book *Limits of Growth* which predicted man would be the ultimate victim of his inability to control pollution and population problems.

On the other hand, he noted, similar studies based on different assumptions could lead to the opposite view that man will be able to control these problems through technology and therefore be able to increase his standard of living.

However, neither of these views is "independently verifiable," he said.

"Everyone seems to agree with the economists that the Club of Rome model is too simplistic to serve as a valid basis for predicting social phenomena.

"It cannot tell us whether to approach the future with confidence or dismay. The model is an interesting tool for quickly testing the mutual interdependences of stated variables whose coupling coefficients can be arbitrarily specified to correspond to any set of assumptions one might wish to make."

However, he said, the model has been helpful because it points out "the global character of phenomenology relevant to human survival" and the interdependence of these global variables.

Authority of Computer

But the interest stirred by the report was not so much due to the information contained in it, but rather that it had been done with the authority of the computer to back up the conclusions, he indicated.

"Can it be that the Club of Rome has struck a responsive chord in the public mind by featuring the most sophisticated product of modern technology as the instrument for predicting a dismal fate for man at his own hands – a kind of Promethean allegory?" he asked.

"It is significant," Branscomb said, "that this application of computer modeling seems to provide a sufficiently over-simplified common ground for looking at problems, that the narrow provincialism characteristic of specific cultures and nations is suppressed."

Branscomb noted that "attempts at simulation of global dynamics may never lead to useful predictions, but they may foster acceptance of the concept of Spaceship Earth, as Barbara Ward called it, which provides the boundary conditions for addressing the predicament of mankind."

Secondly he said "the ultimate terms for addressing the predicament are likely to display a great deal more diversity, human ingenuity and adaptability than the Club of Rome is counting on."

He added that mankind has the choice of whether to try to restrict technology in order to avoid any side effects it might bring or to use the technology to help improve the condition of the world.

Hopper Urges User Push To Gain Better Standards

By Molly Upton
Of the CW Staff

NEW YORK – Users should demand that vendors pay more attention to standardization, for the impetus will not come from the vendors, Cmdr. Grace Hopper told attendees at an NCC session on "Conversion Problems."

"It's time users demanded what they want," such as standard modules and a common data description language that would interface all modules, she urged.

Modular programs don't incur much overhead, are more apt to be written correctly and are easier to document and maintain, she added.

Well-Taken Advice

Echoing Hopper's recommendation that users should more actively outline their demands to manufacturers, one attendee suggested that the session move to the Control Data Corp. and IBM booths to demonstrate for stricter adherence to standards that would aid program transferability on the two firms' systems.

Hopper urged users to look ahead to radical changes and prepare for such events by implementing modular approaches to programming.

"Whatever computer you have is going out the door," she noted, and said probably by 1975 a computer on a chip for $100 would be available, and by 1980 a chip would cost from $1 to $10.

"The basis of all American industry is interchangeable parts . . . The effort to standardize big systems doesn't work . . . We need to standardize the pieces," she emphasized.

The need for standardization to avoid problems that are apt to occur during conversion was an underlying theme throughout the session.

Although people often talk of hardware and software conversion problems, a very real problem is with people, not only the operators of the program but the users of the system, noted chairperson Bonnie Dunning of the U.S. Military Personnel Center.

The question of how to make the user realize the increased effectiveness must be tackled, she urged.

Patrick Hoyt, in charge of the U.S. Army Personnel systems, said the reluctance of programmers and analysts to change may be partially overcome by breaking conversion into stages, such as conversion of programs and parallel operation, then the release of equipment, and finally the redesign and reprogramming to match features of the new system.

"Being forced to deal with the complexity of conversion adds stress to programmers, and anything to relieve this stress will help."

The importance of management involvement and standardization was illustrated by G.C. Durand, a vice-president of Southern Railways, which in six months converted from three IBM 7044s to two 360/65s and two 360/50s in 1969.

Three critical requirements, he said, are informed top management, strong DP management and a standardized shop.

"I advise people to keep abreast of standards development. Don't wait until standards are signed off until you start implementing," he said.

Use of DP in the Retail Industry Provides Plenty of Food for Thought

By Toni Wiseman
Of the CW Staff

NEW YORK – "Our business is planned ahead as far as a week from Thursday and our data processing is equally unsophisticated," according to Carroll D. Satterfield, director of corporate information systems for Fairmont Foods, as he described the DP activities of his company during an NCC session on "Data Processing Directions in the Retail Industry."

The session consisted of three case studies, representative of different segments of the industry. Satterfield's topic dealt with the role of DP in the convenience food business.

With sales amounting to $100 million a year, Fairmont installed its first computer last year to handle the same problems every small convenience store faces, according to Satterfield – inventory control and people. "We installed an inventory system to determine if vendors are overcharging, clients or personnel stealing or managers underselling."

Satterfield termed his company's DP work as the "have your cake and eat it too" system. The objective is to build a strong utilization base to see the company through the "plateau" which all industries experience at one time, according to Satterfield.

"A DP failure would close us down more effectively than any strike or natural disaster," said Vernon L. Schatz, vice-president in charge of information systems for Jewel Company, Inc., in his discussion of DP trends in grocery stores.

Cash management and accounting, sales analysis, payables and control of direct delivery vendors and personnel accounting are the main problems faced by the industry, according to Schatz.

Schatz outlined the Electronic Store Information System (Esis), a minicomputer-based information network. "It isn't POS," he said, "because that is only one of its functions."

Esis centers around three minis – a master controller, an even terminal controller and an odd terminal controller – which are connected to POS terminals in the store and outlying terminals in branch stores.

The system, Schatz said, has numerous advantages, among them the ability to correct misrings, calculate taxes and change automatically and handle coupon refunds. Esis capabilities also extend to check verification and credit authorization; productivity item movement; cash information; and gross margin calculation by item or category.

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Auditor-DPer Cooperation 'Only Way' to Prevent Fraud

By Edward J. Bride
Of the CW Staff

NEW YORK – The only way to prevent computer-assisted frauds is through close cooperation between auditors and DP officials, according to several auditors at an NCC panel discussion.

Reeling from criticism surrounding the recent Equity Funding scandal, auditors called on their colleagues to participate in computer systems design, and demanded similar action from their DP counterparts.

Paul Ton, a consultant with Arthur Anderson & Co., said DP professionals should not try to "snow" internal auditors with DP jargon, but should encourage early involvement in the system design process.

"Walk [the auditor] through" the computer process, rather than attempting to impress the auditor with the expense of developing a financial system, Ton recommended.

Thomas Samson

CW Photos by Edward J. Bride

Paul Ton

One difficulty is the auditors' reluctance to accept "soft" input [video-terminal] devices instead of cards, but auditors should be convinced that this approach to input does not mean the data base is in a "shambles," Ton said.

The data processing manager should "assume the role of the auditor," Ton said. This would assure better systems design, and the communications between departments would reduce distrust, he suggested.

Defining the Problem

The session, attended by about 100 technically-oriented people and a few managers, was sparked by problem definition. Most of the panelists blamed lack of communications for weaknesses in accounting systems, with the Equity Funding problem seen as a general example of lack of controls.

Thomas Samson, partner with Arthur Young & Co., claimed DP managers, not auditors, are responsible for control procedures. While computers are highly accurate and reliable, he said, a "visible audit trail" is given low priority by DP managers and the audit effort is thus reduced in its effectiveness.

Ton encouraged DP technicians to ask auditors "what controls should I implement" in order to assure accounting security.

Noel Zakin, session chairman and an official of the American Institute of Certified Public Accountants, called the audience's attention to the AICPA's several projects to encourage this type of cooperation, but no solutions to the audit-trail problem, other than mutual trust and cooperation, were proposed.

'Policy Vacuum' in Washington

Panelists Push for Information Systems Standard

By Toni Wiseman
Of the CW Staff

NEW YORK – There is a need for a national standard on information systems, according to a consensus of panelists at the NCC session on "Knowledge Dissemination."

Canada, according to Charles Wilk, special assistant to the director of telecommunications, Department of Commerce, is the only nation so far which has such a standard.

Andrew Aines, of the National Bureau of Standards, said there is a "policy vacuum" in Washington, and that not enough attention is being given to the creation of standards for networks of the future and the internationalization of information. He advocated galvanizing industry, government and academia to create these standards.

Standard development will not be easy in Wilk's estimation. It will entail a review of industry problems, a willingness to make changes and a comprehensive analysis of obstacles.

"One obstacle is the fact that computer and communication technologies and the legal environment are ill-suited to jointly develop an information system, much less a standard," he said.

'Weeding Out' Process

Another point of panel agreement was the need for a "weeding out" process.

There is a large and growing information "sludge," said Lewis M. Branscomb, vice-president of IBM, "and information technology, by reducing the cost of storing useless information, is going to make the problem worse before it makes it better."

In order to alleviate one area of "sludge," the National Library of Medicine (NLM) data base contains only articles published within four years of the current date, since, according to NLM deputy director Melvin S. Day, they have found that most information requests are filled from material originating from only half the journals indexed and from issues within the past four years.

Stephen Rossmassler, area program manager for the National Bureau of Standards, said the conventional approach to information retrieval consists of three steps: you tell us what you want, we'll give you what we have and you pick out what you want.

Today, this system can overwhelm any user because the volume of available technical literature is so great that information becomes "unavailable" due to its bulk, the NBS representative said. He pointed out the total backlog of technical literature, from 1800 to 1972, is 15 million articles, with a current annual input of 2 million.

Specialized Data Centers?

Though all agreed that an interdisciplinary network was the ultimate goal, from a short-range viewpoint specialized data centers are the only answer to the problem of evaluating and retrieving information, according to Branscomb.

"The essential criterion for the selection of data base documents is that they be relevant to a specific area," Rossmassler said.

Branscomb noted the distribution function for error must have well-understood bounds if important decisions are going to be based on the data. "The value of information depends on the economic leverage of the issue multiplied by the likelihood of the information affecting the decision outcome," he said.

Rossmassler summed up the session by categorizing the development of an interdisciplinary knowledge dissemination system as a three-way challenge:

First, the information analysis centers must develop communication links and networks; second, the various discipline-oriented workers must evaluate all information in their fields to ensure that nonspecialists receive reliable information; and last, the computer/systems workers must develop an automated system capable of retrieving and delivering information by means of a jargon-free vocabulary access system.

Computer Has Green Thumb

STORRS, Conn. – If you want a more luxurious lawn and more plentiful crops this year, you might want to contact the Plant Science computer at the University of Connecticut here.

Dr. Gary F. Griffin, an agronomist with the University's Plant Science Department, has written two programs to help people deal with most types of soil problem. The first program is designed for lawns and vegetables, the second for agronomic crops such as silage corn, alfalfa and hay.

The computer is fed punched cards containing the person'a name; the plant crop in question; and soil test results such as soil texture, soil pH and the available levels of calcium, magnesium, phosphorous and potassium.

For agronomic crops, data also includea the yield goal, the kind and amount of manure which will be used for the crop, the amount of lime which has been applied to the soil within the last year and the month in which the test sample was made.

Based on this data, the program directa the computer to select or calculate the lime and fertilizer recommendations appropriate for the given crop.

What Is the IQ of Your Intelligent Terminal?

By Peggy Zientara
Of the CW Staff

NEW YORK – Intelligent terminals categorized in "ascending order of intelligence" set the format of an NCC session chaired by Ira W. Cotton of the National Bureau of Standards (NBS).

Zane Thornton, deputy director of the Institute of Science and Technology of NBS, opened the session with a discussion of the "dumb" point-of-sale terminal used in retail applications.

There are three-and-a-half million electronic cash registers in service now, and up to 170,000 POS terminals worth $250 million are expected to be in use by 1975, according to Thornton.

Thornton cited the main advantages of POS terminala as their design for retail work; their resemblance to cash registers which they replace; and operability by laymen.

Uniformity Needed

"Retail industries must get ready for these terminals by developing uniform identification codes and representations," Thornton said.

Two efforts in grocery and retail merchandising included the Universal Product Code (UPC) which was established in April of this year. The code consists of 10 digits, the first five designating the manufacturer and the last five designating the individual item. The National Retail Merchandisers Association in 1967 set up committees to decide standard procedures for code specifications. A major difference between the grocery and merchandise business, as far as codes go, is that the grocery inventory consists of 20,000 individual items while the merchandise inventory can be 70,000 to 80,000 items. The grocery code needs only 10 digits and the merchandise needs over 30 characters for such information as color, style, price and manufacturer. rs.

Gone to POTs?

Douglas Engelbart, director of the augmentation center at Stanford Research Institute, discussed what he called "point-of-thought" terminals. These terminals are useful in what Engelbart terms the "core workshop," where one does one's "knowledge work" by studying, writing, taking notes, etc.

Stanford's NLS on-line collaborating system uses a hand-held "mouse" which can indicate all the characters of a keyboard with one hand (the "what") while the other hand indicates the "where."

"Use of the mouse allows easy postural shifts, works with video and remote slave displays, enables control of separate cursors and stays put for quick, easy access," according to Engelbart. It further allows extended dialog between people in a variety of modes: telephone dialog, telegraph mode (Tenex "send-message") and recorded dialog. Two people in distant cities can reference the same display simultaneously.

Andries van Dam, professor of applied mathematics at Brown University, defined "intelligence" as the ability to do things locally. He distinguished between a terminal as having a fixed function and a satellite as having "a life of its own," being usable, accessible and easily user-programmable.

Van Dam finds the advantages of local intelligence are improved response time for simple tasks, dependence on the terminal with no use of interaction and, ideally, the ability to handle more than 50% of simple functions locally, viewing the intelligent terminal as a "fancy peripheral."

Problem areas in putting the emphasis on peripherals as opposed to central hardware are:

- The difference between hardware "off-the-shelf" vs customization.
- The difficulty in interfacing a hard-wired interface to a communications line.
- Operating system and programming language support.

"Critical intelligence may be defined as enough local 'oomph' to do what you want to do," van Dam said. "Most existent sytems are below critical intelligence, and microprogramming is a vehicle for this intelligence."

The components of the sophisticated system are a high-level language, a compile-time post-processor and a run-time environment.

The problems are to make it work and to determine whether the overhead for the "division of labor" is worth it.

'Fine-Tune' Your Operators

Modeling Can Be Useful, But 'Be Pragmatic' First

By Don Leavitt
Of the CW Staff

NEW YORK – Modeling can be extremely useful even when applied to existing workloads, but it should only be used after more pragmatic considerations have been first weighed carefully, Professor Stephen R. Kimbleton of the University of Michigan told an NCC session on "Performance Evaluation and Measurement."

Before going into mathematical analysis, he said, users should be sure that the processing or the output of the application program really are needed, and if so, that all major jobs have been optimized. Users should be serious enough in the desire to get the most from the system to satisfy themselves that their operators are effective, he continued.

Hardware Reliable?

Fine-tuning the software won't accomplish anything significant if the operators aren't "fine-tuned" as well to do their jobs as efficiently as they can. By the same token, he added, the hardware system reliability has to be considered at a satisfactory level before the user can be sure how effective any modeling effort will be.

All this preliminary study is needed, Kimbleton said later, because even though there are a number of models available and many are good, they can only provide approximate answers. "You can't look for accuracy at the 1%, or even 5% level," he added, but noted that the earlier someone experienced in modeling joins the effort, the better.

Later in the session, James H. Burrows, associate director of data automation for the Air Force, added more evidence that pragmatic approaches can often bring system performance enhancements comparable to those available from many of the more sophisticated evaluation and measurement tools. The big problem in most DP shops, he said, is that the typical programmer has a tendency to be very conservative.

Program Expansion

He has trained for a long time, he noted, to keep programs small. But this is often a mistake. In one case, a program that had been limited – by definition – to 19K words on an Air Force Burroughs B3500, was rewritten and grew to 22K words. While this cost core, he noted, it reduced the number of overlay operations from more than 3,700 to just 18.

Programmers are perhaps most conservative in their setting up of blocking factors for files, Burrows continued. But simple blocking factor programs can often do as much good as extremely complex simulation efforts to determine the most effective factors.

In one test, he said, a program with unblocked files used 18,600 I/O accesses. When the files were blocked by a programmer based on his own best judgment, the number of accesses dropped to 5,000. A simulation study dropped the accesses further, to 3,560, but only at the cost of extensive work over several weeks.

A blocking factor program, used for half a day, gave almost exactly the same results, with I/O accesses reduced from the programmer's best effort (5,000) to 3,571, Burrows added.

Probing the Problem

A different approach to the problem of efficiency, proposed at a recent ACM/NBS workshop on computer system performance evaluation, would entail distribution by mainframe vendors of a plug-like device that would provide access to at least basic "probe points" or impulse measurement points.

These plugs, according to Thomas Bell, staff member of the Rand Corp., might come in four levels of sophistication to suit different user needs. It would be up to the user, he said, to provide his own monitoring device to capture, and perhaps analyze, any data gathered from the probes built into such hardware vendor-provided plugs.

CW Photos by Mary Upton

J. Borenstein of James. A. Reynolds Jr. High, Brooklyn, figures population density and ocean salinity in the past and future.

Mat Mishkin and David Lustig of South Side High School, Rockville Center, N.Y., translate high-level language to machine language on their terminal linked to a HP 2116 from Time Share Corp.

Karl Danz of Smithtown High, E. Long Island, runs his "program for assistance in writing Basic" (it cuts out keystrokes).

Rosanne Gigancte of Bronx Science High runs a student-built computer of 16 memory words that took 30 students' lunch hours for two-and-a-half years.

Science Fair Comes to Town

The 55 exhibits in the high school science fair at the NCC included student works ranging from a shortened version of programming language to a computer built by students, as well as applications.

Robert W. Klein of Walt Whitman High School, Hungtington Station, New York, won first prize in the applications category, as well as best in show with an exhibit titled "Solar Eclipse" (11th grade).

Fred Kalena, Ridgewood High School, N.J., won in the category of design and/or construction of components or computers with his exhibit on "designing low-cost computer components."

In the programming area, Gary Weiss from Northeast High School, Philadelphia, won with his exhibit on computer-assisted instruction in Latin.

DP as Public Resource 'Going Too Slow'

By Molly Upton
Of the CW Staff

NEW YORK – The nation clearly needs to make greater use of its computing power for the public benefit, but progress toward this is not abundantly evident, according to reports from panelists at the NCC session on "Computer Technology as a Public Resource."

Whether the government will take an active role in this direction is not clear, as the budget crunch in Washington seems to have struck several areas that might have tackled the issue.

But panelists also had difficulty agreeing just how making computers more available to the public or increasing computerized services would be effected.

Edward E. David, formerly White House adviser on science and technology, said he sees society calling for applications of technology, and that information technology will become more problem-oriented, with increased standardization and regulation.

Both from a balance of payments view and from a foreign policy position, the U.S. resource of computing technology is becoming very valuable in effecting a stable state of affairs between the U.S. and other nations. "Computing technology is becoming the preferred currency in foreign affairs," he claimed.

Granger Morgan, director of the National Science Foundation's program on the impact of the computer on the individual, mentioned that his office is beginning to provide a feedback loop between research-oriented input and problem-oriented output.

Some of the problems highlighted by increased use of information systems are that frequently systems are based on how society should work, rather than how it does work.

Kenneth Katz, executive secretary for the Privacy and Computer Task Force in Canada, indicated his country has chosen the government to take a leading role in promoting exemplary use of computers rather than engage in heavy regulation.

Canada decided not to institute a single identifying number because it was felt that the measure was not worth the effort due to the public fear and resistance.

More Power to Public

Herbert Grosch, senior research fellow at the National Bureau of Standards, advocated setting up a federal agency responsible to the three branches of government to work for increased computing power for the public.

In this regard, it is up to the computing community to "take a step backwards toward professionalism" and help in this effort, he advised.

David disagreed with the central agency concept, but did endorse working through government channels, which he said can promote changes through incentives and create markets.

Ernest Baynard, a member of the Brooks committee that enacted legislation for use of computers in the government, outlined from the floor the difficulty of government officials and representatives in obtaining pertinent information for decisions about computers and governmental policy.

For instance, to obtain such an incentive break as mentioned by David, one needs access to someone in the Executive Branch to get action. "It's not a question of convincing people but of giving them a 50-50 chance to come to a right or proper decision where computing is involved."

Ecological Simulation Is 'Best' If Future Alternatives Are Given

By Toni Wiseman
Of the CW Staff

NEW YORK – "Simulation for ecological forecasting is best when it underlines alternatives for the future and allows for protection-oriented policy," noted Gene Tyndall during the NCC session on "Environmental Quality and the Computer."

Tyndall, chief of modeling and methodologies for the U.S. Environmental Protection Agency (EPA), explained that the agency's Strategic Environmental Assessment System (Seas) is a research project focusing on a means to forecast the long-range effects of societal actions, with a view to averting harmful environmental impact.

"The research plan revolves around our ability to synthesize the available state-of-the-art techniques and methods for assessing long-range comprehensive pollution problems," Tyndall said.

The Seas development process is an in-house/contractor effort, the EPA representative said, designed to take advantage of expert opinion to maximize the combined man-machine capabilities.

The project, according to Tyndall, faces numerous obstacles. The first critical issue is uncertainty; this includes technological trends and their impact on society.

Secondly, there is the issue of the interrelationship of factors, and the nature and degree of interaction. The deceptiveness of short-term considerations is yet another obstacle to forecasting, as is validation.

Seas is a time-phased project. The first phase includes test model development and operation, and prototype definition. Phase II will encompass prototype development, assessment of the state of the art and comprehensive system requirements. Comprehensive system development and policy applications are the final phase, slated for implementation in 1974.

The input factors for Seas are change agents, processes, residuals, effects, reactions and stocks. Change agents include population, economy, institutions and government. Extraction, production, distribution, consumption and disposal are process inputs.

Tyndall offered a summary of the objectives of Seas: "We want to get the right information to the right people at the right time for the least amount of money possible."

CW Photo by Ronald A. Frank

Lonely 145?

IBM hid this 370/145 in a small corner of the otherwise empty third floor of the Coliseum to back up its peripherals working directly below in a second-floor exhibit at the NCC.

Voice Answerback in Vogue

By Patrick Ward
Of the CW Staff

NEW YORK – Voice answerback control systems were heartily endorsed by users here in an NCC session on "Voice Answerback Comes of Age."

With a Touch-Tone phone or similar equipment as a terminal, panelists showed how practically anyone can dial a computer and then follow its instructions on what data to key-input.

Tom Fisher of IBM, the session chairman, set the stage for the session when he said, "Old objections to voice response systems that criticized poor audio quality and soft security defenses no longer apply." The users on his panel emphasized that audio quality and security were both satisfactory in their applications.

Edward Klemmer, a systems engineer at Bell Labs, pointed out that typical Touch-Tone users key in about 1.4 digit/sec with a relatively low error rate. Errors of omission are the most serious faults to watch for, Klemmer said.

Absolute Security

Security is not a problem for Robert H. Rogers of The City National Bank of Bridgeport, Conn. Rogers' bank handles 250,000 documents a day and "the security of information is absolute." Only bank phones can dial the computer, he said. Bank officers have a code for restricted information.

Tellers can use the system to find if it is alright to cash a check. If it is not, the computer tells them the actual balance. With this and the other information the computer provides, tellers can explain a situation to a customer, he said.

Before the answerback system, Rogers said, tellers had to call up a terminal operator whose line was often overloaded.

Once the system was installed, he said, customer handling efficiency rose sharply. Window lines went down and distrust between bank DP personnel and other employees also dropped.

Cost savings over on-line terminals were dramatic, Rogers added, because of the low cost of the telephone "terminals."

No Snap Decision

Tellers are trained in only 15 minutes to talk to the computer. Now tellers do not have to make snap judgments about a transaction because they cannot reach a computer, he said. And the phone lines to the computer have almost never become overburdened.

Voice answerback techniques are "invaluable for the salesmen" at Emery Air Freight, according to Andy Benkovich, the company's supervisor of analysis and programming.

Emery's computerized air cargo control system inputs 250,000 transactions each day through 200 terminals.

Since 1971 when audio-response from "the computer unit came on-line, salesmen can know where everything is." He demonstrated how they simply have to call up the system, get a response signal and then dial in the shipment number. The computer orally repeats the number, tells what is in the shipment, where it is at the time and when it is due at its destination.

American Honda also finds voice answerback communications a valuable sales tool.

The motorcycle and car importer has 10 distribution centers, Jeb Deane of the firm said, to service 310 auto and 1,800 motorcycle dealerships. Formerly critical parts orders were airmailed to California. It took about 15 to 20 days for the part to be delivered. With a computerized system using voice answerback response, the time is now five days.

How It Works

Users dial the computer, using their particular security code. The computer tells the caller whether the part is available, where it is located and asks the caller how he wants the part shipped and then confirms receipt of the order.

'Too Much Data'; Panelists Want to Stem the Growth

By Michael Weinstein
Of the CW Staff

NEW YORK – Computer people in the information science field are attacking the wrong problem, according to Dr. Jack Belzer, professor of information science at the University of Pittsburgh. More effort should be spent on trying to control the growth of large amounts of data instead of building larger more sophisticated systems, he told an NCC session on "Information Science – Promises, Realities and Futures."

Dr. Murray Turoff of the Office of Emergency Preparedness confirmed the feeling that information science is on the wrong track – "we gather more information, so we can build larger and more accurate models, so we can get more output, so we can get more information."

Ad Infinitum

The problem with information, the panelists agreed, is that it is a non-consumable commodity. It grows endlessly and the system builders spend little time in deciding when and what data should be destroyed.

On another front, Dr. J.C. R. Licklider, professor of computer sciences at MIT, predicted marked social changes due to the increased use of computers as they become more accessible to the general public.

Licklider felt that every two years hardware capabilities double while during the same time costs decrease.

A prime example cited by Licklider was the new calculators costing between $50 and $500. "This cost puts them in the range of nearly everyone," he said.

But the real impact may be when the calculators develop more programmable capabilities and are used by schoolchildren.

Belzer felt this revolution may have the same sort of impact on society as the invention of movable type by Gutenberg.

In another area, Turoff postulated that intelligent terminals could be placed in public libraries. Persons could then use these devices to get information or counseling on a wide range of subjects.

It Is Here!

A user identifying himself as a faculty member of the University of Georgetown noted that the town of Reston, Va., already had installed a Touch-Tone on-line system in the homes of various citizens to allow for some interaction. Further, he noted the number of persons wanting to subscribe to the system was larger than the number of systems that could be supported.

This led to the question of when such systems – such as the wired city – could be expected to become a reality.

While the panelists understandably hedged at exact dates, Licklider felt that in about 10 years a large number of working people would work at desks that did include computer capabilities.

Dr. Anthony Oettinger of Harvard felt many people still had fears of a future society controlled by unthinking impersonal machines.

Many of the past books and projects, such as simulated intelligence, had done little to reinforce the idea that computers were not all-powerful entities, he added.

'Professional Approach Needed' *'Trained Manpower Lacking'*

DP Voting – the Promise that Failed to Deliver

By Patrick Ward
Of the CW Staff

NEW YORK – Computer voting promises low cost, accurate elections, but in nine years it has often failed to deliver, panelists at an NCC session agreed.

And people, not computers, are the problem, they said.

"The technology is here," said James Farmer, an analyst for Systems Research, Inc. "What is required is a professional approach."

"The computer voting industry has failed. Witness Detroit, Washington and a few others," said Bob Varni, president of Computer Election Systems.

Farmer

W Photos by Edward J. Bride

Varni

On the security question, Farmer said it is a myth to think fraud is technically impossible or that computer people would not commit it. He said he knows of two unprosecuted cases where fraud has occurred.

Farmer had some recommendations on ways to counter fraud or errors.

First, voting programs should be certified by CDPs and candidates and political parties should have their own DPers inspect the software, he said.

Control totals should also be taken to detect errors, Farmer said. He pointed out that Los Angeles runs independent sample recounts on 20 precincts, and he favors similar procedures.

He also recommended that political parties have trained observers present at the ballot processing. However, he mentioned that the Democratic Party tried to train observers last year and found a lack of people familiar with both elections and computers.

Lastly, he suggested strong physical security measures at the computer center and the use of an independent audit if necessary.

But computer voting does have its rewards, according to Varni. He said Los Angeles County invested $5.6 million in equipment and then achieved $1 million in savings per election.

Farmer remarked that the Los Angeles savings may not be repeated in other communities. "People in Los Angeles are running the best elections in the country," Farmer said. He attributed the city's success to assigning five programmers to election work.

Farmer and Varni differed on what savings, if any, users could expect from computer voting systems. Varni said there almost always is a cost decrease. Farmer, less optimistic, said a study of his showed punched-card voting is only slightly less costly than manual counts and more expensive than mechanical voting machines.

However, Farmer said, punched-card voting's cost must come down as computing costs go down and labor costs rise.

Printouts Play Politics

NEW YORK – Computer printouts may one day be as common in political campaign headquarters as pictures of the candidate, two panelists at a session on "The Computer and the Elective Process" suggested.

Computer use really began in primaries where there was a need to reach specific voters, said Oren Teicher, who ran the DP operation for the McGovern campaign in California.

Computer systems used for the persuasion of voters are "enormously useful," Teicher said, "in that a well-put-together computer system allows a campaign to maximize man-hours."

Teicher recalled the staff of a New York congressman once spent 22,000 hours looking up two million phone numbers. In California, it took a computer 19 hours to merge 1.7 million phone numbers with voting lists...

Direct mailings can be useful for requests for money, polling samples or persuasion letters, said Wainwright Dawson, Jr., an independent political consultant.

To raise money, Dawson said, you turn to a list. A security problem arises here though, he said, because some of these lists can represent a lot of money.

Session chairman E. Drake Lundell Jr., *Computerworld's* Washington bureau chief, asked if the advent of the computer gave a big advantage to affluent candidates who can buy such lists.

Both Teicher and Dawson agreed it did, but Teicher said it could also help the struggling candidate reach a specific audience. As an example, he said computer mailing can be a great savings in an area where media use would have low cost-effectiveness.

Targeting can be a big help to candidates, "but there is no question the potential for misuse is massive," Teicher observed. It can be used to say one thing to one target group and just the opposite to another group, he said.

Bankers Conference Told

Future Systems Mean 'Heavy' Burden for DP Managers

By Don Leavitt
Of the CW Staff

CHICAGO – Manufacturers are moving "as fast as they can" to perfect what can "legitimately be termed a fourth generation of computer systems" and DP managers better be aware of what these entail and the impact they can have on their companies' management concepts, according to Frederic G. Withington, senior staff member of Arthur D. Little, Inc.

Withington spoke in a work session of the American Bankers Association National Operations and Automation Conference, held at the Palmer House last week. His remarks came shortly after the 1,400 attendees heard keynoter James F. English, chairman of the Connecticut Bank and Trust Co., warn that "an unusually heavy burden" will fall on DP managers since they are the people who must design and operate the systems banks need to compete in the future.

The mature fourth generation product, Withington said, will be oriented to central data bases, transaction (rather than batch) processing, and dynamic interaction with users. Demand among large users is "overwhelmingly" toward real-time, on-line processing that will require those characteristics, he said.

These characteristics indicate the new systems will be heavily centralized, even while they may also support distributed processing operations for a narrow range of services pertinent to the local division.

But, Withington warned, there are also some strong arguments against centralization, "It brings new costs of terminals, communications, larger computers and the like."

It may be hard to convince a skeptic that anticipated savings will prove greater than these new costs. The move toward centralization goes directly against the whole concept of delegation of authority and responsibility that is the key to many corporate organizations, he noted.

As a first and primary effort, he said, DP managers must establish corporate standards for data elements, languages and equipment. The main benefits of centralization "cannot be obtained until this is done," he explained.

Beyond that, he added, the central management must provide staff functions, such as training courses, that the division units will recognize as useful and better than they could develop for themselves.

And, "perhaps most important" in Withington's view, the company should rotate DP management between the divisions and the corporate staff.

"No one is more sympathetic to the other person's point of view than the person who has been there himself," he pointed out. Besides, if it is understood that advancement requires a successful tour of duty on each side of the fence, self-interest will induce people to avoid alienating those currently on the other side, he continued.

"General management must get much closer to its operations and automation management," English noted in his speech, in effect anticipating Withington's thoughts. "They are so dependent on them for guidance in overall planning and for rapid and economical execution" of the DP that the bank's financial performance "may well depend on the closeness and solidity of this relationship, he concluded.

New Products Offer Banks More Flexibility

By a CW Staff Writer

CHICAGO – The NCR 775 "proof and encoding" system introduced last week at the American Bankers Association automation conference includes a minicomputer and provides banks with flexibility and speed that have been virtually impossible with older systems, which were largely electromechanical in operation.

At the same conference, Burroughs brought out the C6203 desktop calculator, hardwired with nearly a dozen banking-oriented "applications," and Hewlett-Packard displayed the HP-45 advanced scientific pocket calculator, described as an enhanced version of the HP-35.

For its part, Honeywell showed for the first time in a major show the 7340 banking teller terminal and the 234-0 Micr reader/sorter, which can be used either on-line to the H200/2000 series CPUs or off-line as a stand-alone unit.

The mini within the NCR 775 enables users to enter "any number of encoded digits a bank might want to use," the company noted, and to extract user-defined control totals as various batches of encoded documents are entered. The mini utilizes MOS/LSI memory.

But there was more than hardware on exhibit at the ABA conference.

The bankers also had new software and services to consider. University Computing Co. used the conference to announce availability of a Micr Input Capture and Reporting software system that operates under either DOS or OS/360/370, handles multiple reader/sorters, and supports on-line reject reentry and entry analysis for management.

Florida Software Services, Inc. told the DP managers about an updated 360/370 payroll package that handles variable pay periods (as many as 15 deductions per employee) and tax routines for all 50 states.

At the same time, PHI Computer Services demonstrated its on-line payroll data entry system for those users who want to control this phase of the application from a terminal.

Software Design, Inc., on the other side of the exhibit hall, described the use of Grasp's spooling capabilities in connection with a card reader that, the company claimed, in effect, turns the unit into a remote batch terminal for an IBM 360/370, at much less cost than a device that had been built for the purpose.

It's everything you've ever wanted in a peripheral for your mini. With a price/performance ratio superior to every other electrostatic printer/plotter on the market.

In fact, the Gould 5000 gives you 1200 lines per minute – or 600 more than Brand V. And at a lower price.

That means you get high speed for improved mini throughput efficiency. Low cost for economic justification. And, of course, high reliability backed by Gould's reputation for quality.

But you also get a lot more. Resolution of 100 dots per inch. Full alphanumeric and graphic capabilities. 132 characters per line. A 64 ASCII character set. Fan fold and roll paper. 8 bit wide data path.

Optional features? The Gould 5000 is loaded. 96 ASCII character set, upper and lower case. 128 ASCII character set custom designed to your requirements. On-line mini-computer and off-line magnetic tape interfaces.

What's more, Gould software is the most efficient and flexible available anywhere. It lets your mini print and plot considerably faster than competitive units.

We say that the new Gould 5000 is the best buy on the market, with the best features of any mini-computer printer/plotter. And our Pete Highberg or Bill Koepf can prove it to you. Get in touch with them now at Dept. CW6, Gould Inc., Data Systems Division, 20 Ossipee Road, Newton Upper Falls, Mass. 02164.

The new Gould 5000. Twice as fast as any printer/plotter ever designed for mini-computers.

DATA SYSTEMS DIVISION

GOULD

Do 'New' Products Reflect Period of Stabilization?

By Michael Weinstein
Of the CW Staff

NEW YORK – If end-user products released at the National Computer Conference are any indication of the mood and state of activity in the computer industry, it appears that the industry is in a period of stabilization.

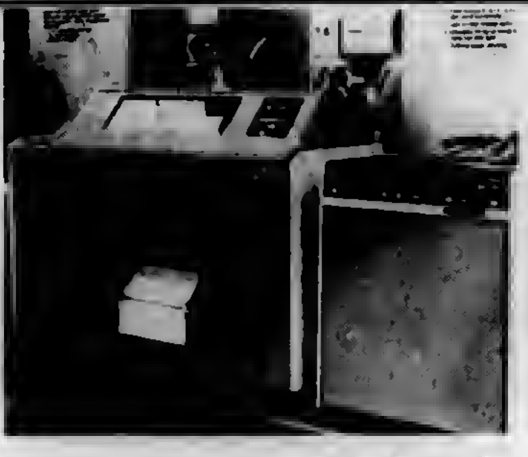
In contrast with past shows, where new products promising new techniques dominated, the 1973 NCC end-user products were marked chiefly by peripherals for present equipment.

Many of the products unveiled are designed to attach to IBM central processors with the emphasis more on cost than on performance.

In terms of number, of the more than 200 exhibitors, only about 30 brought new end-user products. And a good proportion of these products included IBM 360-compatible units, supporting the feeling that the 360 is indeed not dead.

None of the major mainframes showed a new system. Even the mini manufacturers came up with nothing new, with the exception of Modcomp which entered a 32-bit mini.

A larger-than-expected number of products dealing with monitoring and maintenance were shown, suggesting that many manufacturers may feel the present equipment will be around for some time.



CW Photos by V.J. Farmer

CDC printer and controller is a plug-compatible replacement for IBM's 1403 N1 printer.

Attendees try out Potter's System 85 key-to-diskette unit.

Hardware Wrapup

Potter's System 85 Battles IBM 3740

The IBM 3740 key-to-diskette system at IBM's display ran into direct competition with the introduction of the System 85 by Potter Instrument Co.

The basic unit within the Potter offering, the DDS8505 Diskette Data Station, combines five data processing functions – keyboard entry, 4K bytes of read/write memory, a floppy disk drive, line printer and an optional communications unit – enabling it to be used either as a standard data entry device or as a remote batch system.

The S/85 incorporates a direct access capability, IBM 3740 format capability, 250 kbit/sec data transfer rate and a storage capacity up to 1,898 records (242,944 characters)/floppy disk. As an option, users can obtain a second diskette drive that doubles the storage to about 3,700 words.

The Potter system can use IBM-supplied floppy disks which means users can mix Potter S/85s and IBM 3740s. In addition, 3740 users can move to the S/85 with no software or hardware changes required, Potter said.

The diskette is loaded into the S/85 through a loading slot at the top of the drive. Closing the cover automatically positions the disk.

The solid-state keyboard is built around 64 alphanumeric keys. Additional function keys include record, field, character and advances.

Data being entered or edited is displayed on a 32-character display directly above the keyboard.

Mounted above the keyboard and display is a modified LP6150 printer – 132 column, 150 line/min. This unit can print the entire contents of a floppy disk in about 5 minutes, Potter said.

For transferring data to or from the diskette, a built-in controller acts as a buffer. For transfer away from a single station – to another station or to a remote central processor – the communications feature allows data transmission across dial-up lines.

In the remote batch application, a user would fill a diskette with data and when the central processor polls the station, data would automatically be transmitted or received.

Cost of the S/85 is $8,550. Adding the bisynchronous communications facility brings the cost up to $9,950. An equivalent IBM 3740 with communications capability and printer would cost around $14,000, a Potter spokesman said. The second diskette drive option costs about $1,000, including controller.

First deliveries are set for the beginning of 1974 from 532 Broad Hollow Road, Melville, N.Y. 11746.

CDC Shows Printer, Tape Units, 'Speed-Up' for 155

Control Data introduced IBM plug-compatible tape and printer systems for end users. The firm also announced a processor speed-up program for 155 users to "achieve the same performance advantages as IBM's 370/158," the firm said.

The 155 "development program" will include a processor speed-up using Control Data's monolithic memory for the 155. This will be coupled with a later dynamic address translator to give 155 users a virtual capability.

Both the memory and the DAT capability will be supplied to CDC by Advanced Memory Systems. The DAT box is

(Continued on Page 15)

For a national department store chain, with heavy mail-order business, Sanders display terminals produce swift, accurate confirmation of customer credit and expedite all kinds of order entry, retrieval and process-control operations. Sanders system components are widely known for their reliability and cost-effectiveness.

For two major car rental firms, Sanders data terminals link hundreds of reservation counters with central processing points regarding rentals, car control, check-outs, check-ins and other operations activities. Sanders systems are highly flexible . . . can expand easily as more sophisticated requirements develop.

Sanders **Terminalogy** offers a total-systems approach to your EDP problem. Get the full story. Call your nearest Sanders sales/service office . . . or call our National Sales Manager at 603-885-3727.

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Corporate Headquarters

'New' Products May Reflect Period of Stabilization

(Continued from Page 14)

under contract but has not yet been completed, a CDC spokesman said.

The CDC monolithic memory has a higher performance at lower cost than IBM's, according to the spokesman. It will be compatible with the DAT box, which is expected to be priced about 25% below the IBM equivalent, he added.

The 3420-type tape subsystem is available in five speeds compared with three from IBM. The additional CDC speeds are 100- and 200 in./sec.

For a typical 125 in./sec 1,600 bit/in., 9-track system including 3803-type controller and 3420-5-type drives, CDC will charge $545/mo for the controller and $385/mo for the drive. IBM monthly rental is $625 for the 3803 and $440/mo for the drive, according to CDC.

The 1403 N1-compatible system with one 2821 controller and two printers costs $2,512/mo from CDC compared with $2,840/mo from IBM. The comparison is based on a two-year CDC lease and the IBM extended term plan for the same period.

The CDC prices include 24-hour maintenance and additional savings are possible for users who sign up for longer than two years, the firm said.

Modcomp IV Handles 16-, 32-Bit Words

Modular Computer Systems (Modcomp) announced the Modcomp IV, a 32-bit minicomputer and the largest of its family of general-purpose computers.

Two models of the Modcomp IV are available, both with what the firm calls "dual word" processing capabilities. Dual word means the processor can handle either 16- or 32-bit words at the discretion of the user.

Both models – the Modcomp IV/10 and IV/25 – come with 32K bytes of core memory. The machine incorporates 32-bit parallel internal organization, 64-bit floating point hardware, 240 general-purpose registers and memory expansion to 512K bytes.

The Modcomp IV minicomputer

The 32-bit capability directs the system primarily to users with large data base management applications, Modcomp said. The new processor is program compatible with existing Modcomp computers. However, the Modcomp III is to be discontinued and present users will be urged to upgrade to the newer processor.

Effective memory cycle time is 640 nsec, based on use in the 16-bit mode. When used as a 32-bit machine the cycle-time is nearly doubled as the machine draws 16 bits at a time and thus requires nearly two cycles to fill the 32-bit registers, the firm explained.

Price of the IV/10 is $18,500. Price of the IV/25 is $23,500. Both prices include the processor with 32K bytes of core memory.

Peripherals available include all existing lower model-compatible units. Additionally, all existing communications multiplexers, analog-to-digital converters and digital interfaces are available from 1650 W. McNab Road, Fort Lauderdale, Fla. 33309.

Ampex Add-On Replaces 360/65, 67 Main Memory

IBM 360/65 and 67 users can obtain 4M bytes of main memory with Ampex's ARM-2365 plug-interchangeable mainframe memory – the IBM limit is 1M bytes.

The IBM 2365 and the Ampex 2365 appear identical to the 360 central processor. Both units operate at speeds of 750 nsec.

Each Ampex cabinet holds up to 1,024K bytes in four 256K-byte increments. With the four increment approach, if one 256K-byte section goes down it is switched under operator control to the highest order so the entire system will continue to run under OS, a spokesman said.

Lease price on 1M bytes of Ampex add-on is $7,500/mo on a two-year lease. A maximum of 4M bytes rents for $30,000/mo on the same lease arrangement. Purchase price of 4M bytes of memory is about $800,000 from 13031 W. Jefferson Blvd., Marina del Rey, Calif. 90291.

CW Photos by V.J. Farmer

Teda Corp.'s XRL/100 printer ribbon re-inker.

XRL/100 Re-Inker Gives Printer Ribbons New Life

Teda Corp. hopes to dissuade users from throwing away their old computer printer ribbons after the ink has faded, with the XRL/100 that re-inks ribbons at the user's installation.

To control the re-inking operation the operator has two buttons: Power and Process.

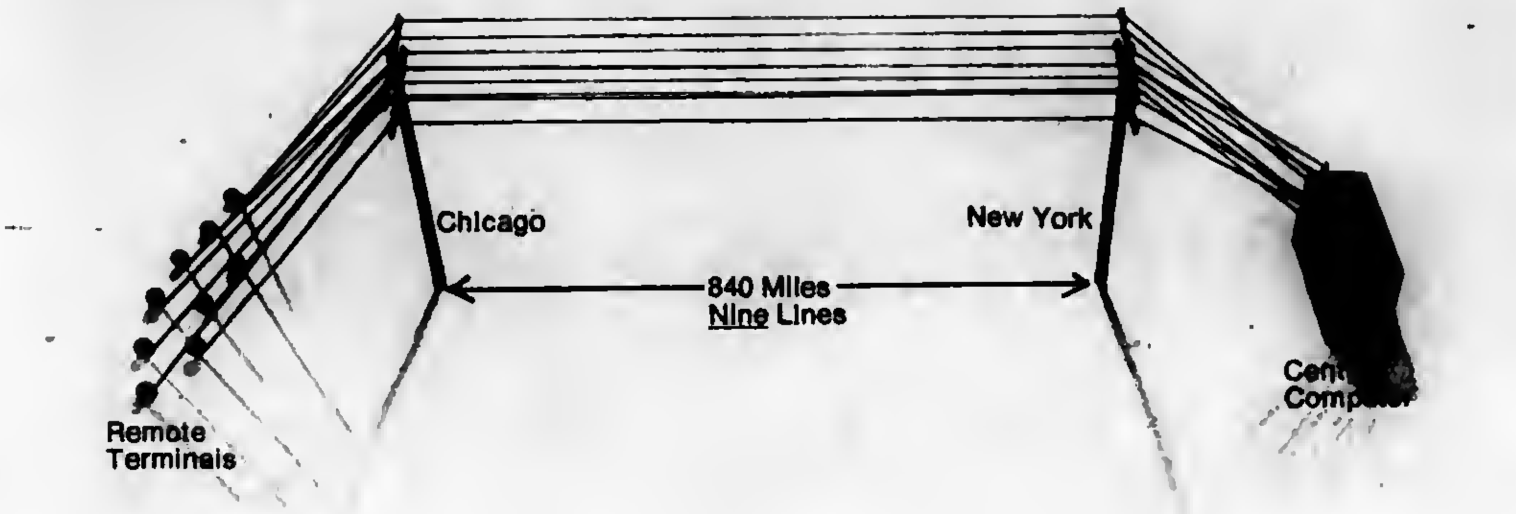
The portable unit can handle ribbons of high-speed line printers used in most mainframe and peripheral systems, according to the firm's spokesman.

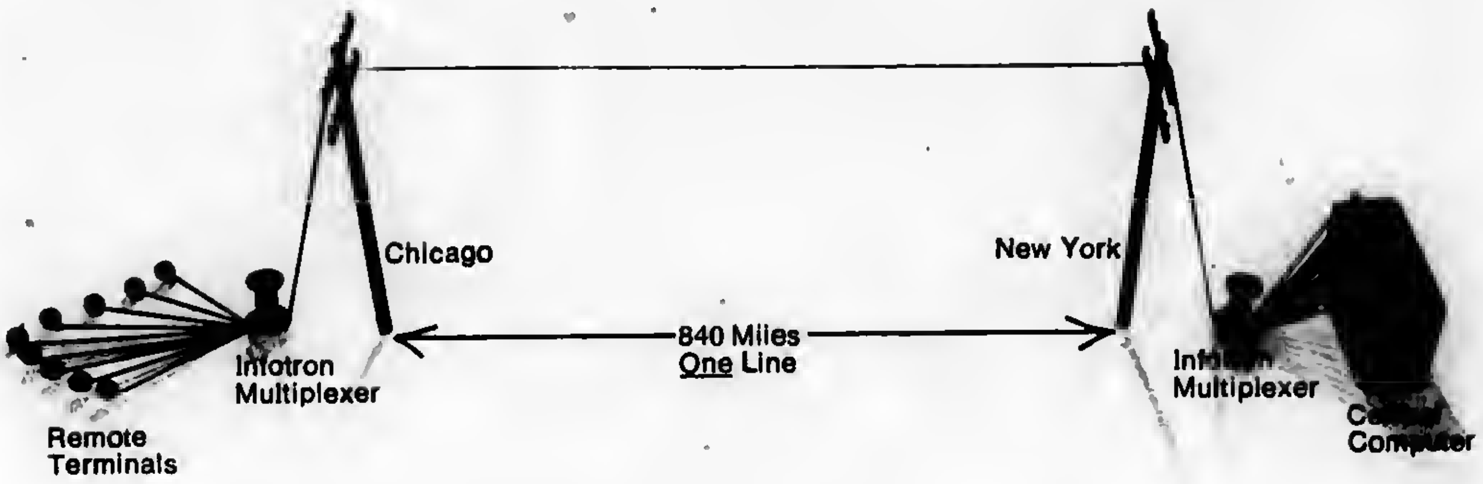
Monthly rental on a three-year lease is $160/mo, $175/mo and $190/mo for units to handle IBM printer models 1403, 3211 and 1403/3211 respectively. Prices for other printer models are available on request. A purchase option is also available from 16641 Roscoe Place, Sepulveda, Calif. 91343.

Off-Line Printer Accepts IBM DOS, OS Tape Input

The newest member of Data 100 Corp.'s Seventy Series family of programmed terminal equipment, the Model 75 off-line print station, was announced at the NCC.

(Continued on Page 16)





We'll give you 30 days to find out which data communications system costs less.

On the face of it, that may not seem like much of a challenge.

Just count the leased long lines and you're done: nine leased lines will always cost more than one.

In the actual example that we based our illustration on, they cost exactly $5,410.06 a month more—even allowing for the lease costs of our equipment.

Time Division multiplexers: the efficient, least expensive way to fill a leased line with more data than Alexander Graham What's His Name ever dreamed of.

Which brings us back to our challenge: It's not a challenge. It's an offer.

A very straightforward offer: we'll come in, review your requirements, design a system and propose the system to you.

If our proposal makes sense to you—order the system. *But*, make your order subject to cancellation during the first 30 days after we install.

Sound fair? Or better than fair? Drop us a line and we'll call to set up an appointment.

Infotron Systems

Infotron Systems Corporation / 7300 N. Crescent Boulevard, Pennsauken, N.J. 08110 / (609) 665-3864

New Techniques Absent From 'New' User Products

(Continued from Page 15)

Components of the Model 75 include controller, card reader, line printer, video display console and magnetic tape drive.

Magnetic tape input data can be standard IBM DOS- or OS-generated tapes. A job control language (JCL) component of the print station software enables the user to select various fields from the input record and selectively format report lines on the high-speed line printer.

The controller is a programmed device which executes the print station software and links the various peripheral devices connected to the station. It contains 12K characters of solid-state memory; dual 1,330-character I/O buffers with 4K memory expansions available for larger I/O buffering; and an optional synchronous communications controller and appropriate emulator software, which turns the Model 75 into a Model 78 programmed terminal.

The optional 300-, 450- or 600 card/min card readers hold 1,000 cards.

The line printer component is either a 600-, 1000- or 1,250 line/min drum printer with Ebcdic, SBT or Ansi character set. The standard 64-char. set and an optional 96-char. (upper and lower case) set is available with either the 1,000 or 1,250 line/min printers.

A 132-char. print line, selectable 6- or 8 line/in. and multichannel verticle format control are also available.

The video display console displays 24 lines of 80 char./line.

Users have a choice of magnetic tape drives: IBM compatible 7- or 9-track, 556/800 bit/in.; and 9-track 1,600 bit/in.

Lease price of a typical system with a 1,000 line/min printer is $1,900/mo on a one-year lease from 7725 Washington Ave. S., Minneapolis, Minn. 55435.

Call Unit Enhanced

A new approach to automatic call distribution was unveiled by Collins Radio Co.

The Collins ACD System takes local calls to remote stations and automatically routes them to a central receiving station. This would be useful in such applications as airline reservations, Collins Said.

A video display at the central site tells the operator where the call is coming from and nature of the inquiry. Once voice contact is made, the same video display screen can be used by the clerk to obtain the data requested from the computer. This information is then transmitted by voice back to the original caller.

All switching, control and data collection operations are executed in digital form so the system is compatible with other digital data processing and transmission systems, Collins said.

System size depends on the total number of voice channels with a maximum of 600 channels.

Presently, the telephone company offers systems with a maximum capacity of 200 trunks and even at this level the Bell system does not allow the receiving operator to interact with the computer to determine answers to remote inquiries, according to a Collins spokesman.

Maximum number of receiving operators on the Collins system is 512.

A typical system handling up to 300 incoming calls to be directed to 225 clerks would cost $704,350 plus installation from 245 Park Ave., New York, N.Y. 10017.

Centronics Printer Leases For $200/Mo on 1-Year Plan

The Centronics Model 308, demonstrated at the NCC, is a 120 line/min, 80 char./line matrix printer that leases for about $200/mo on a one-year lease.

It is an incremental impact printer with a standard 64-char. Ascii set. Users can also specify elongated boldface characters on command as an option. Foreign and other character sets are also available as options.

The parallel transmission rate is up to 75 kchar./sec, and a serial rate from 100 to 9,600 bit/sec is available as an option.

Spacing is 6 line/in. with special features including backspace, horizontal tab and optional selectable column counter.

Purchase price is $2,690 from One Wall St., Hudson, N.H. 03051.

Documation Beefs Up Card Family for Mini Users

Documation added to its family of card equipment for minicomputers with the RP100 reader/punch and the D400 card reader.

The RP100 is an 80-column Ansi standard reader/punch with a hopper/stacker capacity of 1,000 cards.

Punch operating speed is from 100- to 285 card/min with the read-only speed rated at 400 card/min.

Electronics are TTL integrated circuit logic. Error detection is automatic verification utilizing echo check.

The D400 card reader accepts standard 80-column or optical mark cards. Hopper capacity is 800 cards with stack capacity set at 1,000 cards.

Reading rate is 400 card/min.

Cost of the RP100 is $11,700. Cost of the D400 is $1,650. The firm is at P.O. Box 1240, Melbourne, Fla. 32901.

Odec Hammers Away

A medium-speed printer introduced by Odec Computer Systems Inc. has print speeds up to 250 line/min in a quiet cabinet designed for office use.

The Odec 1423 printer uses a technique whereby all 66 hammers impact directly on their center faces. Each of these hammers fires twice during a print cycle to print the 132 characters in a full line.

The advantage of impacting extra wide hammers on their center faces is that it provides a larger margin in the timing of hammer firings and thus eliminates the need for later readjustment, a spokesman said.

Cost of the 1423 is about $7,300 and $7,900 for the quiet version from 25 Greystone St., Warwick, R.I. 02886.

DP May Go to Aussie Races

Special to Computerworld

MELBOURNE, Australia – Racing administration here may soon be computerized.

The Victoria Racing Club is currently conducting a study to determine whether racing should be automated.

The principal racing clubs in Sydney commissioned the V.R.C. to organize the study and the P-E Consulting Group is examining all facets of administration at the racing center.

Particular areas where automation could be used include racing performances, registrations and breeding.

"If approved, computerization could also be used in handicapping, compiling of racing calendars, form guides and turf registers," said Kevin Ryan, project leader and racing secretary-handicapper of the V.R.C.

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Control unit interfacing allows use of existing computer tape programs. When used as a stand-alone system, data are transferred directly to peripherals —document scanner, plotter, printer, or CRT terminals.

Using tape emulator methods, System 190 follows standard 1/0 tape commands. Or use direct access method with simple keying from host computer. Or use the automatic spooling method that allows the 190 to feed data to other storage devices.

On-line storage.
In on-line data libraries, System 190 delivers these advantages *plus* high speed direct access to 275 million data bytes, expandable up to 2.2 billion bytes. With audit trail. And without clobbering old data. Hardware costs are half those of equivalent disc systems.

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In document image storage applications, System 190 supplies an automated document image handling system that is more efficient and less expensive than other automated systems. It provides rapid direct access to thousands of on-line images in less than 1 second per image and to millions more stored off-line in less than a minute. System 190 automatically distributes the retrieved images, either locally or remotely, for viewing or as hard copy.

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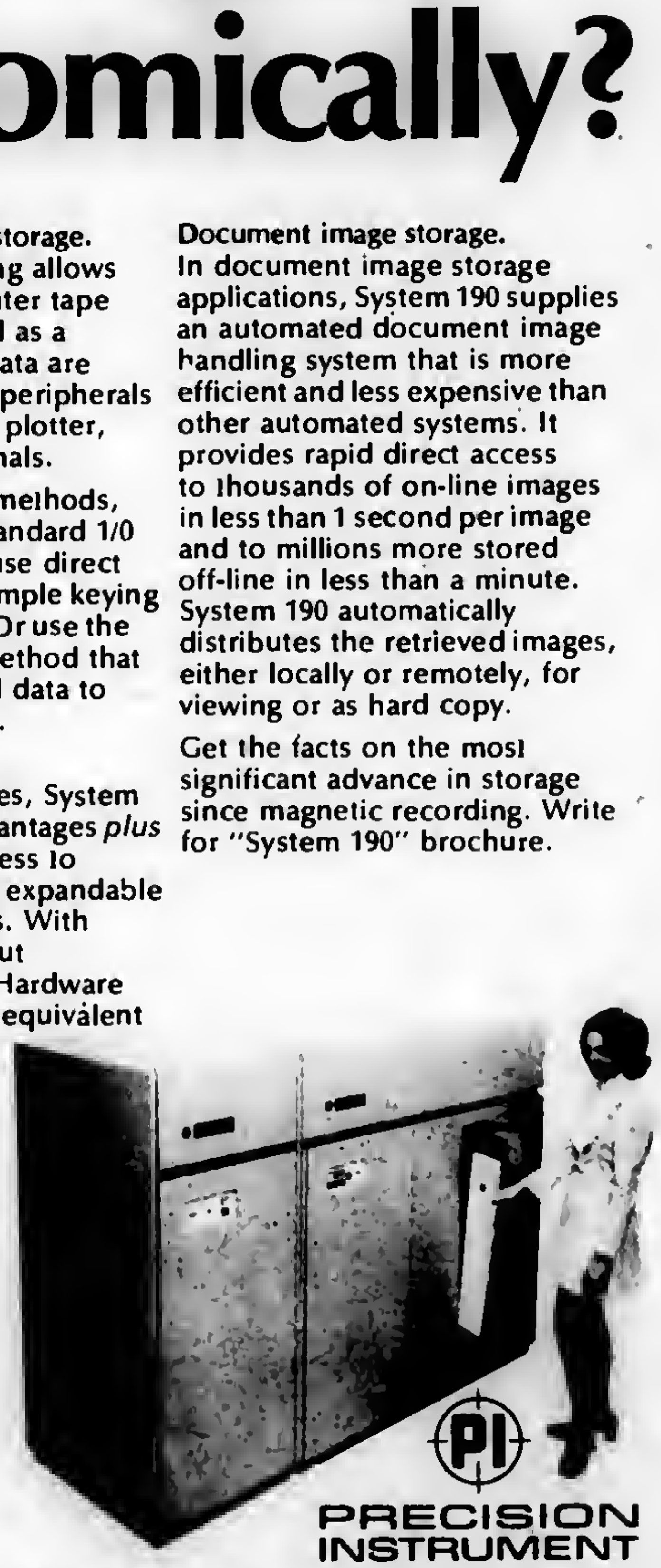

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Enhanced Versions of Terminals Dominate Communications Area

By Ronald A. Frank
Of the CW Staff

NEW YORK – Enhanced versions of existing terminal technology predominated the data communications products at the National Computer Conference and Exposition.

Texas Instruments (TI) drew on its earlier display units to introduce the 912 CRT while Tektronix added new versions to its line of graphic displays and video hard-copy devices. Other devices which were outgrowths of earlier products included the Pertec remote batch terminal, a dial-up model of AT&T's 208 data set and an I/O printer from Centronics.

The TI CRT is designed for use with financial services supplied by Canter Fitzgerald Securities Corp. for the government money market, but the unit is available separately, a spokesman said.

The 912 operates with dual 960A or 980A minicomputers and can be configured to include a built-in modem and/or polling unit. The CRT will cost about $2,500, or about $3,000 with modem and other options.

The Tektronix 4014/4015 display terminals can address more than one million graphic points on a 19-inch storage tube. In addition, the 4015 has an APL character keyboard. The terminals cost about $8,450.

Pertec, Los Angeles, modified its OEM terminal to introduce a remote batch terminal system for end users. The DT1300 includes a send/receive terminal with key-to-tape entry and a 300 line/min impact printer. Paper tape and card units are also available with the DT1300. The terminal is compatible with Hasp software used with 360/370 systems. A typical terminal system costs $24,500 or $450/mo.

AT&T showed a dial-up version of its 208 data set, designated the 208B.

Communications Roundup

A five-button test panel on the data set provides loop-back capabilities, a remote test feature for operation with a "telephone company data test center."

The data set is expected to be ready for first deliveries in the third quarter of 1973 and will cost about $150/mo.

Centronics, Hudson, N.H., added a keyboard to one of its printers to provide users with an "I/O writer." The 120 char./sec unit also can operate at incremental speeds when data is being entered from the keyboard.

The Model 308 printer can operate at speeds up to 9,600 bit/sec with a separate modem. The base price of the 308 is $1,995 with an additional $695 for the keyboard and incremental print feature.

Omron Systems, Inc., Sunnyvale, Calif., introduced its 8025 CRT which is controlled by a microprocessor which can directly address up to 16K of RAM or ROM-type memories. The basic model including a 1,920-character display can transmit in either half- or full-duplex modes at data speeds up to 9,600 bit/sec. The terminal is priced at $2,350 and first deliveries are scheduled for November.

CW Photos by Ronald A. Frank

Don Roposo of Texas Instruments and Jack Flynn of Centronics consider the Centronics Model 308 I/O Printer.

Christopher Allen of General Services Corp. looks on as Valerie Shepherd demonstrates the Pertec DT1300 system.

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Editorial

An Auspicious Beginning

The first National Computer Conference is now history – a success from almost every vantage point.

The wide diversity of the technical sessions contained offerings to please the palates of almost every user, and the number and quality of the people at the exhibits pleased the marketing representatives.

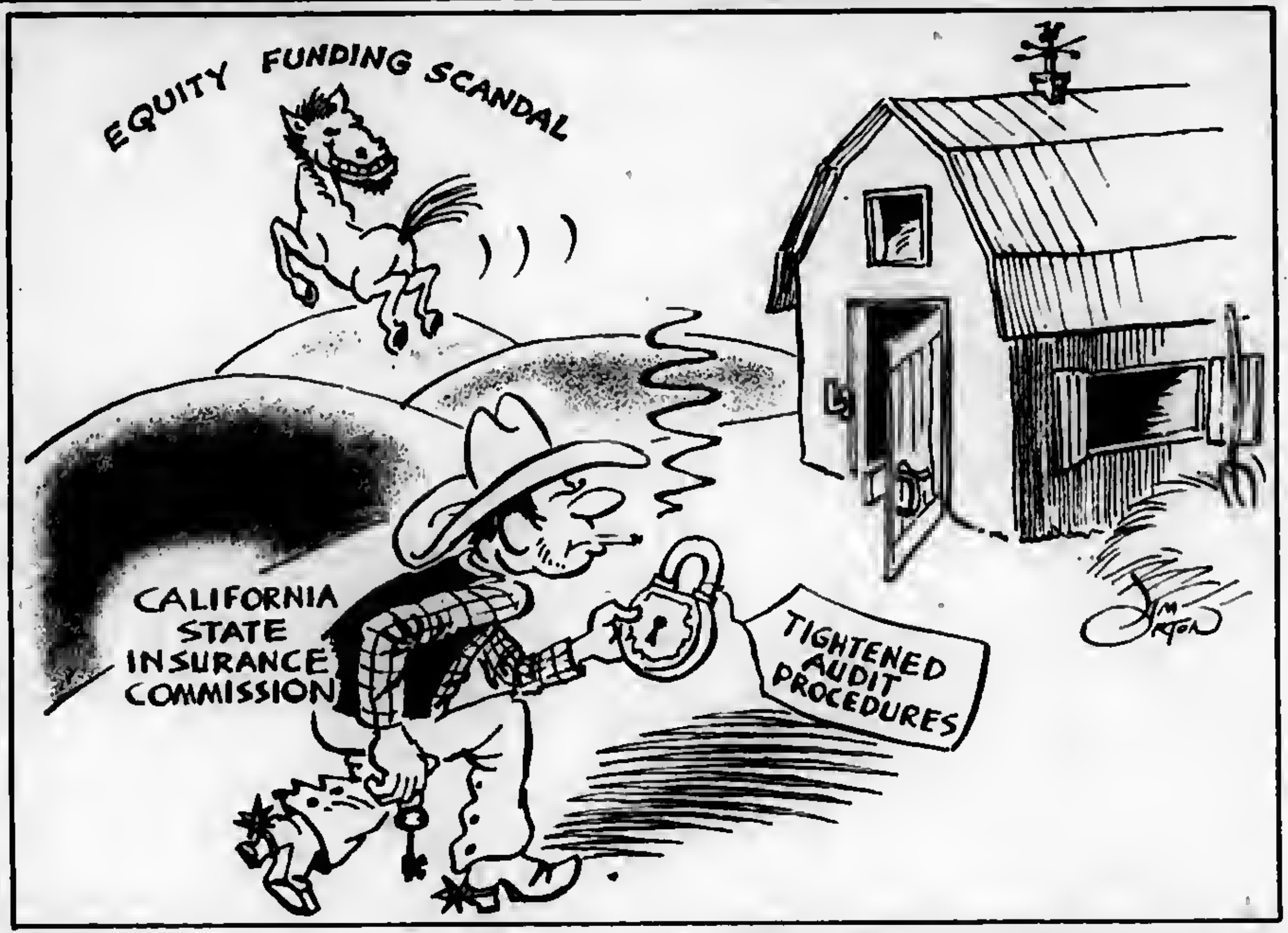
The new technology buffs were probably the only segment of the computer community unhappy with the show, since most of the firms participating chose to add new products to existing product lines rather than introduce new technological advances.

Both the products on display and the technical sessions emphasized the increasing user interest in price/performance over technology. "More bang for the buck" was the watchword being hawked on the floor. The other message was that users are becoming increasingly interested in special products for specific jobs and that they're buying them when they find them.

The old arguments came up once again about the sessions, however, with criticism centering on the emphasis of prepared papers that rehashed old developments rather than the latest techniques, but this criticism was more muted than in recent shows.

Overall, the people at Afips –and the technical program chairmen – should be congratulated for putting on a show that can be truly meaningful to the computer community once again. The new five-day, once-a-year format seemingly pleased almost everyone.

Afips apparently has met its goal of offering a national convention for all segments of the computer community. We only hope next year's convention in Chicago can carry on this tradition and the promise that was evidenced in the first National Computer Conference.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Understand Oneself—Manage Oneself

Management

By Frank Greenwood, PhD

You cannot manage others until you manage yourself; and you cannot manage yourself until you can understand yourself.

The approaches to understanding yourself are many. A natural format for data processing professionals is that your mind consists of two historical files and a master control program.

The two files – both created before you entered first grade – are named "Parent" and "child." Input to your Parent file was the attitudes and behavior of your parents and similar people.

The permanently recorded data includes rules, procedures, prejudices and all external events which you were not free to question. Much of the data is inconsistent and it came from emotionally significant authorities.

Input to your Child file was your internal reactions to your early experiences. Since you had few words at that age, what is recorded is mostly your feelings about your world. Your Child file is the basic data for your current self-concept.

The attitudes in your Child file largely shaped your view of yourself and hence heavily influenced your success. Your master control program, named "Adult," processes the historical data from your Parent and Child files as well as current data, computing probabilities and outputing decision. (See *Born to Win* by James and Jongeward, Addison-Wesley, Reading, Mass., 1971, 297 pages.)

That is, your Adult program receives input from your Parent file (getting data on early attitudes or beliefs taught to you about life) and from your Child file (getting data about life as you experienced it in childhood) as well as from current transactions, then organizing and processing this input to produce decisions as its output.

Let's assume you feel hostile toward your boss because he rejected your plan for redesigning the inventory system and that your boss resents your hostility. This combination of rejection, hostility and resentment won't help you – unless you enjoy suffering – so you want to analyze it and eliminate it.

Your Child file may contain feelings of inadequacy. You were about two feet tall when it was created and maybe your perception of your world was that six-foot monsters told you: "don't do this" and "don't do that."

It may be that feelings of inferiority in your Child file were triggered when your boss rejected your plan, leading to your hostility. Therefore, maybe you are now in a mess because of belittling attitudes exhibited by your parents years earlier. Your Child file has thus made you the innocent victim of attitudes of others many years ago.

If this analysis is correct, you can help dissolve your hostility by sympathetic understanding of how your Child file got that way and then reprocessing your boss's rejection with your Adult program, deciding why your plan was rejected and how to modify it so he can "buy" it. Note that your hostility may have triggered feelings of inadequacy in your boss's Child file, leading to his resentment of you, illustrating how hostility can breed hostility, leading to who-knows-what.

If you found it impossible to gain parental approval as child, no matter how you tried, you may have a much tougher problem. Your Child file has valid transactions for the data that those in authority are uncaring and unreasonable. The permanent records from your Child file then support your feeling that your boss is cold and demanding.

Your Adult program processes this and may decide that you dislike your boss, so you become hostile. Lack of parental approval may thus force you into hostility toward every boss, which won't endear you to the brass. Again, you should sympathetically recognize the validity of the hostile feelings permanently recorded in your Child file. Your Adult master control program has to be patched so that this valid, but much earlier decision about people in authority is not part of the data processed in appraising your current boss.

There will be considerable debugging needed, but you can correct your Adult program. (These examples are but two from an infinite number of illustrations.)

(Frank Greenwood is computer center director at the University of Montana.)

Professional Groups Need Reordering

By Joseph T. Rigo

Special to Computerworld

It seems reasonable that any professional organization claiming to represent the computer community would have more than casual interest in computers.

In fact, as much as 30% of its activities – but no more – would probably revolve around hardware topics. These would cover mainframes and peripherals – past, present and future – and micros, minis and maxis, regardless of manufacturer or user.

At present in this field, only the IEEE Computer Society and the various user groups demonstrate any real interest in hardware.

Another 30% of an association's work would probably focus on systems software.

Most of our current professional societies dip into these areas to some extent, but very selectively. Only the IBM user groups, Guide and Share, have anything resembling strong programs, and they are restricted to matters of concern to IBM.

The remaining 40% of our association's work might be spread around various topics of current or continuing interest. These would include systems analysis, management, documentation, applications programming, education and training, public relations and all those other things that attract our attention.

Again, each of our existing associations is involved in one or more of these areas. But their efforts are scattered, and their involvement varies according to the needs of their unique slice of the computer community.

Finally, a real professional association for the computer field would carry on a full range of programs to reach those who cannot participate regularly in its national-level working sessions. That is, it would organize chapters, publish magazines, hold seminars and sponsor regional and local activities.

Most of our professional associations do indeed provide these services. Guide, Share and the other user groups do not.

Therein lies our problem.

Limited Involvement

Guide, Share and the other user groups have the activities that are of general interest, but they lack the administrative apparatus. Nor do they fully participate in the industry conferences organized by the professional associations.

The benefits of membership accrue mainly to IBM and to the relative handful of people whose companies send them to meetings regularly over a long period.

The professional associations have the publications and the chapters, but their activities are narrow in focus.

ACM's niche, for example, is academia, and the main thrust of its work is in that direction, no matter how much it seeks non-academic members. Consider its special interest group in programming languages, Sigplan, one of its best and healthiest enterprises.

When I was last in touch with Sigplan, about two years ago, it was one of the world's leading sources of information about Algol. Algol seems to be big in academic circles. So is APL, and in this area, Sigplan's work actually appeared competitive with the Guide and Share APL programs.

On the other hand, Sigplan's Fortran and PL/I activities were anemic at best, and it was refusing to even recognize the existence of Cobol. For an academic trade group, this approach is fine. For an organization claiming to represent the entire computer community, it is intolerable.

This fragmentation of professional activities has been with us for sometime now, and I don't think we are well served by it. It should not be necessary for one person to belong to a dozen different organizations to keep up with all the technical factors affecting his daily work. We are not helped when some of the best talent gravitates toward groups that acknowledge no obligation to the entire community.

There was one attempt to establish some order a few years ago. This was when Afips was created as an umbrella society. But now Afips is just one more group, specializing in arranging conferences.

Hopefully there will be another attempt. Hopefully it will recognize that the user groups like Guide and Share must be included in any workable solution. Hopefully it will be led by people who aren't afraid to see a few bureaucratic empires shattered.

In the meantime, it would help if Guide and Share would at least put out a magazine.

Public Reacts to Equity Funding

Must In-House DP Be Banned as Too Open to Fraud?

The Taylor Report

By

Alan Taylor, CDP

"The truth, all the truth, and nothing but the truth," is apparently what the public-at-large expects from computerized systems, just as it expects truth from a witness in a criminal trial. The basic objection to the operation of the computers in the Equity Funding case is that the output included incorrect data. The fact that the input also included incorrect data does not, in the public eye, exculpate the computer system. The Gigo alibi has not been accepted, it seems.

The rationale appears to be that computer people have the basic capability to confirm the data, and, in failing to do so, lost the right to claim they had processed it properly.

How such failures to provide full and accurate processing could become dangerous was related by columnist Jack Anderson in an article entitled "How to Bribe a Congressman." In this article the columnist pointed out that the Avis credit card billing system provided facilities which could avoid billing the person who incurred the expense. Instead, in some cases, it was apparently paid for by ITT (which owns Avis).

There is, of course, nothing unusual in a computer, or non-computerized billing program, receiving charges from one person and charging a different one, or simply not charging at all. But Anderson's point was that this could lead to systematic bribery, with the computer producing acceptable reports which lacked the detail necessary for anyone to see what was happening. After all, from a technical point of view, nothing could be simpler. But when it happens that the recipient is a Democratic congressman from California, and the firm that eventually ends up with the bill is a very large and potentially political corporation, there are many bad implications.

Control Method

One way in which a situation like this could be controlled (although not entirely avoided) would be to place the use of computers under independent professional computer control. This is like, for instance, forbidding drug firms to themselves administer drugs they develop directly, and insisting upon a responsible intervening person to do the testing, check the plans, monitor the results, etc.

Unfortunately, the computer area has not so far developed a group of responsible professionals who owe their loyalty to their profession, and who could take the responsibility of ensuring that the billing programs were not being used to bribe congressmen or for other unprofessional practices. There are such people, of course, but they are simply not recognized by the public, or honored by the practitioners. In fact no professional employment structure currently exists which can make such responsible operations economically viable!

In short, it simply does not pay to take data processing responsibility. At least not when it is most needed!

Yet now more than ever it is necessary for someone to take such responsibiltiy. Until recently the situation has been that only the data processors themselves realized how easy it would be to at least start a fraud. (The outside world still thinks it is also easy to complete one. But one of the real lessons of the Equity Funding case is that the inclusion of a computer system, approximately last December, was what actually put an end to the fraud.)

Criminals Looking for Computers?

Now, however, the situation has changed. Now the commercial community has been warned that crime and computers are good partners. Anyone in the commercial community now knows where to look if he wants to commit a crime and needs an accomplice. They have been told to go and look for a nice programmer or operator who they can, in one way or another, control and who perhaps is not too bright, or perhaps has too high an idea of corporate loyalty, and not high enough an idea of public or professional responsibility.

With that situation it will now be easy to set up a fraud which involves the corporate officers and some frightened computer people.

This possibility of corporate executive-initiated crime must be taken very seriously from now on. And the only way to prevent this is to prevent loyalty to the firm affecting the way data processing is handled.

Removing the Temptation

This means all genuine data processing work (as opposed to simulations, management studies, etc.) would have to be handled by a computer outside the control of the corporate president. Probably the computers and the programming would be handled by service bureaus or by large time-sharing systems.

I would be sorry to see this. The in-house computer has many advantages for firms. Even more, in-house programming has advantages. But it seems clear that if the cost of these advantages is making computers vulnerable to use by corporate criminals, then in-house systems will have to go. Unless, of course, we develop a group of professionals.

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U.S. Steel Not Codasyl's Problem

A correspondent has sent me a persuasive defense of U.S. Steel, which, in my March 28 column I suggested was the key to Codasyl's problems. To some extent the defense was off base. I did not rely upon Warren Simmons for too much of my information, relying instead on the lack of availability of minutes, interviews with Jack Jones, chairman of the executive committee, and other executive committee members, discussions with Ronald Ham, chairman of PLC, and other PLC members.

Readers Respond

Outside this minor point, however, the statements in the letter, although only given anonymously, appear to be verifiable. Certainly the current method of election provides no protection within Codasyl from people who stay on after their days of great contribution are over.

The question is, however, and my correspondent does not take this into account, whether such kindness, while pleasant to the particular person, is injurious to the general data processing user. Although my correspondent might think the Codasyl Planning Commitee is a low-risk position, this is simply not true.

The Codasyl Planning Committee is there both to evaluate the performance of the other committees, and also to provide for feed-back information to the other committeee. Far from being a low-risk position, it is the most important – from the public point of view – of all the committees.

In past years, however, it has not been doing its work, and Jack Jones tells me he will not permit it, or any committee or person, to get in the way of the Programming Languages Committee. How then can it do its work?

Here is the letter, which, from its phraseology, appears to be from a member or an ex-member of Codasyl:

Dear Mr. Taylor,

I think you have really stuck your foot in your mouth this time. You need to verify your information before you make strong accusations. I refer to your column of March 28 suggesting that U.S. Steel was the key to Codasyl's problem. In fact, the perceptions of Gerard McBride (Warren Simmons, not U.S. Steel, is the villain) in the April 25 issue are correct. It seems evident that you relied chiefly on Warren Simmons for the information on which you based your March 28 column. The fact is that Warren Simmons is probably the biggest problem Codasyl has.

In 1968 (July) Codasyl was reorganized. One of the reasons was to get Simmons out of any position of influence so that his actions would do minimum damage to Codasyl. A new committee called the Planning Committee was formed for Simmons.

It was a low-risk position. If something good came of it – great (that is, if Simmons did something in that position), but if nothing happened, the rest of the Codasyl committee could get along without it.

The purpose of the Planning Committee was to serve as a liason between Codasyl and the users and implementors in the computer industry. In previous reports you have properly identified the major weakness of Codasyl being the lack of an effective relationship with the community outside of Codasyl. I trust that now you understand one of the key reasons for the problem.

Simmons is the first to volunteer for a job when the need arises. Unfortunately, he seldom earns the position, nor carries out the responsibility satisfactorily.

Simmons is seldom representative of Codasyl. Ostensibly the newsletter was a good idea in concept, but it was poorly executed. It is often inaccurate with respect to Codasyl.

Talk to any enlightened member of Codasyl and this information will generally be confirmed. If you succeed in having U.S. Steel withdraw its support of Simmons entirely, you may have unwittingly helped to solve one of Codasyl's problems.

Name Withheld

Letters to the Editor

Consumer Does Have Right To Accurate Credit Record

Re "No Credit Here," R.L. Vennell's letter [CW, May 23]:

He said, "credit is not yet a right guaranteed by the Constitution." I'll buy that. But the consumer has every right to complete, accurate and timely reporting of the facts, public record or otherwise, which become a basis for the "privilege" of credit.

Are the credit bureaus as concerned with timely correction of erroneous data as they are with the original reporting of that data? The consumer should make his credit record, but all too often it is vendor errors and incomplete credit bureau data that make the record.

The consumer has rights that must be protected where that record is involved.

T.J. Dowd

San Jose, Calif.

D'Unger Not the Only One With Spelling Headaches

I have been enjoying the continuing saga of Robert M. D'Unger and his frustrations in trying to have his name spelled correctly by the "wonderful world of data processing."

Allow me to enter a similar complaint, but one that must be even more common than D'Unger's.

The name of our firm is U.S. Datacorp, spelled and punctuated exactly that way. Would you care to hazard a guess as to the infinite number of possibilities this opens up to key-entry operators, if in fact they are the ones to blame?

Who decreed that punctuation is "verboten" in our industry? What gives most everyone (including *Computerworld*) the vision and insight to decide that we don't know how to spell our own name?

I made a survey of computer-printed labels on publications and advertising pieces around our offices and came up with these statistics: labels checked: 21, correct spelling: one.

Most common misspelling: US Datacorp. Somehow our initials have become a word.

Other misspellings were US Data Corp, US Data Corp., US Data Corporation, US Data CP, U S Dalacorp, U S Data Corp, United States Datacorp, U.S. Data Corp. and U.S. Data Corporation.

Surely recognition is due the one publication that cares enough to spend those fractions of a cent it might take to do things the right way, and actually insists that their key-entry operators "punch 'em as they see 'em."

Let's hear three big ones for *The Journal of Micrographics*, a bimonthly publication of the National Microfilm Association.

Norman H. Friedman
Vice-President

U.S. Datacorp.
Portland, Ore.

RPG-Cobol Debaters Seem a Bit Prejudiced

Programmer types who have written letters to *Computerworld* about the pros and cons of RPG, RPG II and Cobol seem rather prejudiced.

Cobol programmers who have never written RPG or RPG II naturally feel Cobol is superior. RPG is markedly inferior to Cobol; however, RPG II has many Cobol features incorporated into it; features Cobol programmers can't picture in ("yeech!") RPG.

The RPG or RPG II programmer has taken affront to attempts to "put him down" by demeaning his language and has reacted by launching his own campaign against Cobol.

In effect this debate has become rather emotional.

My own experience covers RPG, ANS Cobol and RPG II, in that order. I found RPG II to be virtually free of the old RPG limitations. I am back to using Cobol at this time and miss many of the coding features of RPG II. I can write an RPG II program and get it debugged in half the time it takes for Cobol.

Shops that value efficiency far above programming time should be ALC and not Cobol users. Cobol is not *that* much faster running than RPG II. RPG is obsolete since the release of RPG II.

Roland A. Radinski

Trenton, Mich.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Coding Techniques For POS Systems—Pick Your Favorite

By Toni Wiseman
Of the CW Staff

NEW YORK – Topics ranging from electronic cash register input units to automatic ticket printing were the focus of an NCC session on electronic point-of-sale (POS) systems in the retail industry.

E. Thomas Doddridge, NCR retail accounts manager, cited improved customer service and unit control information input as the justification, and chief objectives, of automatic ticket reading.

The coding technique, according to Doddridge, should provide high density (a large number of characters per inch), the potential for source marking directly on packages, built-in error checks and security controls to guard against price tag alterations.

The pros and cons of coding techniques were also scrutinized at the session.

Magnetic coding has the advantage of high density, but on the minus side it provides a limited depth of field, little potential for source marking, is expensive and the shelf life of magnetic tapes is still in question, according to Doddridge.

Optical bar coding affords a lower density, he said, but it lends itself readily to source marking, uses conventional stock and requires no particular orientation. Color bar coding requires more complicated printing, but is highly reliable, has a high density and precision printing is unnecessary.

OCR coding is still a thought for the future, according to Doddridge, due to the fragility of the reader. "Quite frankly," he said, "OCR technology for POS looks promising for 1980, but not for the present."

Two other panelists discussed the technology of POS, and its applications in the grocery store industry.

John M. Hunt, vice-president and chief technical officer for Singer Business Machines, described several POS systems, ranging from a large-scale operation with 50 or more terminals to a small store installation in which each terminal has its own tape storage unit but several terminals tie into the same modem.

A third system converts cassette information to one-half inch magnetic tape, taking advantage of intelligent terminals.

W. Rilley Daniels, director of food distribution systems for Sweda International, covered "POS in the Grocery Store Field."

Order size, daily volume changes and environmental factors, such as customer service concepts and the utilization of baggers, are only a few of the variables affecting POS operation, according to Daniels. POS is also affected by the input unit chosen, he stated.

Daniels outlined the merits and drawbacks of conventional cash registers, stand-alone electronic cash registers (ECR), dedicated ECRs and scanning devices. "The key issue in selection," said Daniels, "is the upward compatibility of the unit, its potential for development."

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Random Notes

MIS for Large Projects Installed on AI/COM Net

JENKINTOWN, Pa. – A management information system written in Fortran IV and intended primarily for financial control and accounting of project-oriented operations has been installed by the developer, Analytics Inc., on the Applied Logic Corp. (AI/COM) time-sharing network based in Princeton, N.J.

The system produces fiscal status reports covering labor, materials, overhead, "G&A" items, profit and other elements for both projects and subprojects. The system prompts the non-DP operator through the entry of all relevant data, and provides both logical and arithmetic error checking to make sure input is "clean."

Analytics, Inc. is in the Fox Pavilion, Foxcroft Square, 19046.

Avco Adds Amplex Core, Disks To Expand 360/75 for RJE Work

WILMINGTON, Mass. – Avco Computer Services, which provides remote job entry service based on an OS/Hasp-oriented 360/75, has recently installed the Mark IV File Management System as part of its software library.

The company has also doubled the main storage capacity of its CPU with the addition of 1M byte of Ampex add-on core, and has increased its on-line storage capacity to 728M bytes with the acquisition of nine new Ampex disk drives.

Avco is at 201 Lowell Ave., 01887.

Auto, Truck Fleets Monitored

MINNEAPOLIS – Truck and automobile fleet managers can have greater control over operational costs with the Automated Vehicle Analysis System (Avas) recently installed by Control Data on its Cybernet remote-computing network, with consulting support supplied by CDC's staff.

Developed by Oklahoma-based Innovative Computing Corp., Avas accepts data on fuel consumption, miles and hours of vehicle operation, revenue produced and equipment failure.

From this information, the system generates a set of performance reports by vehicle, groups or classes of vehicles, or the user's entire fleet, including average performance of a vehicle or the fleet.

NCR Expands in Atlanta Area

ATLANTA – NCR will have an immediate 70% jump in the processing capacity of its regional data center when the center is moved, this fall, to a new facility now under construction in Technology Park, a company spokesman claimed recently. The center, handling both on-line savings bank work and batch processing for other users, will share the new two-story building with the company's regional marketing office.

RPG? Cobol? No

Clothier Says Adpac Suits Its Needs

By Don Leavitt
Of the CW Staff

CHICAGO – A currently available and growing language system, Adpac overcomes disadvantages of both RPG and Cobol, while retaining the flexibility of Assembler, according to Hart Schaffner & Marx Clothes' programming manager Thomas T. Osberg, who added that his shop has been using Adpac heavily since the spring of 1969.

Developed and distributed by Adpac Corp., San Francisco, Adpac is a high-level language which, like RPG, relieves the programmer of many routine chores. Although the Adpac specification sheets "take some getting-used-to," Osberg said, the system generates a logic shell that can be as simple or as complex as the user wants.

Many Possibilities

"I can't think of anything you can do in Cobol that you can't do in Adpac," he added, " and there is a lot more you can do in Adpac that you can't do in Cobol. Bit manipulation and character string manipulation are two major facilities that come to mind.

"There are some fairly basic system interfaces that Cobol just doesn't support but Adpac does," he noted, "like device-independent processing and off-line print files."

Osberg characterized Adpac as "fairly flexible" in linking to external routines. It has a "special hook," he said, for I/O routines that have to pass file definition information at execution time. And Adpac also can Link in and Load external modules from the user's Core Image Library "which you just can't do under Cobol."

Hart Schaffner & Marx Clothes has a 360/40 in-house, a 370/135 on order and a dozen programmer analysts under Osberg, in addition to a team of five working on fabric cut planning operations, and two more in the retail sales division.

There is a heavy workload of 1400-series programs still running in emulation mode, but these are being rewritten in Adpac, Osberg explained, so that they will be ready for the 370, due in December.

Only two of his staff work regularly in Assembler. All the rest work in Adpac, the manager said, adding that of the production programs written for the 360, about 50% are Adpac, 30% BAL and only 20% Cobol.

Osberg then admitted there are "obviously some things you can do in Assembler that you can't do in any high-level language," but said he couldn't think of a single major problem for an application program written in Adpac compared with one written in Assembler.

The company behind Adpac is generally very responsive to user needs, he said, but the lack of an active distributorship in Chicago over the couple of years has caused problems. These have been primarily in the area of finding experienced Adpac programmers or of gaining support for training new staff members in the language.

Competition Pushes Improvement In Data Dictionaries; Users Win

BURLINGTON, Mass. – The move to more effective data directory/data dictionary support goes on and the users – particularly those not yet ready to go into a complete data base management system – are the potential winners as the vendors improve their offerings.

Data directory/dictionary software typically provides a system of creating, maintaining and retrieving information from a file which, in effect, inventories the data used throughout a DP installation.

Careful use of this file, which may show both responsibility for and ultimate use of each data element, can reduce duplication and the potential for using improperly maintained data.

Now Synergetics Corp. has added several new features to version II of its Data Catalogue package [CW, Dec. 20], to make it more responsive to user desires. Source code from users' Cobol Data Division file descriptions (FD) can, for example, be used as input to create at least a skeleton of a Data Catalogue listing for each element.

Another new feature reverses that pattern and supports the creation of File Section Data Division entries for files, records or programs from the Data Catalogue.

Synergetics has also added two new reports to give users a better perspective on how they are using their data – the Security Level Report and the Frequency of Access Report.

The basic Data Catalogue system, supporting both narrative and technical descriptions of the data elements being posted, costs $6,500 and operates in an OS/360-370 environment. The feature allowing conversion of FDs to Catalogue entries costs an additional $1,500, while the FD generation feature sells for $1,000.

The Security Level and Frequency of Access reports are available for $250 each, a spokesman noted from One Garfield Circle, 01803.

'Dinos' Aids OEM or DP Manager

OAKLAND, Calif. – Data General Nova users can get as much or as little of a real-time operating system as they need with the introduction of the Dinos family of systems from Decision, Inc. The Dinos packages are geared to both the OEM and the end user of Decision's disk units and controllers, the company said.

Dinos-I and Dinos-II are said to provide the OEM shop or the sophisticated systems programmer with an extremely efficient base for building end-user systems. Dinos-III, on the other hand, provides the end user with all the generality of a full-scale, real-time, multiprocessing system.

I/O Multiprocessing

Dinos-I is the most compact and fastest of the three systems. It offers the power and capabilities of Decision's DOS, but also I/O multiprocessing and buffered I/O support. Round-robin or request stacking program-controlled scheduling and task interrupt linkage are also provided.

Programming in the Dinos family is done in assembly language and interrupt response time is less than 25 µsec on all versions, a spokesman noted.

Dinos-II, scheduled for release this month, has broader capabilities than Dinos-I, but by storing seldom-used I/O driver routines on disk, it has a lower core residency requirement. This level of Dinos provides automatic program segmentation, dynamic core allocation and support of both multiprogrammed nonresident tasks and bulk-resident programs.

Dinos-III, planned for the fourth quarter of this year, adds more features the end user might need for his general-purpose operations. These include full-scale multiprocessing, and foreground/background support complete with online task control, Decision said.

Roughly comparable to Data General's Real-Time Disk Operating System (RDOS), Dinos-III has multiprocessing Fortran, Assembler, Editor and Basic processors, as well as a standard executive system and background checkpoint facility.

Said to be efficient by current end-user industry standards, Dinos-III consumes more core and has "significantly less" processing throughput than either of its companion OEM versions. The system will be free to end users who have acquired Decision's disk units and controllers.

Dinos-I and -II are currently priced at $2,000 and $2,500, respectively, for the OEMers, Decision noted from 5601 College Ave., 94618.

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Since January, 20 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the $800 million class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

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Graphics Made Easy

NEWTON, Mass. – A software package that can be used by non-programmers to generate line, bar and pie charts on various graphic output devices has been developed by Gould Data Systems for either business or engineering applications. With the Display package the actual plotting can be done either on- or off-line, a spokesman noted.

The language available to the Display user is composed of English-like commands and key-word constructs that can be written in a free-form style, and keyed directly into the user's CPU. Input can also be obtained from user files or drawn from any 360/370 compatible data source.

The software is forgiving, Gould noted, since it tolerates input coding errors and still produces a chart. If an unreasonable command is entered or a graph specification omitted, the Display program will produce a "best effort" graph accompanied by a description of the input error.

Output from the system can range from simple charts to sophisticated graphics. Post-processors are included to make the output acceptable to Gerber, United Drafting Machine, Calcomp or Gould plotting devices.

The system is designed to run on any IBM 360/370 under either OS or DOS, and including systems with Hasp, Power, Grasp or any of IBM's VS operating systems. Display requires a minimum of 44K bytes of internal storage.

It is available for a one-time charge of $2,500 which includes the post-processor.

Gould Data Systems is at 20 Ossipee Road, 02164.

New York Times Opens Information Bank For On-Line Scan of Published Stories

NEW YORK – *The New York Times* has begun full commercial operation of its Information Bank service, providing on-line accessibility to abstracts of articles that have appeared in the *Times* or in any of 65 other publications. Full microfilm or microfiche text of the *Times* articles is also available as an extra-cost option, a spokesman added.

Although on-line searching of abstracts is not in itself an innovation, the *Times* operation is perhaps unique, an industry observer noted, in that it is not focused on a limited range of references, such as chemical abstracts, Instead, the *Times* has attempted to abstract everything it has published.

Searches are conducted in the classic manner, by matching users' key-word entries to stored indices, and the entries can be refined through the use of Boolean connectors (AND/OR/NOT). The system notifies the user of how many abstracts match the search key before it sends any to his terminal, the *Times* said.

Searches Narrowed

But the system does have a mind of its own, according to Dr. John Rothman, director of information services. It will not display any abstracts if it has more than 1,000 matches for the user's search key. Instead it will instruct him to narrow his search, through rewording or through Boolean logic.

In a similar vein, though the system can sort abstracts chronologically before passing them to the user, it will not do this if more than 112 abstracts have been identified as appropriate for the search key as given. Other sort keys allow display of abstracts in accordance with the position the original stories had in the paper, with page one first.

In addition to a comprehensive abstract of the cited articles, the *Times* service shows for each abstract the publication in which the article appeared; the date, page and column of the issue; the source, especially if one of the wire services; an indication of whether illustrations accompanied the text; and – for *Times* stories – a reference to the appropriate microfiche frame for the full text.

The service can probably be accessed by any terminal, but Rothman recommends use of a programmable Incoterm unit with a built-in CRT screen and an attached Centronics printer, linked into the service on a leased telephone line. The CRT allows quick scanning of many abstracts, he explained, while the printer capability allows the hard-copy capture of selected items.

'Practical Limit'

There is no technical limitation on the geographic area the service can reach, Rothman added, but he warned that users have to pay their own line costs "and that certainly imposes a practical limit on what firms or research institutions can use it."

The *Times* also recognizes that not all users need the service full time, so it offers two pricing schemes. Unlimited access is available beginning at $1,350/mo, not counting the cost of the terminal or the communications line. The user with limited needs can access the system anytime from 8 a.m. to 1 p.m. daily, or for up to 25 hours of connect time per month regardless of the time of day, for $675/mo.

Cost/Analysis Service Aids Steel Buyers

PITTSBURGH, Pa. – Manufacturers with substantial requirements for steel may be able to save money as well as storage space in their own factories with the Cost Item Analysis (CIA) service now available without cost from U.S. Steel's Supply Division.

CIA is designed to help the user find out for himself the tradeoffs to be considered between buying large quantities of an item direct from a steel mill or getting somewhat smaller quantities from the steel company's more local "retail" warehouse. Mill prices may be somewhat less, the company noted, but to get them, the user may have to commit himself to providing storage space that is worth more than the steel itself.

Optimum Pattern

Under CIA, the user is lent a portable terminal – an Execuport – and the use of a series of programs stored on a mainframe at U.S. Steel's computer center here. Working with a series of input sheets, the user puts his own production and cost figures into the system and reworks them until he finds what he deems the optimum purchase pattern between mill and warehouse.

There is nothing in CIA that limits the user to studying just U.S. Steel as a supplier, a spokesman noted.

The system is keyed to individual items within a user's steel needs, since turnover time in inventory is one of the critical factors in determining how to buy stock, and that varies widely by item.

The CIA input sheets take into account data from the user's purchasing agent, accounting department and production.

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Data Briefs

Omnus Controller Enhances Terminals on Univac 1100

SANTA ANA, Calif. – Omnus Computer Corp. has introduced an enhanced Communication Terminal Module Controller (CTMC) for the Univac 1100 Series mainframe.

The CTMC is compatible with Exec 8 software and can change the type of terminal operating on-line either automatically or on command. It also is said to extend the 1100 to terminals not usually supported by Univac such as the IBM 2780.

A minimum configuration of the CTMC includes eight synchronous lines up to 9,600 bit/sec and 16 asynchronous lines up to 1,800 bit/sec and a backup controller for $65,000. A comparable capability from Univac would cost about $80,000, according to an Omnus spokesman. The firm is at 1538 E. Chestnut St., 92701.

CRT Terminal Shows 132 Char.

HACKENSACK, N.J. – SYS Computer Corp. has announced a CRT display terminal whose screen offers 132 char./line in a 5 x 7 matrix.

The terminals come with both parallel TTL and standard RS-232-C interfaces operating at up to 9,600 bit/sec.

The terminals are available as stand-alone units or in cluster configurations, with a tentative stand-alone price of $7,200.

Delivery is five months from 17-25 Di Carolis Court, 07601.

Wiltek Terminal IBM-Compatible

NORWALK, Conn. – Wiltek, Inc. has combined a punched card reader with a standard Wiltek base to produce a send/receive terminal.

The Model 820 terminal is compatible with IBM hardware and software.

The base houses all the electronics for the terminal.

The 820 reads 200 card/min, automatically crunching the 12-bit Hollerith code to an 8-bit code for synchronous transmission.

Each of the buffers has a 50K-character storage capacity.

The modem, equivalent to a Bell 202C, operates in a half-duplex mode at 1,200 bit/sec or at an optional 2,400 bit/sec.

The Model 820 costs about $12,000 from Glover Ave., 06852.

San Francisco Seminar Set

LOS ANGELES – The American Institute of Industrial Engineers (AIIE) will sponsor a seminar on data communications systems in San Francisco, June 37-29.

The seminar will survey communications system design and optimization.

Registration information is available from AIIE, Box 25116, Los Angeles, 90025.

Replaces IBM 7770

Independent Audio Response Has Bonus

By Ronald A. Frank
Of the CW Staff

PORTLAND, Maine – When an independent audio-response system replaces an IBM system at lower cost and also provides increased communications capabilities, the user probably has a good deal.

That is the case at Maine National Bank here where a Wavetek ADC 1000 system has replaced an IBM 7770 system, thus saving the bank about "one third" on its equipment costs, according to Dave Withee, assistant vice-president for data processing.

But that is only part of the story. The ADC 1000 will allow the bank to incorporate innovations which were not possible with the 7770. Among these are the possibility of moving the Btam access method out of the 370/145 mainframe and having it reside in the ADC 1000 processor.

The processor is really a DEC PDP-11/05 with 16K of storage that performs the control functions for the audio-response system. Other future capabilities include the emulation of 270X line controllers and emulation of the IBM 2848 CRT controller.

The latter is important, Withee said, because of a planned switch from IBM 2260 CRTs to Hazeltine displays. By eliminating the cost of the IBM 2848 controller (about $600/mo) and switching to lower-cost CRTs, Withee believes the bank will get additional savings.

But meanwhile there are immediate benefits from the ADC 1000 with the bank's present application. The bank's 31 branches use a data base in the 145 to authorize check cashing, post interest on savings accounts and other daily transactions.

These inquiries are initiated by tellers at any of the branches using Touch-Tone phones. The audio-response system has a vocabulary of 64 words that can tell the inquiring teller the current balance of an account, authorize the cashing of a check or give any number of answers.

More than 200 telephones can access the Portland DP site from as far away as 100 miles. Each teller, or other bank official, who needs account information enters an identifying code on his telephone which then provides access to data base information. Control of the access codes rests with the bank's auditing department and in three years of operation the system has never been violated, Withee said.

With the 7770, the same application was operating with six Bell 403 modems which each cost about $50/mo. These have now been eliminated since the ADC 1000 has built-in modems. The only other addition has been the necessary CBS data access arrangements from the phone company.

The on-line system is handling about 1,200 call/day and a complete printout is provided daily of all inquiries by access code, the account number accessed and other pertinent audit data. The ADC 1000 was installed over a weekend with little effort. The interfacing was directly to the 145 multiplexer channel and the DOS software did not have to be modified.

The ADC 1000 system emulates a magnetic tape subsystem on the 145 channel, according to Withee. This will provide some in-house programming advantages not possible with the IBM 7770.

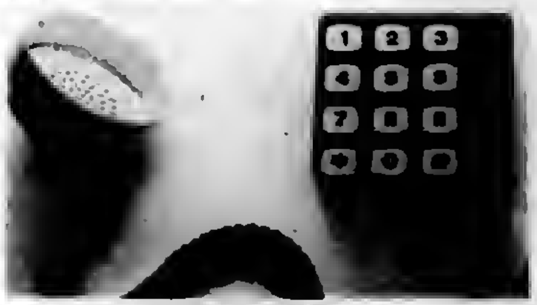
Pocket Terminal Generates Bell Touch-Tones

ANN ARBOR, Mich. – Interface Systems, Inc. has a "pocket-sized" terminal that can be acoustically coupled to any standard phone. By generating Bell-compatible two-out-of-eight frequency tones, the T-16 terminal can be used for remote data entry.

The terminal includes the usual 12-key Touch-Tone pad with an additional four control keys. When used in conjunction with an audio-response system, the user can receive answers to inquiries through the telephone handset.

Since the T-16 includes a built-in tone generation capability, it can be used with the dial telephones. It produces tones compatible with Bell 403 data sets or independent equivalents.

The terminal is acoustically coupled to a phone through a speaker which clips over the handset mouthpiece. The terminal including speaker and keyboard costs $140. Delivery is 30 days from 5 Research Drive, 48103.



T-16 Mini Terminal

Toronto-London Line Open

TORONTO – I.P. Sharp Associates has opened a transatlantic 2,400 bit/sec circuit from Toronto to London to give English customers access to its APL Plus service.

The 3kHz channel operates with Codex 810 multiplexers and is currently serving six users in London over private-line facilities provided by three common carriers.

From Toronto to Montreal the line is supplied by Bell Canada; from Montreal to "mid-Atlantic" the circuit is controlled by the Canadian Overseas Telecommunications Corp.; and from there to London, the line is supplied by the British Post Office, according to Keith Armstrong, communications specialist at Sharp.

Users in London use a variety of 134.5 bit/sec terminals including IBM 2741s, Novar units and some Datel terminals, all operating with correspondence code. The present users must access the APL Plus service from the London Sharp office. But the British Post Office has approved a dial-up tie-in using its Datel 200 service. This will allow expansion in early June to serve about 16 users who will use Datel 200 bit/sec terminals from their own offices.

The Codex multiplexers are interfaced with International Communications Corp. modems at the London end and in Canada the Tel-Tech 201B data set is used.

The APL Plus service data base resides in dual 370/145s at the Sharp offices in Toronto.

GTE Has IBM-Type Front End

WHITE PLAINS, N.Y. – GTE Information Systems has added the IS/1101 to the low end of its line of IBM-compatible communications controllers.

The IS/1101 terminal control system includes a communications processor, channel adapter and communications scanner which handles up to 40 lines. These can include 24 asynchronous and 16 synchronous in half-duplex mode.

The programmable processor employs 16-bit parallel data paths, 750-nsec memory, console and 32K bytes of memory. It is compatible with the earlier Tempo 270T front-end processors which now carry the IS/1100 series designations.

The front-end unit can directly replace IBM 270X line controllers. It supports data speeds up to 50 kbit/sec operating with Ascii, Ebcdic and other transmission codes. The 1101 is compatible with GTE and IBM hard copy and CRT terminals.

An 1101 front-end with a 360/370 interface, scanner and one asynchronous line set will cost about $820/mo with maintenance. Purchase price is $25,500 and deliveries are 60 days. GTE is at Four Corporate Park Drive, 10604.

The AJ 841 has proven itself in many direct comparisons with other terminals as the most reliable Selectric-based terminal on the market. We are steadily gaining customers on the basis of our outstanding performance and reliability.
Gerard W. Schoenwald, Director of Marketing

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U.S. Users Eye Canada's Route

By Ronald A. Frank
Of the CW Staff

OTTAWA, Ontario – The digital data communications network recently introduced by Canada's Computer Communications Group [CW, March 14] can provide some important benefits for U.S. data users.

U.S. firms that regularly transmit data to points within Canada can enjoy significant savings with the digital Dataroute instead of using conventional analog facilities within Canada.

These users would get AT&T analog links to the nearest Dataroute Serving Area (DSA) across the border. At the DSA, the signals would be converted to the all-digital system.

Lower-Cost Alternative

Although the Canadian carriers have restrictions which include a flat prohibition against "two-border crossings" for the same transmission, some users see the Dataroute as a viable lower-cost alternative to coast-to-coast AT&T rates. These users would avoid the dual-border crossing prohibition by utilizing store-and-forward hardware.

For example, with a user transmitting from Los Angeles to New York, the data might be sent to a multiplexer or concentrator in Vancouver. The message would go through a store-and-forward procedure being sent from Vancouver to Montreal, and the same message-handling would take place in Montreal with the data being sent on to New York.

Although the Canadian rates on Dataroute would be well below the AT&T charges, some users are skeptical of the real advantages. They feel the cost of the store-and-forward hardware might well overshadow any line savings.

Along the Dataroute

One U.S. user who has seriously considered using the Dataroute sees some significant savings at 2,400 and 9,600 bit/sec. For private-line analog facilities between Montreal and Vancouver, a 2,400 bit/sec link costs $3,770/mo compared with $1,826/mo on the Dataroute. A 9,600 bit/sec analog line costs $4,620/mo while the Dataroute rate would be $3,908, the user said.

Despite some reports that Canadian carriers are favoring "new business" rather than converting existing users from analog to digital facilities, a Bell Canada spokesman said prospective users for the Dataroute are being handled on a first-come-first-served basis. At present there are four users on the digital service, none of which are U.S.-based, he said.

Some users see the Dataroute as best serving the smaller user who needs from one to five channels. Above this number the trade-off swings in favor of an in-house multiplexed system using analog facilities, these users say.

Communications Package Handles Distributed Net

PALO ALTO, Calif. – Hewlett-Packard has a hardware/software communications package that allows satellite minicomputers to interconnect with a central system.

The firm said its 91701 distributed systems package allows any number of satellite minicomputer systems to interconnect with a multiprogramming real-time executive (RTE) system, as though each satellite mini were the central system's only user.

An HP 2100S computer-based RTE system, the heart of the distributed system, contains one or more disk drives, distributed systems software and communications interface cards for the satellite computers.

The satellite systems are also 2100S-based. They have core-resident Basic Control System (BCS) operating systems, plus distributed systems software, communications interface cards and full I/O capabilities for instruments, data collection equipment and display terminals.

The satellite systems can simultaneously engage in a variety of tasks and can be connected into or disassociated from the distributed system at will.

Each satellite system user has access to the central disk through Fortran, Algol or Assembler programs.

The 91701 distributed systems communications package costs $6,000. It is immediately available from 1501 Page Mill Road, 94304.

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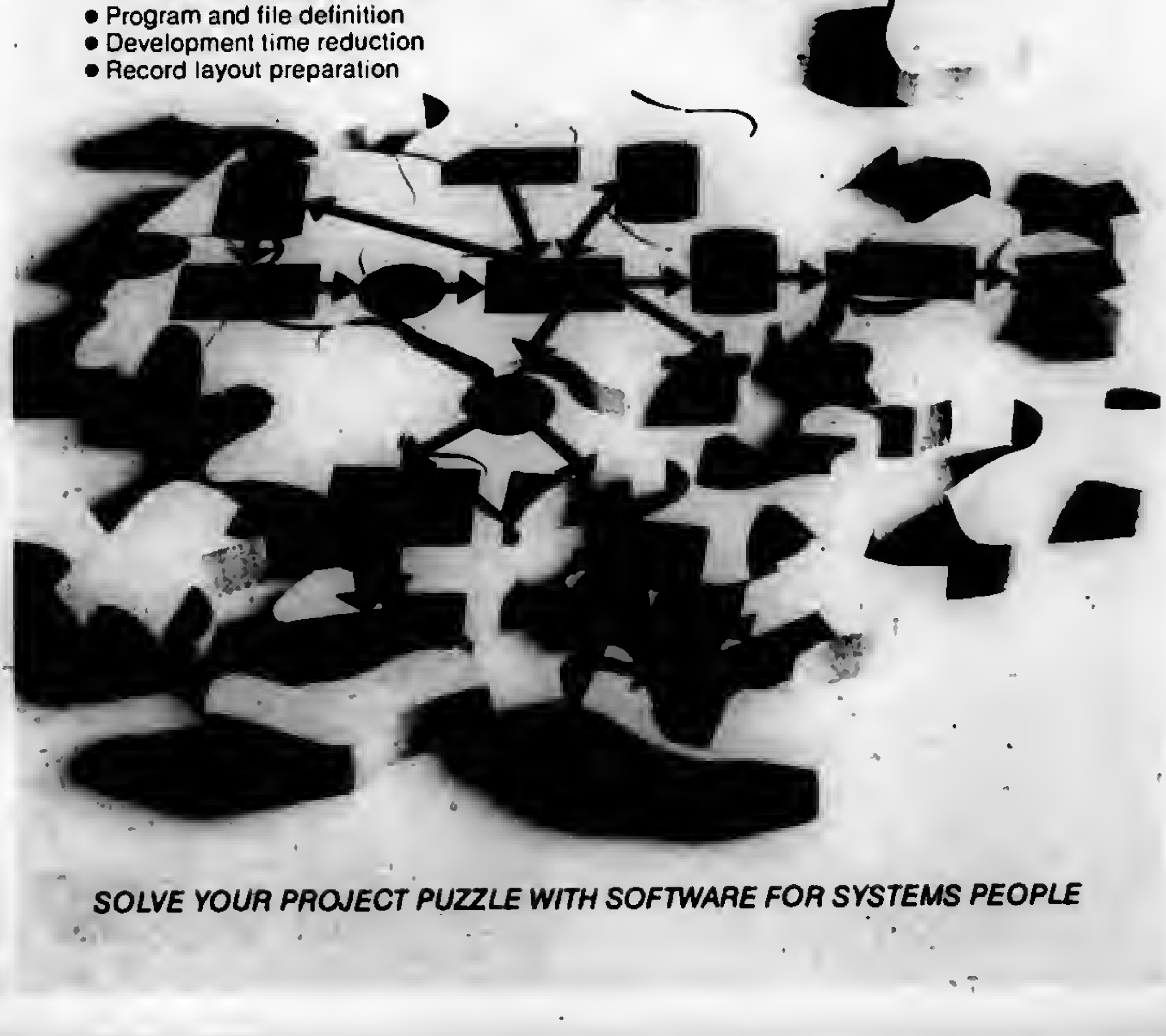

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'No Universal Wrench' Available

User Favors Building His Own Over Turnkey System

WASHINGTON, D.C. – George Washington University Hospital has decided to develop its own small computer-based communications and information system rather than obtain a turnkey-type system.

"We've tried to home-grow a system to perform a variety of functions, according to our particular needs," stated Dr. William Yamamoto, head of the hospital's clinical engineering department.

No 'Universal Wrench'

"That's really the only way you can get a cost-effective apparatus," he commented. "I don't believe you can just go out and buy a 'general-purpose' system for something like this, any more than you can find a universal wrench."

The hospital system is described as a communications control system because it accepts, stores, retrieves and updates information entered from terminals at various points in the hospital.

Information entered covers management and accounting, patients' medical and demographic records, medical treatment data including a large volume of inputs from the hospital's intensive care unit and information for research files.

A major parameter in choosing equipment for the system was to combine large disk file capabilities with a relatively small central processor.

The Small Systems User

"The ability to handle big files is a requirement in most biomedical applications. Unfortunately, some of the minicomputers on the market can only handle minidisks," Yamamoto stated.

The system the hospital settled on is based on two Varian 620/f-100 machines – one acting as backup for the other.

Each computer has 24K words of core memory and each has access to both of the system's large storage disks – 29M byte/disk.

An input/output bus switch allows utility peripherals (card punch, card reader, line printer) to be switched to either central processor.

A data communications front end provides 16 telecommunications parts for each machine, for connection of telephone lines. The front end can be later expanded to carry 128 ports for each computer, Yamamoto noted.

Information can be retrieved as a video terminal display or in hard-copy form.

The system's software is built around Varian's Vortex software package which allocates resources so general-purpose background tasks can be run concurrently with real-time foreground operations.

Using the Vortex package, users do not have to get involved in such tasks as I/O handling, interrupt servicing and resource allocations. These operations are handled by the real-time executive (RTE) in the central processor's main memory.

With the foreground/background capability the system can assign priorities to real-time tasks (such as the retrieval and updating of medical information) which can then be run immediately or held for future processing.

Batch processing for applications such as general ledger and accounting operations can be run concurrently in the background mode, Yamamoto added.

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Union Members Happy With New Worker

BOSTON – Before Local 22 of the Construction and General Laborers' Union purchased a small computer, the job of accepting dues, handling receipts and stamping union cards for 250 members took about five hours.

Now if 250 members want to pay their dues at the union hall, they can have their cards stamped and their receipts in hand in about one hour – or 15 seconds for each member.

While speed is the most obvious improvement in the dues collection procedure, the new computer provides other services such as the preparation of reports which are required as a byproduct of the dues collection procedure, according to Michael Tarallo, secretary-treasurer for the local.

Once the magnetic ledger card has dropped into position, the operator enters the new information, the card is updated and the receipt is printed on the continuous form.

But the basis of the functions remains the collection procedure which consists of the following five functions:

- Preparation of the receipt, printed by the computer.
- Updating the day book, prepared automatically as the receipts are printed.
- Totaling the day's income.
- Updating a magnetic ledger card which contains the status of each member account.
- Verification of the day book.

The magnetic ledger cards are the key to the Nixdorf computer system. When a member pays his dues, his ledger card is pulled from a file, and new entries are made to update the information typed on the card and stored in the magnetic stripe.

During the procedure, the receipt is printed and the day book and verification record are printed.

This same magnetic ledger card is used to provide the data from which other reports are generated, including a monthly dues control report (showing daily dues income), income report (other than dues), expense journal and payroll control card.

Another function taken over by the system is membership mailings. In the past, the names and addresses had to be typed every time a new mailing was prepared.

Now the computer prints letters with the members' names so that windowed envelopes can be used.

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Inquiries should be directed to Dr. Leland H. Williams, Triangle Universities Computation Center, Research Triangle Park, North Carolina 27709, Telephone 919-549-8291.

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Decision's OCR improves operator efficiency multifold and it reads your own existing forms! The 7600 handles a wide variety of pages and documents and reads alphanumeric A & B fonts, numeric hand printing and data in a variety of additional fonts, including Courier, upper and lower case.

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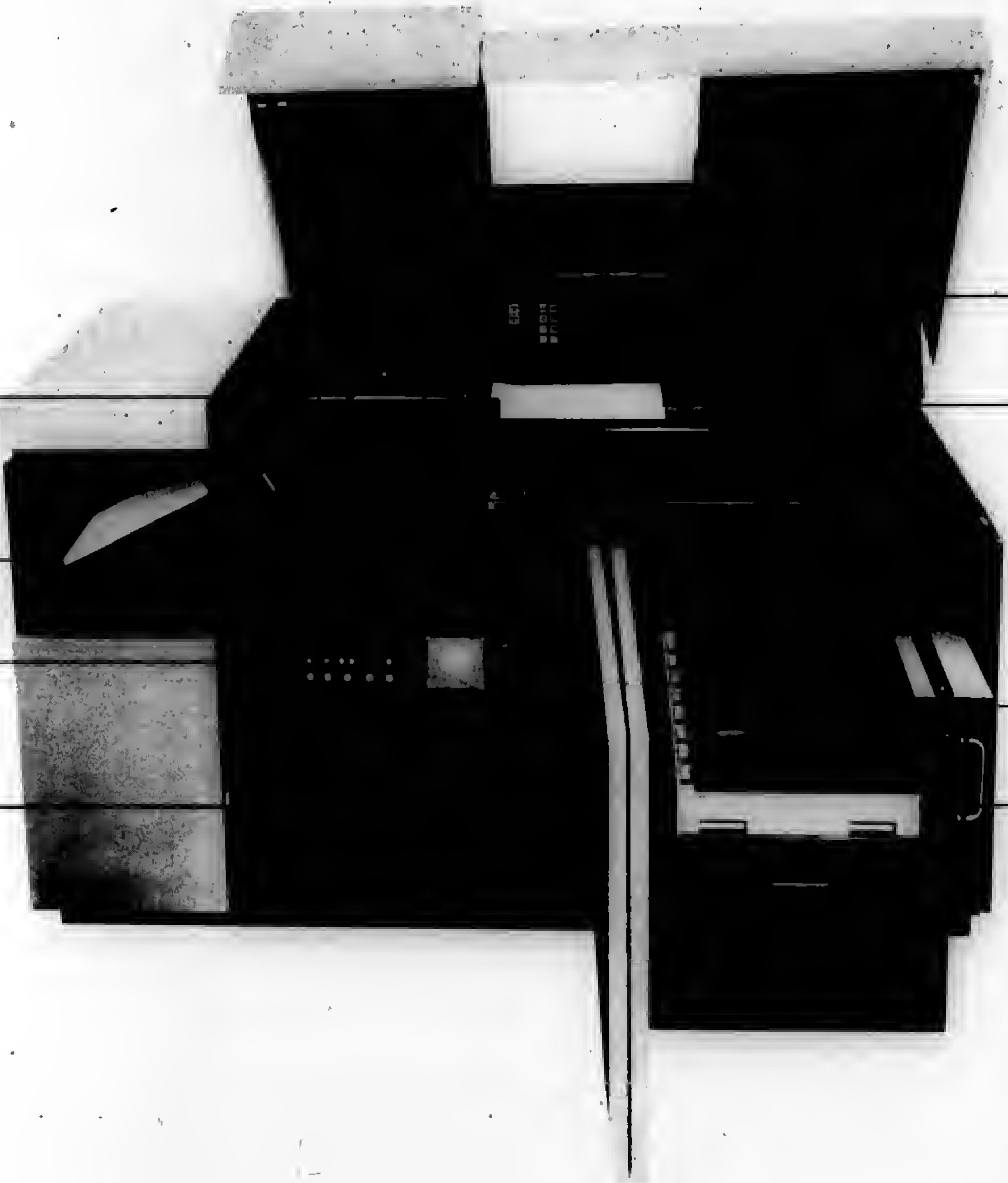

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Bits & Pieces

Hardware-Stack Interface Unveiled for PDP-8/e

NEEDHAM, Mass. – A hardware-stack interface that enables the use of reentrant code on the PDP-8/e minicomputer is available from Delta Control Systems, Inc.

Operationally, the HS-101 permits several shared programs to make subroutine jumps without the need for expanded memory or time-consuming relterations, according to the firm's spokesman.

The unit operates as a temporary data register, controlling one or more stacks in memory. The status of an interrupted routine is entered into the stack with a single I/O operation.

As soon as the higher-priority routine is complete, the status data is dropped from the stack, and the original routine is resumed from the interrupt point.

The HS-101 is supplied in modular form and plugs into the processor's Omnibus.

Cost in single quantities is $3,600 from 14 Charles St., 02194.

Tape Evaluator Enhanced

BURLINGTON, Mass. – Computer-Link Corp. has announced two additional types of error detection for the firm's Series 1000 Magnetic Tape Evaluator/Cleaner.

The first addition is an independent error detector for both temporary and permanent error conditions.

The second error detection option is designed to find wrinkled or cinch areas on tapes formerly used with older, dual capstan-style tape drives. This option segregates these errors from normal temporary write error conditions, allowing users to remove bad tapes before they are scheduled for use, the firm said.

Computer-Link is at 14 Cambridge St., 01803.

Separator for Low-Volume Jobs

DAYTON, Ohio – A forms separator from Standard Register Co., the Model 800, is designed for low volume, short run operations.

The unit will process forms having two or more copies, removing and refolding one copy and rewinding the carbon, while refolding the remaining copies and carbons.

The Model 800 operates at variable speeds up to 400 linear feet/min. Delivery is three weeks beginning in July. Price is $550 from 626 Albany St., 45401.

Noise Less on Burroughs Encoder

CITY OF INDUSTRY, Calif. – Users of the Burroughs Series "S" Encoder can obtain a Soundoff Dampener (Model 8222) to reduce noise levels around the Burroughs unit.

Price of the acoustic covering is $129 from Van San Corp., 1180 Centre Drive, 91748.

Airline Reduces Staff

User Increases Data Throughput 20%

By Michael Weinstein
Of the CW Staff

MIAMI – With two years' experience on a key-to-disk system, Eastern Airlines has achieved a 20% increase in data throughput and decreased the data entry staff by nine operators, according to Mary Snyder, manager of data recording.

In addition, Eastern's data-handling requirements have increased by about 15% per year during this period and new industry conventions for data entry have led to massive reformatting of old information.

Currently, more than 50 different data entry jobs are keyed on the Inforex 1302 systems, including interline ticketing, passenger statistics and earned revenue calculations. These jobs represent more than 75% of all the airline's data entry requirements in the data recording center.

In addition to this bulk entry, a change in industry standards meant the ability of the shared processor to reformat data once it has been entered on the disk subsystem was a significant feature, Snyder added.

Eastern and other airlines with which it shares interline flight revenue have been in the process of changing ticket forms from a 12-digit identifying code to a 13-digit code.

At the present time, about half of all records employ the older 12 digits in the check digit field of the record.

In the past, this disparity caused problems in the use of the check digit, since check digit calculations can't be performed on a field that varies in length. Under the former system, checking could not take place until the data had been entered into the central computer file, at which time exception records were generated from the completed records, stated Francine Zmuda, senior control analyst.

Using the key-to-disk system, the problem is averted before it ever reaches the mainframe, she explained. The operator keys the full check digit code if the 13 digit format is used, and the check digit calculation is carried out by the shared processor.

When the 12-digit code is used, the operator keys a leading zero to allow calculation on the shortened field. Then, when the data is transferred from disk to tape, the key-to-disk system automatically inserts the correct digit in the high order position.

If the number is the 13-digit code, the high order digit is simply overlaid with itself, but if it is the 12-digit code, the significant digit is entered in place of the high order zero.

Expanded Tape Feature

In addition to cleaning up records before they leave the data entry section, the key-to-disk system provides Eastern with a number of additional capabilities including packing of records and an expanded tape processing feature, Zmuda said.

These features enable the system to condense the disk and tape space required for processing of records and increase the operator efficiency by reducing the frequency of disk-to-tape transfers, she added.

For example, by packing, she stated that Eastern operators are able to put four 29-character records into each 125-character record on the disk. When information is transferred to tape, the records are automatically expanded to the standard 80-character length.

The system at Eastern is composed of 12 keystations clustered on a shared central processor. Data entered into the system is displayed on a video display terminal at each station.

This allows the operator to read and verify records as they are entered and before they go to the disk.

Information can also be viewed after it has been entered onto the disk and corrected if necessary.

Honeywell Adds 12 Peripherals To 700 Minicomputer Series

WELLESLEY, Mass. – Honeywell has introduced 12 peripherals for the 700 series of minicomputers and reduced the price for some existing peripherals.

Included in the new offering are two magnetic tape subsystems, three card readers, five line printers and two removable disk subsystems.

The two magnetic tape subsystems incorporate redesigned controllers, adapted from the Series 16 minicomputer line. The 700 series subsystems have a 12% price reduction over the earlier tape units with no degradation in performance, according to the firm's spokesman.

Both the 7- and 9-track drives provide transport speeds of 26 in./sec and rewind speeds of 78 in./sec. Recording densities of 200-, 556-, or 800 bit/in. are available on the 7-track drives, and 800 bit/in. on the 9-track units.

Up to three additional tape units can be added to a basic subsystem consisting of a single tape unit and controller. These tapes are stated to be compatible with all sytems that satisfy Ansi requirements for NRZI recording.

The three card readers expand the 700's card capability from 300- to 600 card/min at the low end to 1,050 card/min at the high end of the 700 series.

All readers, including the original 800 card/min unit, perform data sensing through a photoelectric system that reads alphanumeric or binary punched cards on a column-by-column basis. They have automatic hardware code conversion in alphanumeric mode, Hollerith to six-bit BCD code.

The five buffered line printers expand System 700 printing capability from 300 line/min to 200-, 450-, 650-, 950- and 1,100 line/min. Line widths of 96-, 120- and 132 characters are available. All printers are supported by OS/700 software and a test and maintenance program.

Removable disk packs containing six or 11 disks each provide 10 or 20 recording surfaces respectively. Each surface has 200 recording tracks that are formatted according to parameters established by the user, the spokesman added.

Model	Three-Year Lease (cost/mo)	Purchase
Line Printers		
5515 (200 line/min)	$ 420	$14,400
5516 (200 line/min)	535	20,400
5526 (450 line/min)	675	31,300
5527 (650 line/min)	900	42,850
5524 (950 line/min	1,150	54,800
5529 (1,100 line/min)	1,130	60,700
Card Readers		
5100 (300 card/min)	160	7,150
5123 (600 card/min)	290	12,500
5122 (1,050 card/min)	380	16,700
Magnetic Tape		
4041 (7-track & control)	410	13,200
4051 (9-track & control)	410	13,200
Removable Disk		
4740 (1.1M word)	425	14,900
4743 (7.5M word)	990	34,525
Reduced Price – Existing Peripherals		
5121 (800 card/min reader)		$335/mo
5140 (card reader)		$600/mo
5520 (300 line/min printer)		$590/mo

Cost Figures for New Peripherals and Reduced Prices for Existing Peripherals

Semi Memories Get UPS

SANTA MONICA, Calif. – An uninterruptible power supply for volatile semiconductor memory systems is offered by Pioneer Magnetics, Inc.

The PM 2412 is a 140W convection-cooled converter designed to provide up to 32K x 18 or 65K x 9 MOS RAMs at worst case temperatures.

The firm is at 1745 Berkeley St., 90404.

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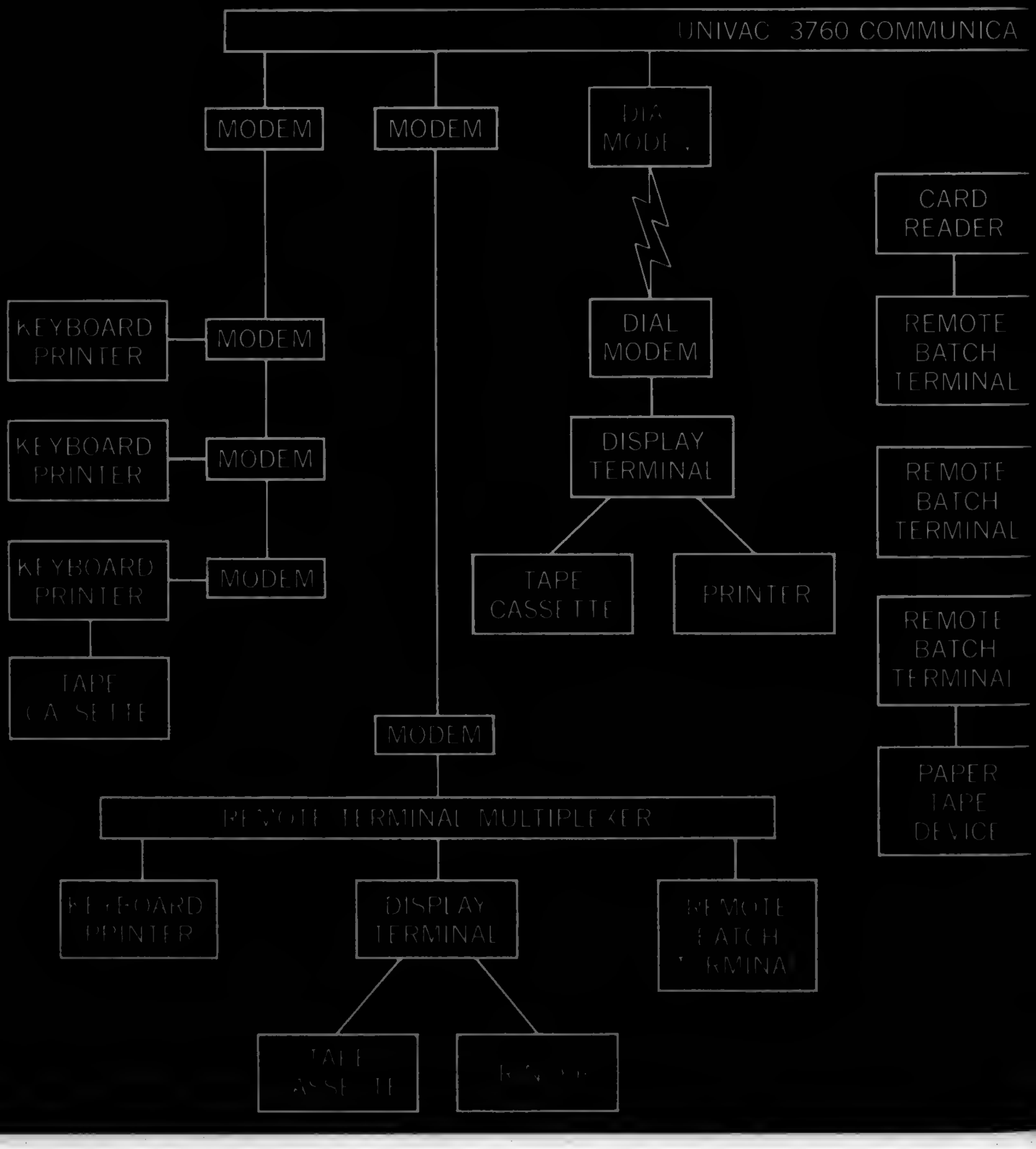

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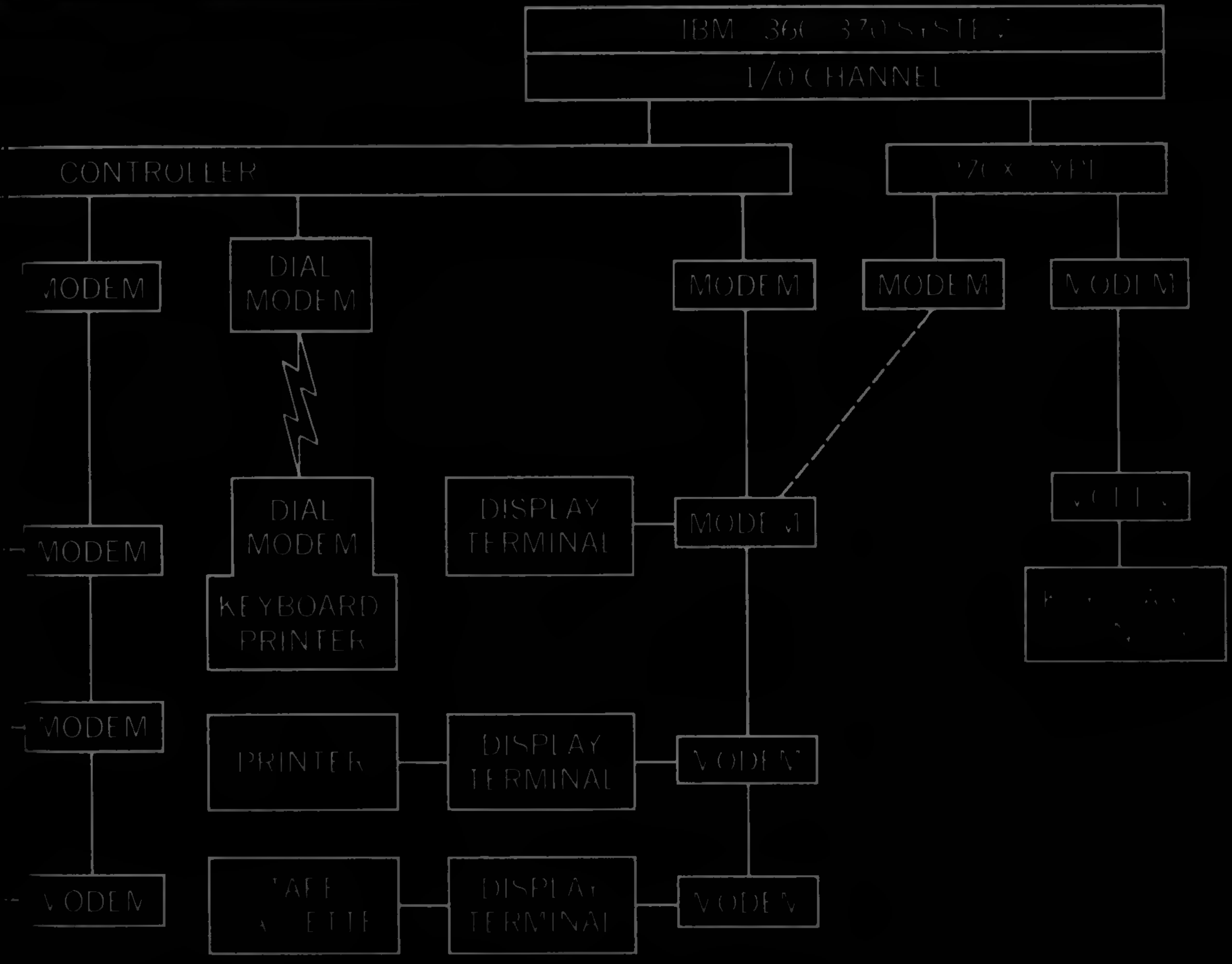


Can Attach to 370

IBM Offers High-Speed Check Processor

WHITE PLAINS, N.Y. – IBM has announced a high-speed document processor designed to enable banks to process and distribute checks at twice the speed of the IBM 1419 magnetic ink character reader, previously IBM's fastest Micr reader.

The IBM 3890 can be operated on-line to a System 370 by storing its own sorting programs and by holding data in its buffer memory for periodic transmission to the computer.

The unit attaches to the 370/135 through the 370/168 running under IBM's OS/VS1 or OS/VS2.

Self-Contained Logic

When used off-line, the 3890 has self-contained logic and a removable disk storage subsystem which allows the reader/sorter to perform "advanced fine sorting, reducing the number of times a check must be processed before sorting into its final sequence," according to the firm.

The IBM 3890 can be linked directly to virtual storage models of the 370 or used off-line.

Available with up to 36 sorting pockets, the 3890 can read and sort a typical mixture of different-sized checks at a rated speed in excess of 125,000 document/hr, and can print a batch and identification number on each document to improve item control.

The new reader/sorter is designed to enable a single operator to maintain uninterrupted processing on a unit with 18 pockets. Features allowing this capability are:

- A large-capacity hopper that holds up to 4,800 checks.
- A built-in joggering mechanism that automatically aligns checks for processing.
- Pockets, with a capacity of 900 checks each, that can be unloaded without stopping the machine.
- A system of warning lights that identifies pockets needing to be emptied, and signals the operator when the hopper is low.

Under IBM's extended term plan – providing for a 24-month contract – rental for the 3890 with 18 pockets will be $7,600/mo. Under the IBM rental agreement the monthly charge is $8,931. Purchase price for the unit is $356,700.

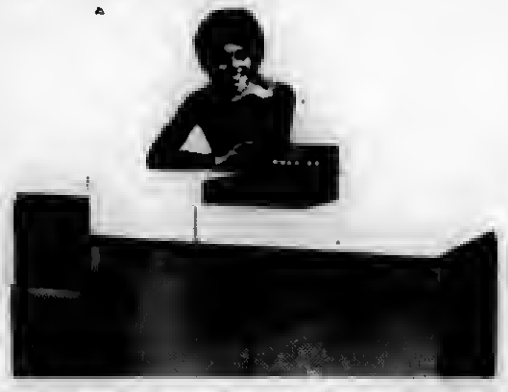
OEM Products

While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users. Further, while some of this equipment is not presently available to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.

OCR System Reads Variety of Fonts

OAKLAND, Calif. – An optical character recognition (OCR) system that reads numeric or alphanumeric OCR, A and B fonts; data in a variety of other fonts – including IBM Courier, upper and lower cases – and data from typewriters, preprinted forms, computer printing and numeric handprint, is being offered to OEM builders at a cost of about $30,000 in quantity, from Decision, Inc.

The OCR 7600 reads at a rate of 600 char/sec. Pages and documents, from 3 in. by 5 in. to 9 in. by 14 in., are scanned before the paper is moved.



Additional fonts and system control are available through the use of IBM 3740-compatible floppy disks.

Data, once read, can be entered on-line to a central processor or off-line to magnetic tape, paper tape or communications lines.

The unit interfaces with all major systems in use today, according to a spokesman. It can be operated in a plug-to-plug compatible mode with the IBM 3886 Model I, connected to a System 370 or off-line with 800 bit/in. NRZI or 1600 bit/in. phase encoded magnetic tape. The 7600 has a communications output capability of up to 9600 bit/sec in Ascii or Ebcdic.

More Facts to You

A floppy disk subsystem permits additional fonts and diagnostics to be added and is available for error information and data. It can also be used to program the unit to read data from existing forms, as opposed to having to redesign forms so that data is in a form suitable to the reader.

Editing of difficult-to-read data can be handled manually or with a keyboard/video terminal station.

Decision, Inc. is located at 5601 College Ave., 94618.

Floppy Disk Drive Can Read, Write on IBM Floppy Disks

SUNNYVALE, Calif. – An OEM floppy disk drive that can read and write on IBM 3740-compatible floppy disks is available from Shugart Associates.

A typical operation for the independent floppy disk drive would be to prepare data using the IBM 3740 system and use the Shugart drive to input this data to a minicomputer.

The firm states it has interfaces for most minicomputers and can design and build additional interfaces to meet demands.

The SA900 measures 9-1/2 in. by 4-5/8 in. by 14 in. and can be installed individually or stacked in a rack mount.

Access time for the independent drives is 10 msec with a 3M-bit storage capacity.

Unit prices start at $750 from 335 Soquel Way, 94086.

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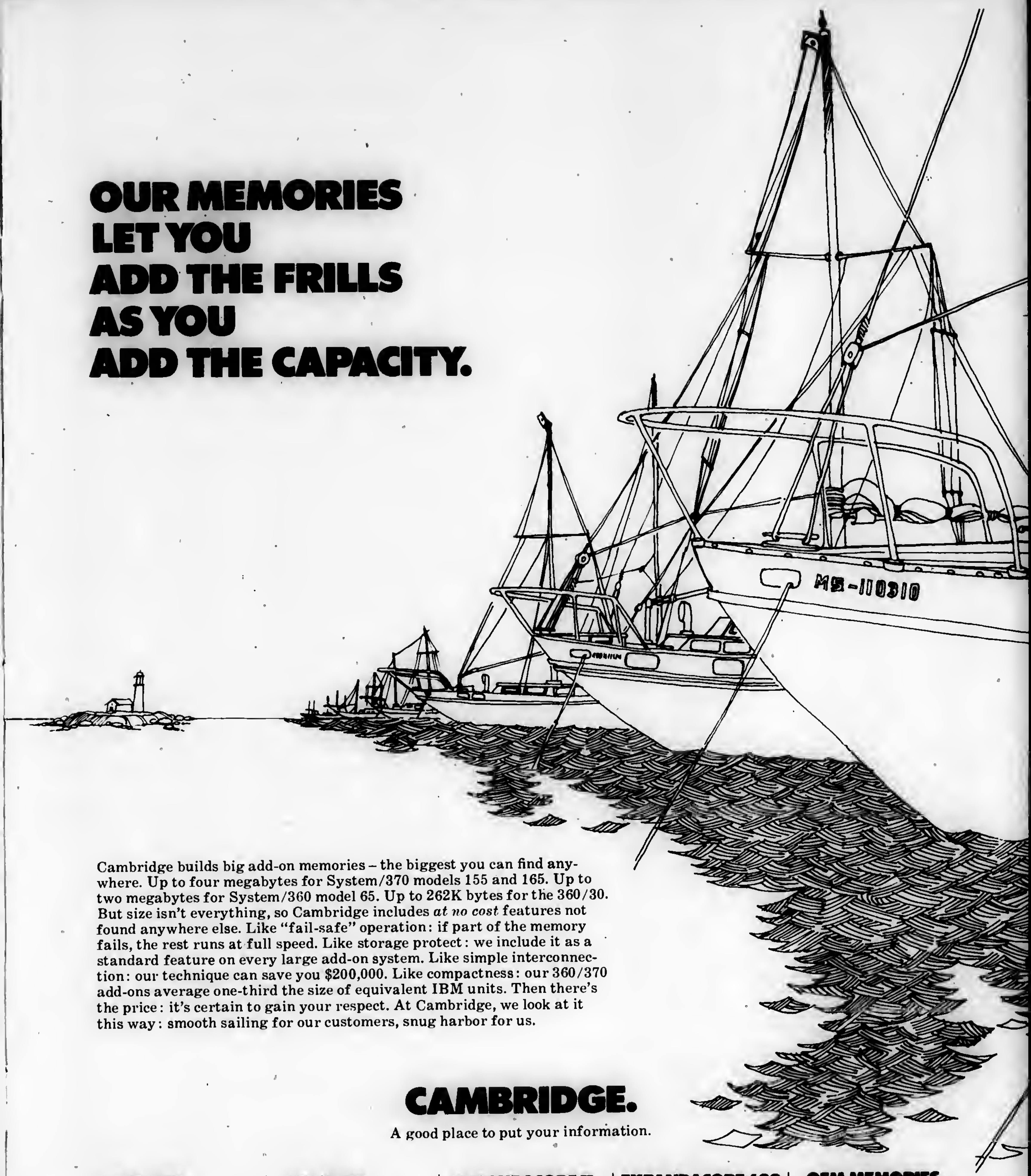

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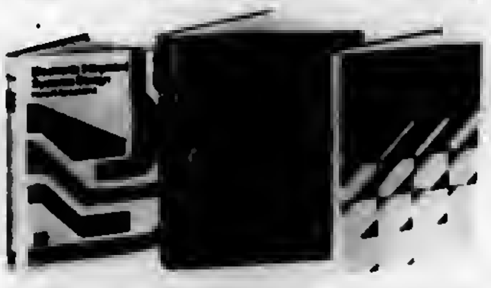

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New OEM Products

Intel Has Microcomputer Modules, PL/I Subset

SANTA CLARA – Intel Corp. has introduced two modular microcomputer development systems – Intellec 4 and Intellec 8 – designed as basic systems from which larger MCS-4 and MCS-8 OEM systems are constructed.

The firm also released a high-level language (PL/I-type) for the MCS-8 microcomputers.

The Intellec 8, 8-bit modular computer is designed around the MCS-8 microcomputer set, while the 4-bit Intellec 4 is designed around the MCS-4 microcomputer set. These microcomputer sets were introduced by Intel in November 1971.

Program Loading Eased

The newer models are designed to have all program storage accomplished using random access memories (RAMs) rather than read only memories (ROMs). The switch to RAMs is to provide easier program loading and modification.

Both systems have a front panel control and display console for system monitoring and debugging.

The Intellec 4 and Intellec 8 come complete with central processor, memory I/O, crystal clock, TTY interface and power supplies.

The modular form allows the OEM builder to buy as little or as much as needed for a specified application. These modules can be used for pre-production systems development and for expanding the memory and I/O capability of the Intellec systems.

Language Derivation

PL/M is a high-level language derived from IBM's PL/I with control structure and variable definition facilities of PL/M similar to PL/I. The data types and basic operations reflect the architecture of the Intellec 8 and Intel 8008.

The PL/M compiler is written in standard Ansi Fortran IV and thus will execute on most machines without alteration.

The Intellec 4 and Intellec 8 will be available for delivery in October 1973 at $2,195 and $2,395 respectively for single unit quantities. Micro-modules to expand basic systems are optional at extra cost.

PL/M will be available in July 1973 for $1,250 when purchased directly from Intel at 3065 Bowers Ave., 95051.

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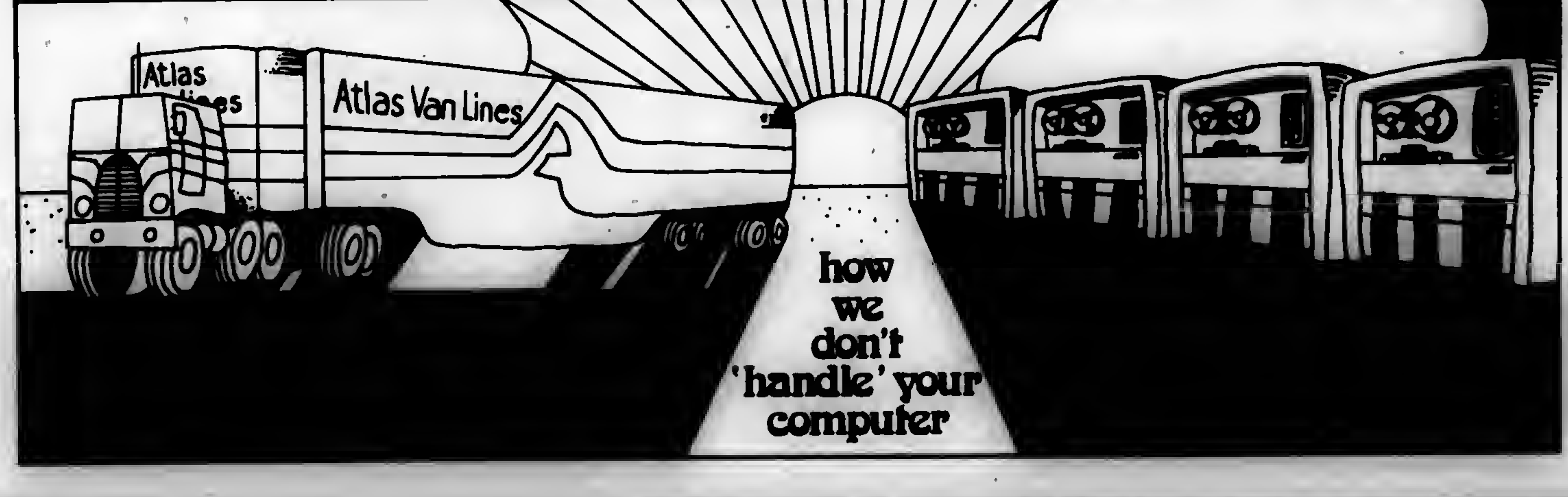
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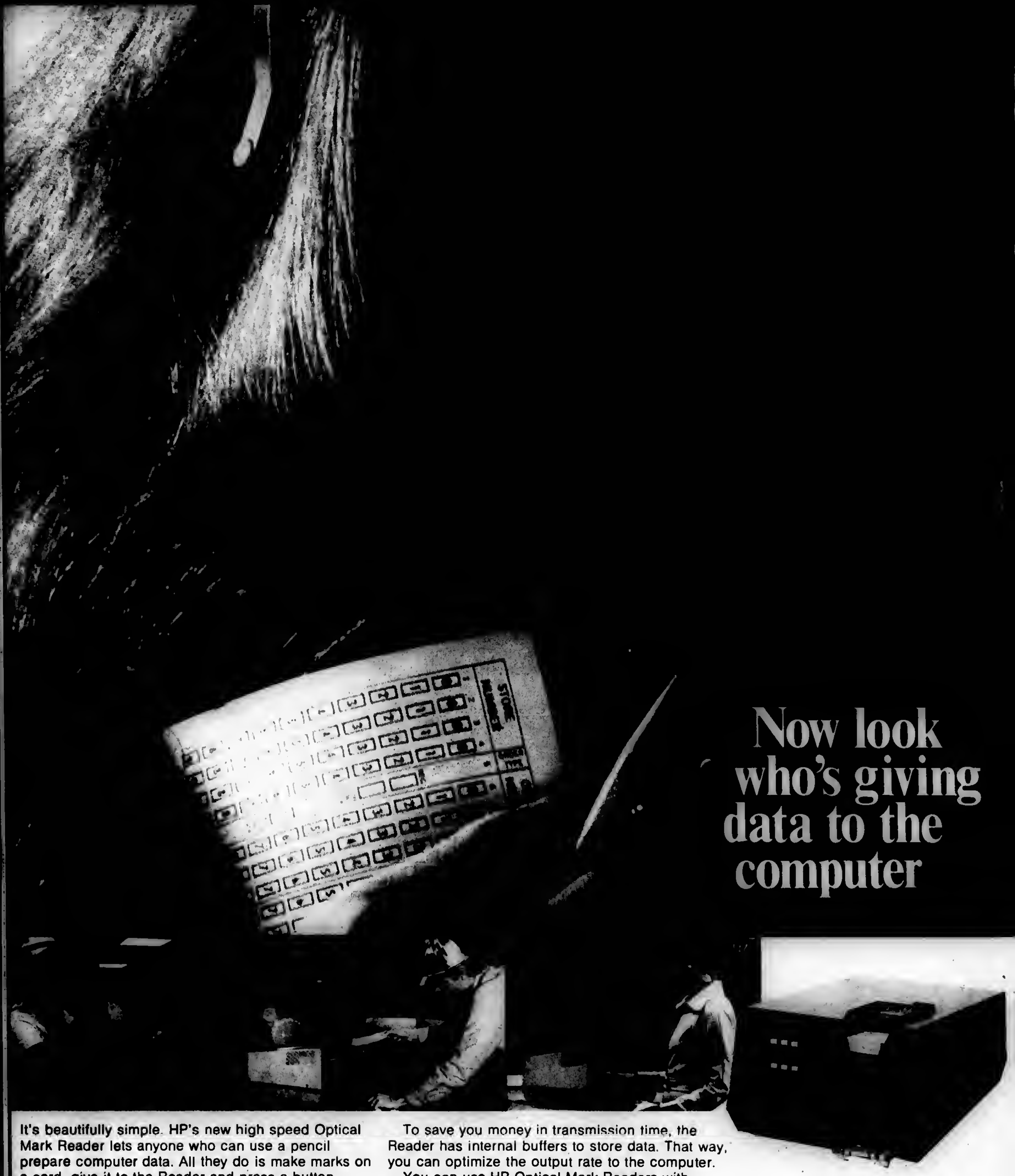

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'You Can't Have It Both Ways' — 'Procompetitive' Legislation Needed

Restructure or Face Regulation, Hart Warns Industry

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – If the computer industry is not restructured, it will face direct government regulation, Sen. Philip Hart (D-Mich.) told the keynote session of the NCC/73 here last week.

The only "alternative to restructuring," Hart told the estimated 2,000 attendees at the keynote session, "will be direct government control. You can't have it both ways."

Hart defended his Industrial Reorganization Act, which identifies concentrated industries and calls for their restructuring by a special commission and special court that would be established under the terms of the bill.

CW Photos by V.J. Farmer

Sen. Hart makes a point at the keynote session.

The computer industry is one of the seven concentrated industries identified by name in the bill, which defines "concentrated" as any industry where the top four firms control over 50% of the market or where any one company accounts for more than 15% of the revenues of any industry.

Hart noted that testimony before his Senate Antitrust and Monopoly Subcommittee by an economic adviser to President Nixon had indicated that "free enterprise is dead" and that within 10 years "our entire economic system would be regulated directly or indirectly by the government – with major sections nationalized."

However, Hart said that while the free enterprise system is dead already in some areas of the economy, "I don't think it's beyond resurrecting.

"And the medicine I would prescribe is a very large dose of antitrust."

But he said the antitrust law today is pretty much a theory that "gets many kind words and very few true believers."

There has not been one piece of "procompetitive" legislation passed by either house of Congress in the past 20 years, while at the same time there have been several measures passed that actually hurt competition, he added.

At the same time he claimed in several areas overseas there was a great deal of activity in the antimonopoly area and this action was helping those areas to boost their productivity and consequently their trading effectiveness.

Concentration of industry leads to technological stagnation, Hart said, even though he noted the U.S. still maintains a technological lead over the rest of the world in the computer field.

"It seems to me that wise public policy means achieving and maintaining a competitive – a truly competitive – data processing industry. It does not mean some kind of public utility regulation for this industry," Hart stated.

He introduced the Industrial Reorganization Act, Hart said, because he wanted to avoid this type of regulation of industry and said he looked on the bill as a sort of "Marshall Plan" for the U.S.

At the same time, however the present structure of the bill is by no means final and it will develop, he added, as more hearings are held.

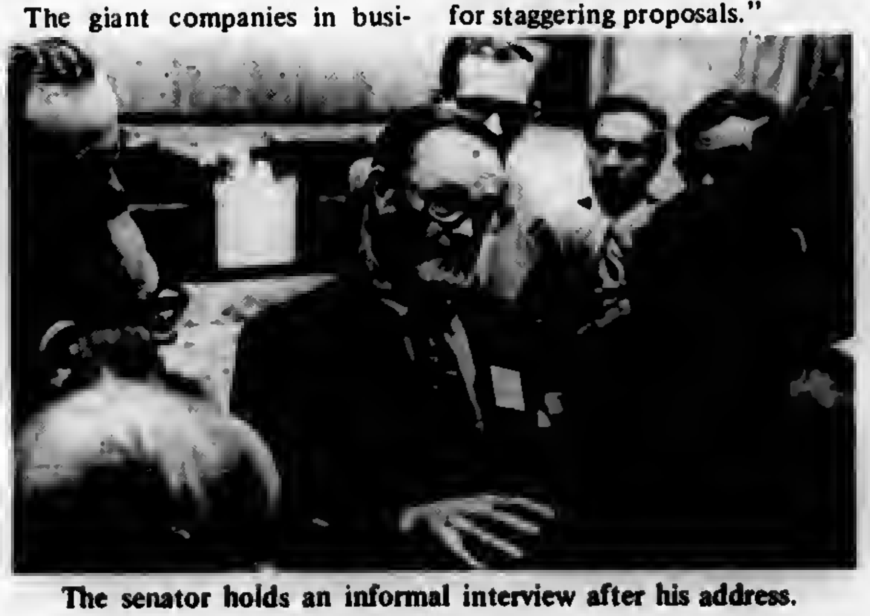
But, Hart said, he is for the basic policy outlined in the bill. "I strongly believe there are certain sectors of our economy which are not as competitive as they ought to be and that we should do something to correct this."

The giant companies in business, he said, do not have a lock on research and advancing technology. Hart said he was convinced that "technical efficiency, inventiveness and innovativeness are not monopolies of giant corporations.

"In fact, a glance at some of our more concentrated industries will show the very comfort of concentration destroys the incentive for efficiency and innovativeness.

"Certainly," he continued, "the EDP industry is illustrative of this point. Significant innovations have been produced by smaller firms as well as by the largest."

In conclusion, he explained that "some of you may decide that my bill's greatest weakness is its conservative nature. If you want a quick and easy solution to today's monopoly problems, you will have to look elsewhere for staggering proposals."



The senator holds an informal interview after his address.

IBM Sought Trust Hearing Delay

NEW YORK – Sen. Philip Hart confirmed last week that IBM had requested his Senate Antitrust and Monopoly Subcommittee delay its planned hearings into the computer industry.

But, he added, IBM did not request that the hearings never be held, only that they be delayed a while.

Former Attorney General Nicholas Katzenbach, now IBM general counsel, met with him on the subject, Hart said, and noted the IBM legal staff was extremely busy with the many cases against the firm and it would be hard for it to participate in the hearings if they were not delayed.

In addition, Hart said the IBM lawyers were concerned adverse publicity might come out of the hearings coincidental with the IBM-Telex case.

Some sources had indicated early in the year the hearings on the computer industry might begin as early as this spring, but Hart said no industry hearings would be held before fall.

OEM, End-User Exhibitors Delighted by NCC Reception

Quality, Number of Prospects Pleasing

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – OEM exhibitors seemed generally pleased with both the size and quality of the crowd at the NCC/73 with the reaction running from "excellent" to "very good."

In general, their counterparts on the end-user marketing side showed much the same reaction, with a few pockets of discontent.

Glenn Lutat, a marketing man from Iomec, said the firm had been seeing "excellent" prospects for its OEM products – which were the largest part of the display and the firm's product line – but added the reaction to the firm's one end-user offering at the show was also getting a good reception.

Lutat noted the quality was exceptional with the people asking "hard questions."

'Fantastic' Show

The show was "fantastic" in the view of Jared Anderson, president of Decision, Inc., which introduced a new OEM OCR reader at the show – the 7600 which carries a price tag as low as $30,000 in 100-lot quantities.

He said the firm was making contacts with high-level people in each of the three areas in which it expects to sell the system – the key-entry people, plug-to-plug equipment manufacturers and OEMs interested in development of systems for selected applications.

Decision is delighted by the reaction it has been getting from these decision makers, Anderson indicated, noting the show might help the firm close several deals it had been working on.

Ralph Gabai, marketing man from Lockheed, said "we are seeing good numbers of people – and they seem to be people that we would not be seeing otherwise." But at the same time he noted that most of the good contacts seemed to be drawn to the exhibit from a Lockheed campaign aimed at drawing those prospects to the exhibits and not just from walk-ins.

However, another OEM exhibitor, Dick McGuigan, OEM sales manager at Decision Data, Inc., noted that the show had been a "little slow" in the first part of the week, but felt the slowness might be caused by the drawn-out nature of the show as compared with the three-day affairs in the past.

At the same time, he said the firm had been seeing some "good" OEM prospects on the floor, and he felt it would probably see as many people over the five days as it had before in the three-day shows.

"With the five-day schedule, it seems the crowd is more drawn out than it was

(Continued on Page 43)

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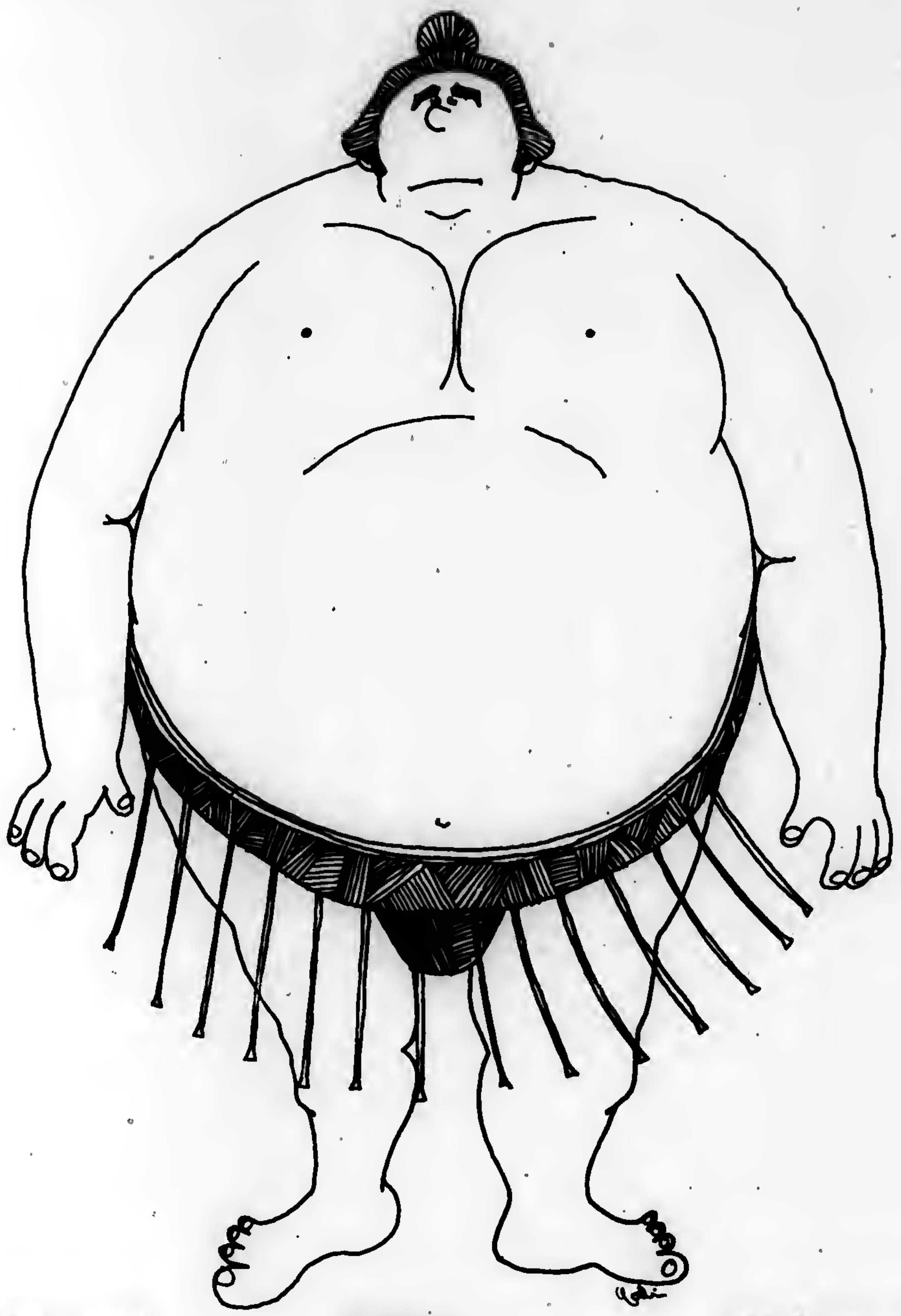

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- **Shukan Computer** is the only newsweekly for the fast-growing Japanese computer community.
- Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.
- Shukan lets you in on the action in the world's fastest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 11,237 in 1971; 11,000 minicomputers installed, up from 1,670 in 1971; and 3,000 industrial systems installed, up from 1,086 in 1971.
- Is this growth likely? The latest census of general-purpose systems revealed that there were 14,806 systems installed as of September 1972, a one-year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 23.1%, respectively. And more than 50% of these new systems were American made.
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COMPUTERWORLD

OEM and End-User Exhibitors Pleased at NCC Crowd Reception

(Continued from Page 41)

in the earlier Joints where everybody crowded into the display area on the first two days. I don't know whether this is better or not, but it sure is more tiring," he said.

Another exhibitor said the longer show was a definite help. "It's given us more time to talk to interested contacts," he said. "It's amazing how many people are coming back to talk to us seriously after making their first quick tour of the floor. Sometimes before, they didn't have time to come back and get more than a brief introduction to the system."

Gary.Cain of EM&M said the show was allowing his firm to get more exposure with the end-user public and it had been seeing more end-user contacts than OEM ones, even though the firm makes products for both sides of the industry.

Bill Ford, marketing vice-president at General Automation, claimed the crowd had been "pretty good" on both the OEM and end-user side. "We're getting all types of people," he noted, stating that OEM and end-user interest was high.

Paul Lobell of ICC/Milgo felt the show had been "damn good" for the firm and he had been "busy all day long." Even on Monday when the show was supposed to close at 8 p.m., he said he had been busy in the booth with prospects up until 8:30, when they had to leave.

While most of the OEM exhibitors were definitely happy with the crowd and the quality, a few of the end-user companies were somewhat pessimistic, even though most of them also seemed pleased with the results of the show.

"We don't seem to be seeing as many of the end users as we expected," one said. "Most of the people who seem to be coming by are either competitors or people who want to become our suppliers."

Marketplace, Not Government, Seen Strongest 'Giant' Killer

NEW YORK – The marketplace is more likely to diminish the power and position of IBM in the computer industry than is the government, Judge Lee Loevinger told an NCC/73 session on "Regulation of the Computer/Communications Industry."

Loevinger, who has been chief of the Justice Department's Antitrust Division, a Federal Communications Commission commissioner, in addition to a judge in Minnesota, is now in private law practice.

He said antitrust actions by working with market forces to bring relief in monopoly industries will be successful.

If the market conditions are not right at the time of any antitrust action or settlement, the relief proposed by the courts will not be effective, he indicated.

The best way for the government to act, he said, would be to relax its regulations on industry instead of developing new regulations for new industries.

At the same session, Dan McGurk, president of the Computer Industry Association, echoed Sen. Philip Hart's keynote speech when he warned that the DP industry presently faces the choice between restructuring itself and government regulation.

But McGurk indicated neither solution would be really satisfactory, because a restructuring that could come out of the government's antitrust suit against IBM would probably not come about for 10 or 15 years, if it goes all the way to trial.

Panelists Are Split Over Bell Motivation For Recent Filings

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – The firms which early on espoused competition in the data communications industry, "have become the new protectionists," George E. Ashley, general counsel for New York Telephone, told an NCC/73 session on "Regulation of the Computer/Communications Industry."

He claimed the new specialized common carriers had been fighting all of the Bell filings in recent years that would have lowered the costs of services to data users.

However, William Melody, a professor at the University of Pennsylvania, indicated Bell was just lowering rates in those areas where it did have competition and not across the board.

In fact, he said, the rates were being raised in those areas where there was no competition to make up for the loss of revenues in the areas where there were cuts.

Accusing Bell of "predatory" pricing, he said Bell was filing the lower rates just to drive out competition in the few areas where there was some competition.

Both Melody and Ashley agreed, however, that the goal of competition should be to lower the costs of communications services for the end user.

"What was intended to be an opening of a regulated industry to something more akin to the free play of supply and demand with decisions made by market forces has instead become a procedural morass of incredible complexity," Ashley said.

Protecting the Young

"The public in general, and the data processing industry in particular, will be the losers if, in order to protect 'infant industries' and to enforce an artificial division of the market, the efforts of the Bell Companies to continue to be responsive to customer needs are hobbled and delayed, or, perhaps, even prevented," he added.

Bell Companies "are encountering opposition at every turn," he noted, "primarily from competitors who so recently extolled the virtues of free entry and a free market."

He said the communications industry was at a "crucial point" in its development, and he indicated "the data processing industry has an important stake in having government policies and the regulatory process facilitate and not impede these developments."

Melody, however, indicated that if Bell was successful in driving out its infant competition, then it might end up regulating the industry.

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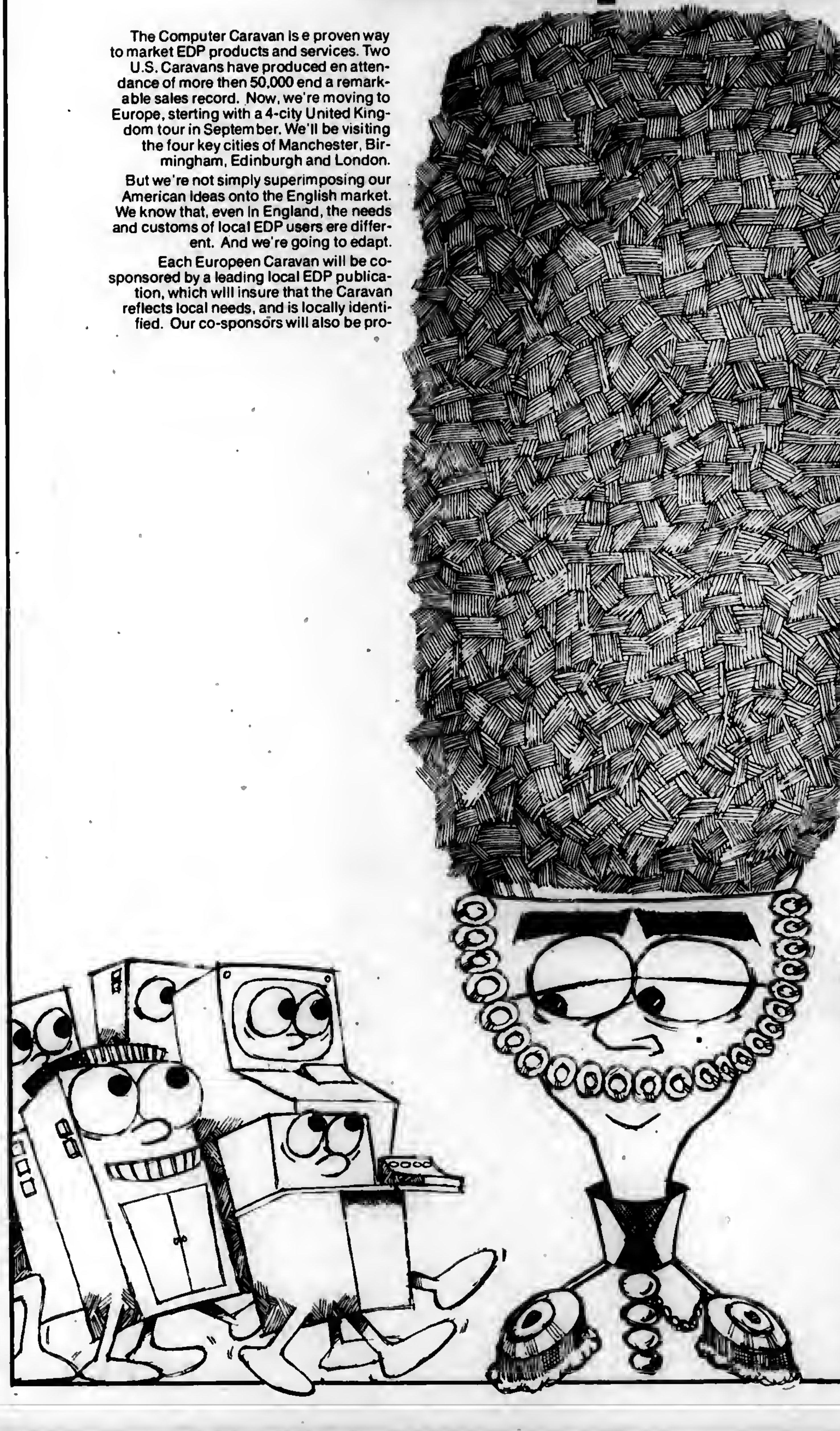

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DP Around the World

Japan Entering 'Integration' Era

By Peggy Zientara
Of the CW Staff

NEW YORK – The use of computers in Japan is entering a new era, with former "islands" now moving into totally integrated systems, according to Shohei Kurita, manager of the research department of the Japan Electronic Computer Co.

There is a trend toward diversification, toward the use of mixed hardware, and, Kurita claimed, "a proper regard for systems analysis must be maintained to avoid general confusion."

Speaking at an NCC session on "Computer Use Around the World," Kurita said Japan had 14,806 installations of general-purpose computers as of Sept. 30, 1972 and 1,670 minicomputer units as of Dec. 31, 1971.

The banking industry is Japan's largest user of data processing, with 15.6% of the total installed computers (with 55% of those on-line); and the electronic machinery manufacturers come in second with 13.6%, according to Kurita.

In the minicomputer area, the electric and electronic equipment industry claims 22.8% of the installations, colleges and universities 15.3%, iron and steel industries 5.7%, and the chemical and petroleum industry 5.1%.

The typical computer installation in Japan spends 40.3% of its budget on rental costs, 28.9% on personnel, 21.8% on miscellaneous costs and depreciation accounts for 9.0%.

"By March of 1977, $12.7 billion worth of general-purpose computers are expected to be installed. That figure is 4.4 times the present volume of installations in Japan, and 2.5% of Japan's GNP for fiscal 1976," according to Kurita.

Non-Developed Nations

Valmor Bratz of IBM do Brasil Ltda. spoke as the only representative of a non-developed region and cited the substantial lack of quantitative and relevant information concerning Latin America as one of the chief problems in studying the topic of computer use there.

Bratz chose the four countries that make up 75% of Latin America's gross international product and gave figures for their December 1972 installed computer-base. According to Bratz, Brazil had 900 (one-third of the total); Argentina, 460; Mexico, 400; and Venezuela, 300. "These figures are only estimates, however, since there is no official data on the subject," Bratz noted.

The major constraints in Latin American DP are the technical infrastructure (as in teleprocessing, where needed reliable telephone lines are hard to find); lack of applications-oriented experienced manpower; management whose decision-making methods are traditional in the midst of an advanced technology; and government restrictions on imports.

Since there are no national manufacturers in Latin America, the countries must import, and most can't afford the heavy import costs. A $300,000 computer bought in the U.S. would cost a Latin American about $500,000, according to Bruce Gilchrist of Afips, the session chairman.

Europe vs. U.S.

Hans P. Gassmann, head of the international studies unit of the Organization for Economic Cooperation and Development (OECD), compared the Western European countries of France, the Federal Republic of Germany, Italy and the United Kingdom with the U.S. in several categories.

At the end of 1971, he said, the U.S. had 84,600 computers installed compared with the Western European countries which all had between 3,400 and 7,800. The average value of systems was $28.9 billion in the U.S. and $1.2 billion-$2.8 billion in Western Europe.

In the number of EDP systems, number of companies/million of working population and value of installations, the U.S. came out far ahead of Western Europe, according to Gassmann's figures.

Barry Boehm, an executive with Rand Corp. spoke on the internal technology of the Soviet Union and Eastern Europe, discussing the BESM-6 (the largest Soviet computer), the Minsk-32 (the "real workhorse") and the Ryad series of computers.

Boehm said there are problems with the Ryad series in the Soviet Union and no one knows when the top-end models 50 and 60 will come out. He said the Soviets haven't mastered the production of peripherals, and production is way behind schedule.

"The usage and demand for computers is centralized," Boehm said, "with Poland and Czechoslovakia having about 500 computers between them." In real-time systems, there is a big demand for process control. There is an airline reservation system in Moscow, but elsewhere the process is entirely manual.

"The Soviet balance of trade was negative last year, which intensifies the general reluctance to buy West," according to Boehm.

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'Lawyers Need Help'

Software Protection? Users Must Chart a New Course

By Edward J. Bride
Of the CW Staff

NEW YORK – New legislation reflecting new thinking is needed to protect computer software. The problem is: who should do the thinking?

This attitude was the unanimous conclusion of five lawyers who comprised a panel on "Legal Protection for Software" during last week's NCC.

Claiming attorneys are not clever or innovative, but are more like "scribes" who translate thoughts into writing, attorney Roger M. Milgrim said the people most affected by software problems should chart the course for the new laws.

Help Lawyers

Milgrim noted users and people in the computer industry know the problems of software including the difficulties of enforcing patent laws. These people should communicate their needs to lawyers, who could help draft legislation to end the current uncertainty regarding the patentability of computer programs.

When the Supreme Court overturned the Benson-Tabbot patent, the only assertion in the ruling was that mathematical processes are not patentable, and this was merely a reassertion of past policy, according to IBM patent attorney Elmer Galbi.

The Benson-Tabbot program helped convert BCD data to binary, panelists recalled, agreeing this particular program was not suitable for a broader ruling (on machine processes that can be accomplished by a digital computer).

The Supreme Court clearly "threw the ball to Congress" when it said that if programs are to be protected, new legislation might be required, Galbi noted.

The patent system has a place in our society, Galbi continued, stating the system needs a broad overhaul so it can work. "Since I don't see a general overhaul" in the making, the next best thing would be "specific legislation," he added.

Technological Interchange

William Keefauver, the Bell Telephone Laboratories' lawyer who lost the Benson-Tabbot decision, agreed that what is needed is a system that encourages technological interchange, one that has more than "prestige" as a dividend.

He dislikes the IBM suggestion of a "registration" system for programs, noting the "inventive, imaginative" portions would be placed in the public domain – only the coding would be protected, and this type of effort is "trivial" compared with systems design, he said.

Keefauver also suggested the Supreme Court decision was "disappointing thinking to legal scholars" because of its narrowness. "Most of the major questions remain unanswered," he said.

Attorney Morton Goldberg claimed computer programs are "writings" under the Constitution, and they are therefore eligible for copyright protection (several hundred programs are currently copyrighted, according to the U.S. Patent Office).

The weakness, however, is that only copying is prohibited, while unauthorized use of material is not covered by copyright laws, Goldberg suggested.

Martin Goetz, a software designer and software patent holder, reminded the panelists the true subject of a software patent is a "machine process" and not a writing. From the audience Goetz suggested that copyright is not a valid form of protection for programs.

Panelists also suggested that trade secrets provide some protection, but enforcing this type of protection is just as expensive as enforcing a patent. The advantage of this approach is that a trade secret costs nothing additional: it is automatically applied when the work is completed. It is also applicable immediately upon completion, while patents can take from two to five years to attain..

Elmer Galbi

Roger Milgrim

CW Photos by Edward J. Bride
William Keefauver

A Voice Alone

The "sad" aspect of the Benson-Tabbot decision, according to Milgrim, was that the court had no help except from interested parties.

He philosophized that software is "new in our society." There is very little that people do today that is not related in some way to a computer, he said.

"Like IBM has been saying for some time," he continued, "perhaps we need to look at this as a new problem," rather than thinking which of the three forms of protection (patent, copyright, trade secret) is best.

Air Traffic Under Control

SAN DIEGO, Calif. – The Naval Electronics Laboratory Center (Nelc) is applying previously developed monitoring and diagnostic techniques to a Federal Aviations Administration (FAA) project now underway which seeks to improve air traffic ground systems for commercial airlines and general aviation.

The development is a Centralized Automated Measurement and Monitoring System (Camms) designed to affect all areas of air traffic control: surveillance radar systems, navigational aids and ground communications systems. Camms includes system analysis and demonstration hardware development.

System analysis effort includes a survey and analysis of current air traffic control ground systems and recommendations concerning automation of test measurement and performance monitoring on these systems. Hardware development includes demonstrations of measuring and monitoring concepts using the FAA ASR-7 surveillance radar system.

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OEM Products Focus on Storage, Small Systems, CRTs

CDC Doubles 3330 Storage

By Ronald A. Frank
and Molly Upton
Of the CW Staff

CDC's OEM Products Display

NEW YORK – Over half the companies at the NCC marketing chiefly to OEMs announced new products or showed products for the first time, with the empahsis primarily on the storage and small systems area.

There was also considerable activity in the CRT area, with several firms adding to their lines or entering that market for the first time.

One of the most significant products for the OEM announced at NCC was CDC's double density 3330-type disk system that is said to have twice the capacity of the IBM system.

The 9780 drive has a pack with 19 recording surfaces and a recording density of 4,040 bit/in. and 400 track/in. These specification coupled with a 30 msec access time add up to a total of 200M bytes of on-line storage, according to CDC. The increase in storage is achieved by "doubling only track density," the company said.

But the drive does lack a controller. CDC estimated it will take about a year to add a "media-compatible" controller to its double density 3330-type drive. The company said it is also developing an integrated version similar to IBM's 3333 drive.

The implication in announcing the drive is that an OEM customer will develop the necessary controller, but CDC spokesman agreed this has yet to be done.

OEMers at NCC

Other CDC products announced included the 92000 magnetic tape drive, available in both 7- and 9-track models with tape speeds of 25-, 37.5- and 50 in./sec and recording densities of 200-, 556-, and 800 bit/in.

The device uses single capstan drive and optical digital tachometer and is rack mountable. Prices range from $3,400 in single quantities to $2,400 in lots of 1,000.

CDC also had a 6,250 bit/in., 200 in./sec tape drive priced at $13,200 in single quantities down to $10,500 in lots of 1,000.

The 92423 CRT features upper and lower case characters, Ascii set and numeric pad. The screen is 80 characters by 8 lines, expandable to 80 by 16, TTY-compatible and is switch-selectable from 75- to 9,600 bit/sec.

The display operates in either scroll or page mode, and links to an optional thermal printer. The CRT costs $2,200 in single quantities and the printer option is $2,100.

Printers Upgraded

The 9322, a 400 line/min drum printer, is an upgrade of the 200 line/min printer of the same series. The unit uses one hammer/two columns instead of the former one hammer/three columns, a spokesman explained. Single unit cost is $7,190.

The 9370 series train printer operates at up to 2,000 line/min and embodies a new hammer bank and improved dc servo control motor for paper feeding, CDC said. The single unit price of $3,500 includes a buffered controller.

The 9400 flexible disk drive records at 3,200 bit/in. and has 76 track/surface. The data transfer rate is 240 kbit/sec and average access time is 20 msec.

The 9740 storage module drive contains 40M byte with data stored on five recording surfaces. Price of a single drive is $3,900.

The 9790 is a 300M-byte unit with 22 non-removable disks containing 40 data surfaces. Data is recorded at 6,000 bit/in. at a density of 192 track/in. Single price is $29,000.

Iomec Unveils Printers, Disks

Iomec was another exhibitor unveiling a number of OEM products, including a mini line printer, disk drives, magnetic tape cartridge system and card reader.

The Series Seven Model 352 prints up to 420 line/min with a 48-character font. Prices range from $9,550 to $5,760 in quantity.

Iomec Series Seven Model 352 Printer

The Series 3000 mini disk drives include both front, top loading and fixed configurations. The 3004 is a front-loading 200 track/in. unit with fixed storage plus a cartridge with total capacity of 96M bit. Average access time is 55 msec. Quantity price is $3,120.

The fixed disk drives range from the 3024 with 24M bits on a single disk to the 3048, with 48M bits on double disks, and

(Continued on Page 49)

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OEMers Bring Products For Storage, Display

(Continued from Page 48)

the 3096, which offers 96M bit on double disks.

Bit density is 2,200 bit/in. and track density is 100 track/in. for the 3024 and 3048, and 200 track/in. for the 3096. Average access time is 55 msec.

A mini magnetic tape cartridge system, the Model 300, comes in one-, two- or three tape transport/panel with prices from $2,240 to $3,250.

The unit uses a "Cartritape" cartridge which stores 912K bits recorded at 400 bit/in.

Iomec also announced three models in the Series Five card readers, the Models 30, 45 and 60, which read at rates of 300- to 600 card/min.

Hoppers hold 500 to 1,000 cards depending on the model. The units are priced from $1,525 from 345 Mathew St., Santa Clara, Calif. 95050.

OCR Unit Shown

Decision, Inc. revealed the OCR 7600, which the firm claims is half the cost of IBM's 3886 Model Two, with faster performance.

The Recognition and Control Processor is supplemented by a floppy disk that permits additional fonts and diagnostics to be added. Editing of "difficult to read" data can be done manually or with a keyboard/CRT station, the firm said.

Options include the ability to read data from typewriters, preprinted forms, computer printing and numeric hand printing, the firm said. The 7600 processes 8-1/2 sheet/min at recognition rates up to 600 char./sec.

Price in lots of 100 is $30,000 from 5601 College Ave., Oakland, Calif. 94618.

Potter Printer Uses Two Moving Parts

Potter unveiled two impact line printers, the LP6150 and the LP6350, operating at 180- and 420 line/min, respectively.

The 132-column units incorporate only two different moving parts, hammers and the new Potter helical platen, with 12 hammers set in a single bank for minimum maintenance, the firm said.

Single unit price for the LP6150 is $3,500 and $2,450 in lots of 1,000. Unit price for the LP6350 is $4,950 and $3,465 in lots of 1,000.

Potter also announced a 3740-compatible floppy disk drive, the DD4740 Diskette Drive. The price drops from $790 in single quantities to $550 in lots of 1,000. The firm is located at 532 Broad Hollow Road, Melville, N.Y. 11746.

CPU-Independent Unit Converts 80-Column Cards

HORSHAM, Pa. – Decision Data marked its entry into the 80-column card equipment market with its 80- to 96-column card converter and an 80-column card data recorder.

The converter can operate independent of a computer and handles up to 120 card/min. The conversion feature is field installable on 9601 or 9610 data recorders, the company said.

The 8010 data recorder reads at 200 card/min, punches 75 card/min. and functions either on- or off-line.

Tape System Uses Cassettes

A punched tape emulator (PTE) using a digital cassette system highlighted the Remex display. The PTE, a dual-cassette deck, reads or writes at a minimum of 300 char./sec and sells for under $2,400 from the Santa Ana, Calif., firm.

The RRS6300 reader/spooler handles up to 350 ft of tape and reads 300 char./sec and rewinds at 1,200 char./sec. The price is $1,195.

A new perforator/reader, the RAF6375 reads up to 300 char./sec and punches 75 char./sec on fan-fold tape. Its price is $2,145.

Remex RAF6375 Paper Tape Reader/Punch

The RRK2080, a photoelectric punched tape reader, is designed for typesetting applications.

Ampex Upgrades Tape Unit

Ampex's OEM products included a new tape memory model B (TMB) that handles 10- to 50 in./sec and sells for about $3,500 in single quantities. It features retractor arms and single capstan drive. The unit is basically an upgrade of the TMZ, which operates at 37.5 in./sec, a spokesman said.

The DE 800 is a phase-encoded NRZI format control unit designed for use with the TMB or other smaller tape drives. It is priced at under $3,000 from the Marina del Rey, Calif., firm.

Other OEM Products

Teleprocessing Industries, Inc., a subsidiary of Western Union Corp., showed its new Peripheral Device Switch, Model S1000, which can handle up to 98 lines in a 2 by 2 arrangement. The unit can switch communications lines, I/O channels to peripherals or peripheral units between computers.

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Canberra Industries, Inc., Meriden, Conn., showed its Model 2020 cassette tape mass storage system. The unit handles three cassettes and operates up to 140 in./sec. Interfaces are available for the PDP-8, 11 and Nova, the firm said.

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Omron Systems Inc., Sunny-

(Continued from Page 48)

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Storage, Displays Spark OEM Exhibits

(Continued from Page 49)

vale, Calif., showed its 8025 programmable CRT, which contains 2K of refresh memory and is available with up to 16K. The basic unit includes a microprocessor, program ROM, display RAM, Ascii keyboard and numeric pad, and RS-232C interface. The 15-in. diagonal screen shows 80 char./line and 24 lines.

– – –

The Vistar/GT CRT terminal from Infoton, Inc., Burlington, Mass., sells for $1,595, with a switchable transfer rate from 75- to 9,600 bit/sec. The basic unit includes keyboard, display, control and refresh power supply and RS-232C and current loop interfaces.

– – –

Megadata Computer and Communications Co., Deer Park, N.Y., displayed its Mac-Net terminals, including one that sells for $4,850, as well as its SR-1000C color graphics display terminal, featuring over 150 graphic characters in four to seven colors. The display is on a Sony television screen. Prices range from $2,900 to $5,000.

The firm also showed a printed circuit card CRT/8 that plugs into a slot on the PDP-8E, F or M, and includes an executive monitor program in paper tape. The card is priced at $770.

– – –

Adage, Boston, Mass., introduced the Adage/400 graphic display system, with a controller and microprocessor using ROM. The unit can handle dynamic graphics and line drawing. Prices range from $30,000 to $50,000.

The Adage/200 is designed for multi-terminal graphics applications, and the TV raster screens can display 2,400 characters and store 3,800.

– – –

Imlac Corp.'s PDS-4 graphics display system includes a mini with 4K to 32K memory, display processor, 17-in. screen, alphanumeric keyboard and RS232 interface. Software including a Fortran IV compiler is available, as well as a floating point feature, the firm said. Peripherals available include light pen, tablet and joystick. The basic system price is under $14,000, the Needham, Mass., firm said.

– – –

Caelus Memories Inc., San Jose, Calif., showed its new 103 fixed disk drive, which has 100 track/in. for a capacity of 24M bits. Average access time is 75 msec.

Up to four units can be daisy-chained. The single unit price is $1,800.

The 306/2 disk drive has 200 track/in., with one fixed and one removable disk. The 96M-bit unit's average access time is 35 msec. In quantities the price is $4,000.

– – –

Electronic Memories and Magnetics (EMM), Hawthorne, Calif., had a new Micro 3000 16K by 20 board that offers a 650 nsec cycle time and 300 nsec access time, and is pin-compatible with the older 3000 8K board.

– – –

Another firm showing a 16K by 20 board was Standard Memories, Ft. Lauderdale, Fla., which calls its unit the 16 EcomH. The 3-wire 3d board is pin-compatible with the EMM 3000 and sells for $2,400 in quantities.

– – –

Hewlett-Packard, Cupertino, Calif., showed for the first time its writable control store board for the 2100 Series, which sells for $3,500. It also offers a Prom writer that fuses chips for $500.

– – –

Data Products, Woodland Hills, Calif., said it has made significant changes since introducing its Charaband printer. The Model 2550 prints at 1,250- to 1,550 line/min and single unit price is $23,000.

– – –

Intel Corp. introduced two modular microcomputer development systems, the Intellec 4 and 8, designed to aid in the

(Continued on Page 51)

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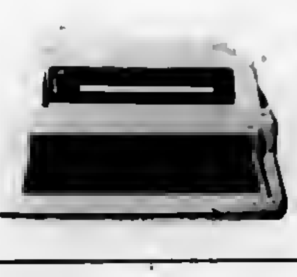

For Entry-Level Programming

ACM DP Curriculum Leans Toward Business

By Patrick Ward
Of the CW Staff

NEW YORK – The Association for Computing Machinery unveiled a business-oriented undergraduate DP curriculum at the NCC that is designed to prepare students for entry-level programming work.

The report was written by a subcommittee of ACM's Curriculum Committee on Computer Education for Management and Prof. J. Daniel Couger, chairman of the subcommittee, outlined the report:

- It is divided into two concentrations or options: the technological, usually for engineering majors, and the organizational, typically for business majors.
- Of the 11 courses required for the two undergraduate programs, six are undergraduate versions of the graduate courses the ACM recommended in a report a year ago.
- Both concentrations require the student to take courses in operations analysis and modeling, systems concepts and implications, information system analysis and system design and implementation.
- Students in the business concentration would also take courses in human and organizational behavior, programming structures and techniques and computerware.
- Those in the technological concentration, designed to give students a more in-depth exposure to computers and programming techniques, will take courses in information structures, computer systems, file and communication systems and software design.

One-Year Master's?

Graduates of ACM's undergraduate program could attain a master's degree in an ACM-recommended curriculum in one year rather than in two, Couger said.

"We are talking about introducing seven courses into the standard business curriculum and eight into engineering," Couger explained.

One attendee pointed out that this could create a "scheduling nightmare," especially if the required courses were offered in various departments, as Couger suggested they might be.

Prof. George Gorsline, a professor of computer science at the Virginia Polytechnic and State University, said he was "positive" about this degree program but had a few words of criticism.

"This degree as outlined really depends on a post-graduate apprenticeship," he said. Gorsline recommended a cooperative plan or a work-study solution instead.

He also said he hoped this new undergraduate curriculum plan would not cause the core of the master's curriculum to fall into the baccalaureate courses. He said he expects master's programs to be upgraded.

Couger explained that he saw the master's program as taking experienced people and training them for a career, rather than for entry-level work.

Tapes, Disks, CRTs Highlight OEMs

(Continued from Page 5)

design of the fim's MCS-4 and MCS-8 OEM systems. With the units all program storage can be on RAMs rather than ROMs. Prices start at $2,195 and include CPU, memory, I/O, crystal clock, TTY interface and power supplies.

Also available are standard cards designed around the MCS-4 and MCS-8 microcomputer sets.

A portable analyzer, for the MCS-4, was also introduced.

– – –

Vermont Research's new product was the 3016 drum memory that has a capacity of 32M bits.

Service Links Securities Trade

NEW YORK – A program designed to link all parties to an institutional trade has been developed by the Central Certificate Service, Inc. (CCS), a subsidiary of the New York Stock Exchange that serves as a securities depository.

Called Institutional PDQ, the program will link electronically the broker-dealer, institution and the institution's agent bank to confirm the trade, issue delivery instructions and deliver the positions automatically through CCS.

After the broker-dealer supplies CCS a computer tape containing the information necessary to confirm a trade, CCS transmits this information to the institution, while making a hard copy. The institution will validate the confirmation to CCS, its broker and its agent bank.

This information is input to CCS' computer and deliver or receive instructions for the agent bank and the broker are produced. The positions are then delivered automatically through CCS.

"This program should alleviate one of the nagging problems of the securities industry – rejection of security deliveries because instructions to receive are misplaced, lost or delayed in transit," observed President Diran M. Kaloostian.

The program is being tested with the cooperation of Chase Manhattan Bank.

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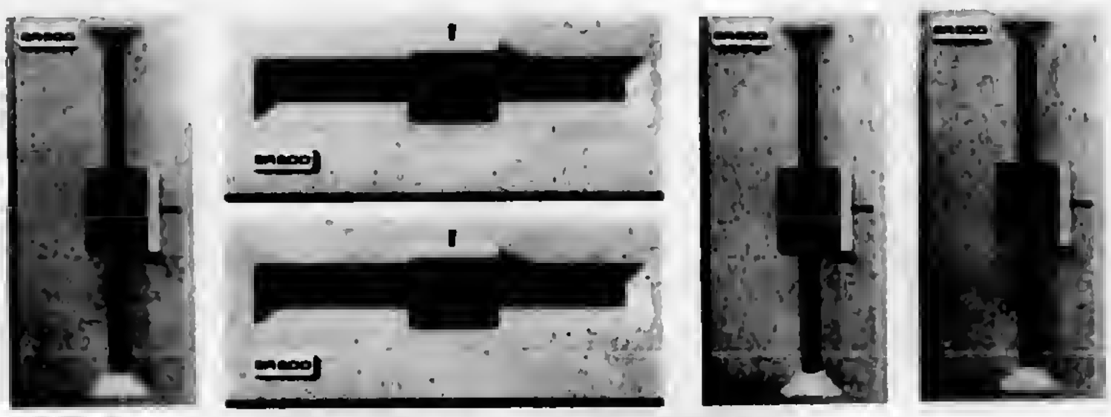

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Greyhound's 'Top Dog' Sees Lessors Unresponsive to IBM

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – "We don't like the way most of the leasing market has been going," Olie Swanky, president of Greyhound Computer Corp., said in an interview last week, "because most of the firms aren't doing anything to better their condition."

Greyhound introduced at the NCC/73 here an upgraded 360/30 with the capacity of a 370/145 and renamed it the Phoenix system.

"We put a different label on the system to indicate it is a truly different system," Swanky said. "Many users when they hear of an upgraded 30 think it is impossible since IBM determined the limits for the system.

"By giving it a different name, we are trying to show it is a completely new device – in hardware, software and support."

He said the acceptance of the new name for the system and of the change it represented had been demonstrated at the show.

"We're trying to sell the idea of price/performance, and that is what gets to the vice-presidents of finance and presidents of companies," he said.

Challenge Accepted

In addition, he said, several users had accepted Greyhound's invitation to actually bring in their programs and run them on the Phoenix system on the floor of the exhibit and to compare those results against the results they were getting from their in-house systems.

He said one user had even brought in a monitor for the system to monitor its performance as it operated on the floor.

The quality of the people testing the system at the show was "good," he said, noting most of them were presently using the lower end of the 360 line.

But the whole move to introducing the enhanced system, he said, was brought about because of the problems facing the leasing industry today.

The industry at present, he said, was "nickel and diming" itself to death with price-cutting actions.

At the same time, he said, most of the firms in the business were doing little long-term planning for the future, instead concentrating on "making the mortgage payments."

Many of the firms, he said, are "almost insolvent" and he predicted there would be a great deal of consolidation in the business during the next year, with the more viable firms picking up the inventory of the less financially secure companies.

About IBM . . .

Swanky believed that the industry had largely brought this on itself because it had concentrated on competing with each other and not with IBM, but he said IBM was definitely the firm that was supplying the major competition for the firms in the business, not the other leasing companies.

In conclusion, he noted there was still "a lot of mileage left in the 360 hardware" and the key to increasing usage would be in developing increasingly sophisticated software for the systems that are enhanced beyond the IBM-imposed limits.

Lack of Technology Breakthroughs Seen A Sign of the Times

By a CW Staff Writer

NEW YORK – Several industry observers at the NCC/73 commented on the seemingly low level of innovations shown on the floor.

"Even though there are a lot of new products here," one said, "most of them are just improvements in existing products or fill-ins for existing product lines. There seems to be less really new technologically than at some of the past joint conferences.

"I guess," he said, "that these shows just aren't the place for technological breakthroughs any more, but I don't know where that type of product would be shown."

Sign of the Times

However, another source said the slowdown in technological innovations on the exhibit floor just reflected the current state of the computer industry.

"I know many people expected to see a lot of the latest technological gems here," he said, "since it is the only show of the year. But I think the industry has stabilized to an extent in the last six months and the breakthroughs just aren't there today."

Another long-term industry observer noted it had been two years since the introduction of the 370 line and most of the industry had already reacted to it, so the new technological products associated with it had already been introduced.

He indicated the next big surge of major introductions would probably come in a year or two when the independent suppliers begin introducing a wave of products to improve the 370 line rather than just making duplicates of the IBM products.

"There's still a lot of work being done in the labs around the country, but the market just isn't ready yet for a new wave of technology right now. It will take a couple of years," he concluded.

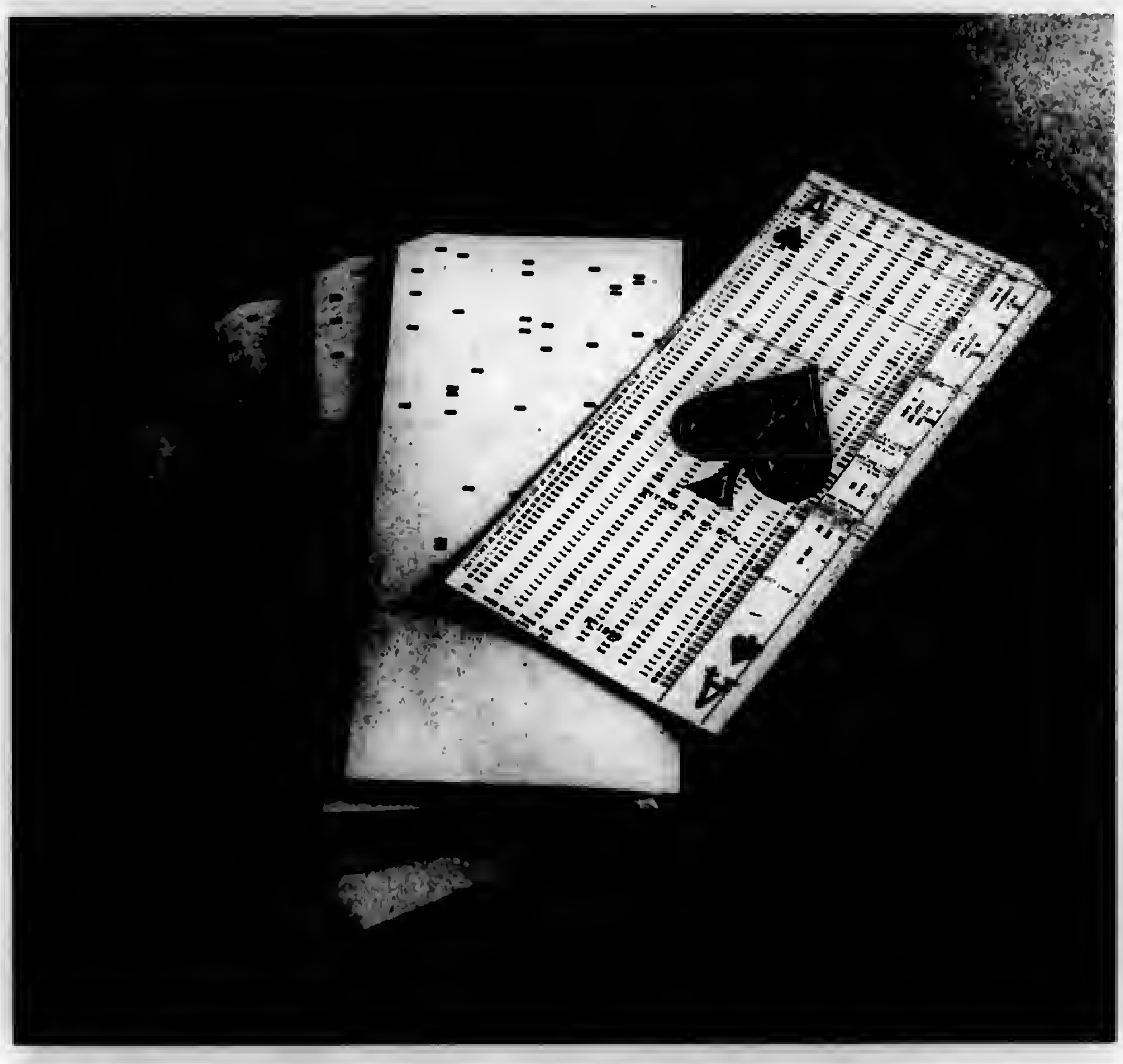
Gloomy Outlook

The gloomy economic outlook for the rest of this year, however, may have scared off some firms from making the large investments needed to bring some of the new developments to the market, some other observers believe.

"After all," one said, "who wants to make a large economic investment in developing and marketing a new product, if the bottom is going to drop out of the economy and users are going to stop buying in six months?"

Another source agreed with this assessment, but he indicated that while the signs were bad at the present, he wasn't at all sure that the downturn would in fact come, even though he agreed that many in the business expected it next year.

"I think they might be worrying too much because of the current climate, but only time will tell whether they or I are right," he said.



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Integrated Technologies Called Vital to User Needs

The World of Specialized Carriers

By Ronald A. Frank
Of the CW Staff

NEW YORK – The specialized common carriers will have to provide communications users with a wide range of services in order to be responsive to their needs.

The new carriers will have to consider using an integrated combination of line-sharing technologies, according to Alex Latker, director of data transmission at Microwave Communications, Inc.

Speaking at an NCC session dealing with the impact of networking, Latker said the specialized carriers should offer services ranging from conventional frequency-division and time-division multiplexing (FDM and TDM) to "concentration-oriented methods" like dynamic multiplexing, computer-controlled electronic circuit switching and message-switching such as packet-switched technology.

Variable Delays

One disadvantage of message- and packet-switching is the random and variable nature of the delay experienced by each message passing through the network. And response times in packet-switched networks are very "sensitive to heavy traffic loads," Latker said.

But with circuit switching nets or dynamic TDM systems, the delay does not depend significantly on the overall traffic in the network, he said.

Based on these types of trade-offs, the communications user will probably have to utilize a variety of conventional and shared services to optimize his communications capabilities, Latker said.

In order to provide users with the required services – value-added offerings beyond those now generally available – the specialized carriers will have to provide error control, code conversion, data speed changing, data concentration, message routing and related capabilities.

To implement some of these projected user needs, MCI is considering three major types of value-added services, Latker said.

The first is a throughput maximizer service which would include the addition of carrier-supplied hardware to buffer and format CPU output before and after transmission.

This service would be "highly customized" and the costs will depend on the amount of features selected by the user. Among these features will be user-selected block lengths, transmission protocols, code formats, interfaces and similar considerations.

Two types of error correction would be included in the customized service. The first would be automatic-request-repeat for high accuracy applications. The second would be forward error control for less demanding nets.

The second type of service would be for shared operation of carrier facilities by a number of users with varying bandwidths, traffic loads, message priorities, terminal types and line control techniques.

The shared operation would have four priority levels including interactive mode for messages which have to arrive "within 10 seconds." A fast batch service would include delivery of a message within three minutes. A regular batch service would include delivery of a message within 60 minutes, and bulk service would provide for delivery of the customer's messages on an overnight basis.

For the shared operation with its varying priorities, the user would be charged on a time, message length and transmission priority basis.

The third type of service would duplicate the offerings of the second type with the addition of a capability to deliver a message to any location instead of to only a fixed destination.

The shared offerings that become feasible with value-added nets would appeal to the smaller communications users who cannot justify an in-house system with dedicated equipment, Latker said.

The major difference between the existing carrier services and the value-added nets would be the transparency, he said. This term refers to the fact that a user of an existing service receives the same message as the one that was transmitted.

This would be contrasted with the value-added nets that will be able to alter data depending on the user's needs.

The projected services could not be offered unless MCI (or another carrier) gets approval from the Federal Communications Commission.

3d Generation CPUs Highlight USSR Show

Novosti Press Agency

MOSCOW – Six members of the ES series of third generation computers highlighted the recent USSR Permanent Exhibition of Economic Achievements.

The systems, developed through the joint efforts of six socialist states, are founded on a common structural, technological and electronic basis, are program-compatible and use standardized peripherals.

Advances in the design of controllers have made possible multiprogramming and the machines accept remote job entry.

The machines on display included the ES-1010, produced in Hungary, the ES-1020, the USSR and Bulgaria; ES-1021, Czechoslovakia; ES-1030, the USSR and Poland; ES-1040, German Democratic Republic; and the ES-1050, the USSR.

There were also 100 varieties of auxiliary devices which help to mount automated systems of various configurations, intended for the solution of a great variety of economic, engineering and research problems.

The variety of standard peripherals facilitates the use of graph constructions in designing.

With the mathematical apparatus and translators, engineers can quickly write the necessary program in an algorithmic language comprehensive to any engineer.

Work to Do

This does not mean, explained V.S. Seminikhin, chairman of the exhibit organizing committee, that the work on the system is over. One of the biggest machines, the ES-1060, is now being designed, and the working group for automated control systems still has a great deal to do to develop a uniform policy of application.

Apparently everyone who comes to the exhibit wants to see the machines in operation. Visitors can see them count the proceeds from a department store, estimate the trajectory of flight of a supersonic plane, play chess fairly well, receive instructions by telephone, and even make jokes and compile horoscopes.

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For Entrepreneur Seeking $, Some Hard Facts...

By Molly Upton

Of the CW Staff

NEW YORK – While the times are hardly auspicious for the financing of young firms, many entrepreneurs showed up at the NCC session on venture capital for the computer industry to hear advice from panelists on the do's and don'ts of obtaining financing.

Entrepreneurial endeavors are not for everyone, cautioned venture capitalist Alan Patrigof of Alan Patrigof Associates.

Long, Rocky Road

Even in good times, the road to bringing an idea to a reality is a long, hard one, and several panelists mentioned the high rate of divorces and personal problems among those who had started their own firms.

Patrigof outlined qualities needed for successful entrepreneurship – a "strong ego, dogmatic confidence, dogged determination to succeed . . . the ability to work with people and meticulous attention to details."

In starting a company, he urged founders to proceed as far as they can on capital raised through friends, relatives and other personal sources before coming to ask for venture capital.

Chances of obtaining capital improve as the business progresses, Patrigof said, especially in the current financial environment, and seeking capital too early would likely mean retaining very little share in the company.

The founder should assemble a core team, preferably of persons who have known each other, and they should include a mix of skills, such as marketing, business and technical.

Dick Brandon, president of Brandon Applied Systems, speaking as one who has gone the entrepreneurial route, also confirmed this advice.

Brandon's assessment of the importance of members of a management team was business management 40%, marketing 40% and technical talent 20%.

Patrigof said that he now attaches even more significance to marketing talent.

Also, it is a good idea to acquaint a venture capitalist with the firm while in its early stages, and get him to "keep a file on your company. You might even wind up having the capitalist ask if he can help you," Patrigof said.

'Be Conservative'

When one decides to search for venture capital money, he should prepare the proposal in the form desired. "Don't innovate," Patrigof said.

Outline specifically what the money will be used for, and detail adequate provision for contingencies, and include possible negative factors. Be as complete as possible, he urged.

However, don't include specific financial plans, as the terms will change very shortly, and this would only make the plan look outdated, he added.

In addition, the entrepreneur should not get "hung up over percentage of control, as control ends up in the hands of the entrepreneur if he's any good," Patrigof mentioned.

Brandon outlined a few more basic principles, such as the necessity of appearing articulate, presentable and calm when searching for capital. "Whatever you do, don't panic," he said.

A thorough resume on the principals in the business and marketing areas is necessary, and the material should not be devoted to technological descriptions.

The capitalist can generally find out about technical achievements of individuals easier than business skills or marketing talent, he said.

Have a reasonable business plan – cut it in half and it will still be optimistic, he noted.

Word Processing + Communications + Data Entry = Multi-Function Success

By a CW Staff Writer

NEW YORK – In the future the world of data entry will be marked by a combination with the world of word processing and communications, a speaker predicted at an NCC session on "Views of the Future."

"The data entry field is rapidly moving to combinations of CRTs, cassettes and printers for source data automation," according to George Bernstein of the Naval Supply Systems Command.

At the same time that the combination comes about between word processing and data entry, there will also be an increased emphasis on communications for the system, he said.

He said that presently much of the equipment for word processing and data entry is basically similar and growing more so every year, but that no firm is yet marketing combination systems to the end user.

"It is obvious that if one piece of equipment can perform three separate functions in an office – and it is not required full time for any one of these functions, then the costs for all three functions can be reduced by sharing the same piece of equipment," Bernstein noted.

"It is reasonable to predict," he added, "that the companies which make keyboard equipment will start to realize that equipment can and should have multiple functions."

In addition, he said users might press for this type of movement since it is obvious they will be able to save money by using the same piece of equipment for many functions and also by volume purchasing.

But while the merger of the three areas must come, Bernstein indicated that over the shorter period there will be changes in the key data entry.

For example, he predicted the buffered keypunches would replace many of the more traditional 80-column card punches in smaller keypunch installations.

Panelists Battle Over Protection Of Software

By Michael Weinstein

Of the CW Staff

Why is the question of software protection under the law so tough to resolve? Why is the present era so unfavorable for any resolution? How, if ever, will this problem be resolved? And considering the present state of limbo regarding software patentability, what should users do?

These were some basic questions asked at an NCC session on "Computing and the Law."

Representing those who felt patentability was a good idea, Philip H. Dorn, a private consultant, stated, "Everyone who develops programs has the right to protection."

In Public Interest

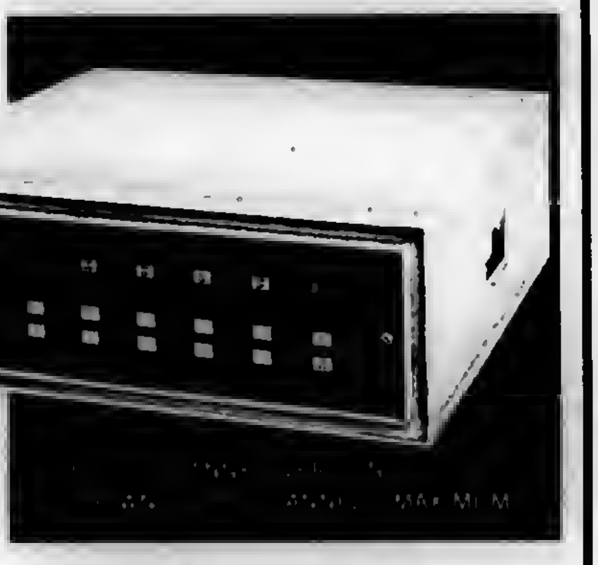
Amplifying this basic right, Robert Jacobs, a lawyer, felt software patents were in the public interest. To demonstrate this mutual benefit Jacobs built a hypothetical case where a software house spends $50,000 to develop a package and $25,000 to market it.

If it can sell the package to 150 users who each pay $1,000, then all benefit: the developer makes a profit and the users get a package for a portion of its development costs.

Jacobs feared that if there was no protection the initial developer would not spend $50,000 if his work would become public.

Others on the panel disagreed with Jacobs.

Dr. Michael Duggan, Professor at the University of Texas, asked, "Who are the patent proponents trying to protect?" Ideally he felt it was better for society if all ideas were open to all persons.



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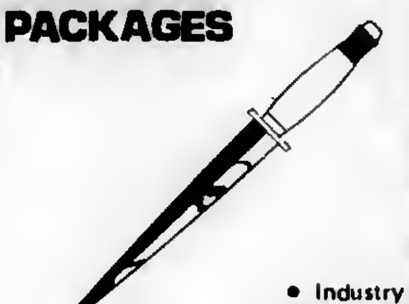

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Basic/Four Growing Slowly

MAI Shows Improvement, Cuts Losses

NEW YORK – Management Assistance, Inc. is continuing to cut its losses, with second quarter and six-month results showing improvement.

In the second quarter the firm lost $523,000, including special credits of $433,000, compared with a year-ago loss of $1.3 million including a special credit of $374,000.

Revenues showed a 19% increase, rising to $15.2 million from $12.8 million for the same 1972 quarter.

In the half-year ended March 31, the loss totaled $281,000, including special credits of $871,000, compared with a loss of $1.8 million and a credit of $785,000.

Revenues also rose to almost $31 million compared with $25.2 million in the year-ago period.

President Raymond P. Kurshan reiterated that slower than anticipated growth in revenues from sales of its Basic/Four system and delays in collection have continued to adversely affect the company's profit and cash positions.

During the six months, about 50% of the firm's revenues were derived from the marketing of Basic/Four and maintenance service furnished by Sorbus Inc., he said.

About a year ago, the two units contributed about 19% of total revenues.

MAI and the Continental Bank agreed to a deferral of one monthly payment due April 10 and have under consideration a rescheduling of other remaining payments in fiscal 1973, Kurshan said.

Sales by Genesis One Computer Corp., its domestic marketing subsidiary, have reduced the domestic residual value account on MAI's balance sheet to $538,487 compared with $3.2 million on Sept. 30, Kurshan noted.

He said he expects the account will be balanced in the third quarter. After that, MAI will be able to include domestic sales and related marketing and reconditioning expenses in its consolidated statement of operations.

REI First-Half Loss Includes Charge For Corporation S, Inventory Reserve

DALLAS – Recognition Equipment Inc.'s (REI) first quarter earnings were more than absorbed by a poor second quarter, which, with a charge for the loss of Corporation S and other items, resulted in a $458,000 loss in the six months as compared with restated earnings of $196,000 in the same 1972 period.

In the second quarter ending April 30, REI revenues rose to $10.5 million from $9.9 million, but the loss totaled $938,000 or 19 cents a share compared with restated earnings of $99,000 or 2 cents a share in the comparable year-ago quarter.

In preparation for the proposed merger with Corporation S, REI allocated $195,000 of Corporation S loss in the 1973 quarter, and restated a loss of $259,000 in the 1972 period.

In addition to the quarterly Corporation S loss, there was $638,000 in extraordinary items, including $450,000 for the establishment of an inventory reserve.

For the half, revenues declined slightly to $18 million from $18.6 million, while the firm's loss was $458,000 or 9 cents a share compared with restated earnings of $196,000 or 4 cents a share in the same 1972 period.

Special credits of $498,000 almost offset the $506,000 charge for the Corporation S loss in the half. The special credits resulted from a tax credit and gain on the sale of Docutel Corp. securities in the first quarter, less a $519,000 charge for establishment of reserve with respect to investment in Datacraft Corp. in 1973.

A $2.2 million gain from the sale of Docutel securities will be recorded in the third quarter, the firm said.

As of April 30, the backlog excluding R&D contracts was up to $24 million from $13.2 million, but shipments during the first half declined to $4.9 million, down from $8.8 million a year earlier.

CMC Shows First Period Profit

SANTA MONICA, Calif. – Computer Machinery Corp. continued its profitability started in the fourth quarter of 1972, with earnings of $386,416 for the first quarter ended March 31.

Including a $276,000 special credit, the $386,416 or 8 cents a share compared with a restated loss of $1.5 million or 31 cents a share in the same period last year.

Revenues soared to $10.7 million from $3.2 million in the comparable 1972 period. Of the total, sales accounted for $6.4 million, rental and service income $3.5 million and deferred revenues realized $772,250.

The company restated 1972 results to reflect adoption of a lower marketing deferral rate by which marketing costs are deferred equal to 2% of equipment's list price at the time an order is accepted and an additional 2% when the equipment is installed.

Previously, about 5% of the list price was deferred at the time an order was accepted.

The proposed acquisition of Cipher Data Products, Inc., a tape drive manufacturer, is expected to allow CMC to produce its products more economically, as "each CMC data entry system includes at least one tape transport as a major component," President Thomas L. Ringer said.

Informatics Reports Record Year

CANOGA PARK, Calif. – Informatics concluded the year ended March 31 with record earnings and a rise in revenues.

Earnings for the year totaled $650,000 or 43 cents a share compared with $424,000 or 28 cents in the year before, when a charge of $120,000 was made for discontinued operations.

Revenues rose to $18.8 million from $17.5 million in the 1972 period.

A "very strong" fourth quarter helped conclude the "best year in our history," according to President Walter F. Bauer.

The Mark IV file management system showed a 35% increase in revenues during the year, and was a major contributor to company revenues and profits, he said.

Mark IV and related products, together with the company's communications systems products, accounted for 42% of revenue during the year, up from 37% in 1972, he said.

Losses on a large fixed-price contract inhibited further profit gains, Bauer said, but he does not expect the contract to have any adverse effect on earnings during the next fiscal year.

The company is "virtually free of debt of any kind," Bauer said, adding that "sizable investments were made in new product development during the year."

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A	APPLIED DATA RES.	2- 4	2	- 1/4	-11.1
O	APPLIED LOGIC	1- 3	1 1/2	+ 1/8	+9.0
N	AUTOMATIC DATA PROC	52- 94	57 3/4	+1 3/4	+3.1
O	BRANDON APPLIED SYST	1- 1	5/8	0	0.0
O	COMPUTER DIMENSIONS	2- 5	3 1/4	0	0.0
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	1- 5	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	2 3/4	+ 1/8	+4.7
O	COMPUTER TASK GROUP	1- 2	1 3/4	+ 1/4	+16.6
O	COMPUTER TECHNOLOGY	1- 3	1	0	0.0
O	COMPUTER USAGE	4- 9	5 1/8	+ 1/2	+10.8
O	COMRESS	1- 2	1/4	+ 1/8	+100.0
O	COMSHARE	4- 9	4 3/4	0	0.0
N	CORDURA CORP	6- 15	5 3/4	- 1/8	-2.1
O	DATATAB	2- 4	1 3/4	0	0.0
O	EDP RESOURCES	1- 3	1	0	0.0
A	ELECT COMP PROG	1- 2	1 1/2	+ 3/8	+33.3
N	ELECTRONIC DATA SYS.	35- 56	35 7/8	-1 7/8	-4.9
O	INFORMATICS	2- 6	2 7/8	- 1/8	-4.1
O	I.O.A. DATA CORP	1- 1	5/8	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 1/2	- 1/8	-1.8
O	LOGICON	4- 7	3 7/8	- 1/8	-3.1
A	MANAGEMENT DATA	2- 5	1 3/4	0	0.0
U	NATIONAL CSS INC	8- 41	17 3/4	- 1/4	-1.3
O	NATIONAL INFO SRVCS	1- 2	1	0	0.0
P	ON LINE SYSTEMS INC	13- 17	12 3/4	- 3/4	-5.5
N	PLANNING RESEARCH	3- 7	2 3/4	+ 1/8	+4.7
O	PROGRAMMING METHODS	22- 24	22 1/4	- 1/2	-2.1
O	PROGRAMMING & SYS	1- 1	7/8	0	0.0
O	RAPIDATA INC	6- 24	6 1/2	+1	+18.1
O	SCIENTIFIC COMPUTERS	1- 2	1	0	0.0
O	SIMPLICITY COMPUTER	2- 4	3	+ 1/4	+9.0
O	TMS COMPUTER CENTERS	3- 4	2 3/4	0	0.0
O	TCC INC	1- 1	3/8	0	0.0
O	TYMSHARE INC	6- 12	6 5/8	- 3/8	-5.3
O	UNITED DATA CENTER	5- 6	4	0	0.0
N	UNIVERSITY COMPUTING	5- 11	6	+ 7/8	+17.0
A	URS SYSTEMS	4- 8	4 1/4	+ 1/4	+6.2

PERIPHERALS & SUBSYSTEMS

EXCH		1973 RANGE (1)	CLOSE JUN 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	12- 34	12 1/8	-1 3/8	-10.1
O	ADVANCED MEMORY SYS	5- 23	6 1/4	+ 1/4	+4.1
N	AMPEX CORP	4- 7	5 1/8	+1	+24.2
O	ANDERSON JACOBSON	3- 4	3 1/2	+ 1/4	+7.6
O	BEEHIVE MEDICAL ELEC	6- 10	6 3/4	- 1/4	-3.5
A	BOLT,BERANEK & NEW	6- 12	6	- 5/8	-9.4
N	BUNKER-RAMO	6- 18	9 3/4	- 1/4	-2.5
A	CALCOMP	5- 13	7 3/8	+ 1/8	+1.7
O	CAMBRIDGE MEMORIES	10- 15	9 1/2	- 1/4	-2.5
O	CENTRONICS DATA COMP	13- 28	16 1/4	-2 1/2	-13.3
U	CODEX CORP	9- 19	10	- 1/2	-4.7
O	COGNITRONICS	1- 3	1 1/2	+ 1/8	+9.0
O	COMPUTER COMMUN.	1- 4	1 1/8	- 1/4	-18.1
A	COMPUTER EQUIPMENT	2- 3	2 1/4	0	0.0
O	COMPUTER MACHINERY	6- 13	6 1/2	- 1/4	-3.7
U	COMPUTER TRANSCEIVER	2- 6	1 3/4	- 3/8	-17.6
N	CONRAC CORP	15- 32	15 3/4	- 5/8	-3.8
A	DATA PRODUCTS CORP	2- 4	3	+ 1/8	+4.3
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 5/8	0	0.0
O	DI/AN CONTROLS	2- 4	2 1/8	0	0.0
N	ELECTRONIC M & M	3- 6	3	- 1/8	-4.0
O	FABRI-TEK	3- 5	2 3/4	- 1/8	-4.3
O	GENERAL COMPUTER SYS	6- 9	6	- 1/4	-4.0
N	GENERAL ELECTRIC	56- 76	60 3/4	+1 1/4	+2.1
N	HAZELTINE CORP	5- 9	5 1/4	- 7/8	-14.2
O	INFOREX INC	9- 23	9 1/4	+ 1/2	+5.7
O	INFORMATION DISPLAYS	1- 2	5/8	- 1/8	-16.6
U	INFORMATION INTL INC	10- 15	10	- 1/4	-2.4
A	LUNDY ELECTRONICS	4- 9	4 1/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
A	MILGO ELECTRONICS	15- 28	15 1/2	+ 1/4	+1.6
N	MOHAWK DATA SCI	4- 13	4 7/8	0	0.0
O	ODEC COMPUTER SYST.	2- 6	2 1/4	0	0.0
O	OPTICAL SCANNING	2- 7	3	0	0.0
O	PERTEC CORP	5- 8	5 1/2	- 1/8	-2.2
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	4- 9	3 5/8	- 1/4	-6.4
O	PRECISION INST.	2- 6	2 1/2	0	0.0
O	RECOGNITION EQUIP	4- 8	4 1/2	+ 1/2	+12.5
N	SANDERS ASSOCIATES	7- 18	7 5/8	- 3/8	-4.6
O	SCAN DATA	2- 6	1 5/8	- 1/8	-7.1
O	STORAGE TECHNOLOGY	12- 34	14	+1 3/4	+14.2
O	SYCOR INC	9- 14	11 1/2	- 1/2	-4.1
O	TALLY CORP.	2- 14	3 3/4	+ 1/8	+3.4
N	TEKTRONIX INC	30- 53	31	- 1/2	-1.5
N	TELEX	3- 6	3	0	0.0
O	WILTEK INC	10- 18	10 1/2	+ 1/2	+5.0

SUPPLIES & ACCESSORIES

EXCH		1973 RANGE (1)	CLOSE JUN 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	6 1/4	- 1/4	-3.8
A	BARRY WRIGHT	6- 13	7 1/8	+ 3/8	+5.5
A	DATA DOCUMENTS	17- 22	17 1/8	-1 1/4	-6.8
O	DUPLEX PRODUCTS INC	7- 10	7 3/4	+ 1/4	+3.3
N	ENNIS BUS. FORMS	5- 8	5 1/2	+ 1/8	+2.3
O	GRAHAM MAGNETICS	10- 20	10 1/4	0	0.0
O	GRAPHIC CONTROLS	9- 12	8 7/8	+ 1/8	+1.4
N	3M COMPANY	78- 89	84 1/8	+1 3/8	+1.6
O	MOORE CORP LTD	53- 60	54 1/2	+ 1/4	+0.4
N	NASHUA CORP	42- 58	46 1/4	-1 1/4	-2.6
O	REYNOLDS & REYNOLD	40- 51	41 1/8	-2 7/8	-6.5
U	STANDARD REGISTER	14- 20	14 3/4	- 3/4	-4.8
O	TAB PRODUCTS CO	10- 23	10 1/2	-1	-8.6
N	UARCO	17- 23	17 5/8	- 1/2	-2.7
A	WABASH MAGNETICS	5- 7	5 1/8	- 3/8	-6.8
N	WALLACE BUS FORMS	18- 26	18	- 7/8	-4.6

COMPUTER SYSTEMS

EXCH		1973 RANGE (1)	CLOSE JUN 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	211-245	224 1/8	+2 3/4	+1.2
N	COLLINS RADIO	18- 26	18	-1 1/4	-6.4
N	CONTROL DATA CORP	35- 62	36 5/8	+ 5/8	+1.7
O	DATA GENERAL CORP	28-131	31 1/4	+2 1/2	+8.6
O	DIGITAL COMP CONTROL	2- 6	2 1/4	- 1/8	-5.2
N	DIGITAL EQUIPMENT	73-105	83 7/8	- 1/4	-0.2
N	ELECTRONIC ASSOC.	4- 9	4 5/8	- 1/2	-9.7
A	ELECTRONIC ENGINEER.	6- 11	7 1/8	+ 7/8	+14.0
N	FOXBORO	23- 32	27 1/8	+3 1/8	+13.0
O	GENERAL AUTOMATION	26- 55	28 1/2	- 3/4	-2.5
O	GRI COMPUTER CORP	1- 3	1	0	0.0
N	HEWLETT-PACKARD CO	74- 95	82 1/8	+ 7/8	+1.0
N	HONEYWELL INC	99-139	101 3/4	-1 1/4	-1.2
N	IBM	310-457	322	+7 1/4	+2.3
O	INTERDATA INC	7- 13	8 3/4	+ 1/2	+6.0
N	MEMOREX	2- 19	4 1/8	+ 1/8	+3.1
O	MICRODATA CORP	3- 10	2 3/4	- 3/4	-21.4
N	NCR	27- 35	34 1/2	+1 1/8	+3.3
N	RAYTHEON CO	25- 34	25 3/4	- 1/2	-1.9
N	SPERRY RAND	36- 50	39 1/4	+ 3/8	+0.9
A	SYSTEMS ENG. LABS	3- 8	2 7/8	- 1/8	-4.1
N	VARIAN ASSOCIATES	10- 20	12	0	0.0
N	WANG LABS.	13- 34	14 1/4	- 7/8	-5.7
N	XEROX CORP	141-169	153	+5 3/8	+3.6

LEASING COMPANIES

EXCH		1973 RANGE (1)	CLOSE JUN 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	1- 5	1 1/4	- 1/8	-9.0
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	6- 17	6 1/8	-1 3/8	-18.3
O	COMMERCE GROUP CORP	3- 4	3 1/2	- 5/8	-15.1
O	COMPUTER EXCHANGE	1- 1	5/8	+ 1/8	+25.0
A	COMPUTER INVSTRS GRP	2- 8	2 5/8	- 3/8	-12.5
O	COMP. INSTALLATIONS	1- 2	1 1/8	0	0.0
N	DPF INC	5- 9	5 7/8	+ 1/4	+4.4
N	DATRONIC RENTAL	2- 3	2 1/8	- 1/8	-5.5
A	DCL INC	2- 3	1 1/2	0	0.0
A	DEARBORN-STORM	14- 26	14 1/2	- 1/2	-3.3
A	DPA, INC.	5- 8	5	- 1/4	-4.7
A	GRANITE MGT	2- 6	2 3/4	+ 1/8	+4.7
A	GREYHOUND COMPUTER	3- 6	3 7/8	+ 1/8	+3.3
A	ITEL	4- 12	5	- 1/8	-2.4
N	LEASCO CORP	9- 18	9 1/8	+ 1/8	+1.3
O	LEASPAC CORP	2- 8	1 7/8	+ 1/8	+7.1
U	LECTRO MGT INC	1- 2	1 1/4	0	0.0
A	ROCKWOOD COMPUTER	1- 3	1 1/8	- 1/8	-10.0
O	SYSTEMS CAPITAL	6- 15	6 1/4	0	0.0
N	U.S. LEASING	16- 36	16 3/8	-1 1/8	-6.4

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
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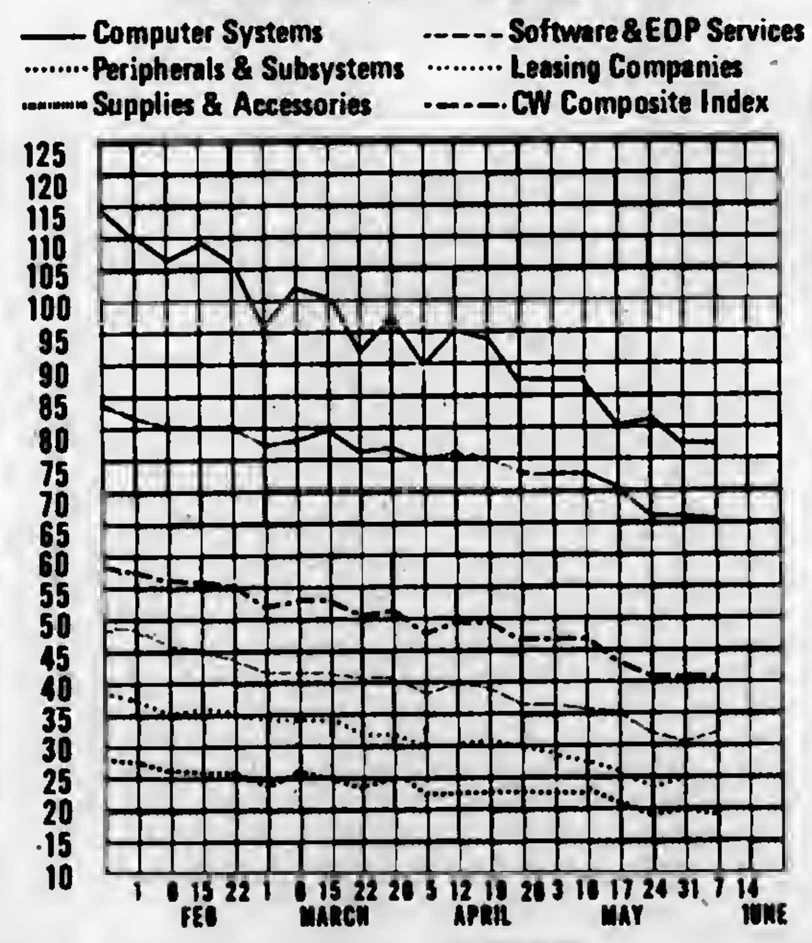
COMPUTER STOCKS TRADING INDEX



Earnings Reports

ENNIS BUSINESS FORMS
Year Ended Feb. 28

	1973	1972
Shr Ernd	$.58	.....
Revenue	41,811,620	$41,380,078
Spec Chg	.....	d1,883,185
Earnings	1,424,123	(2,012,012)
3 Mo Shr	.16	.....
Revenue	10,623,222	10,010,935
Spec Chg	.....	d489,007
Earnings	385,438	(217,838)

d—From writeoff of investments and advances to affiliated companies and losses from sale of surplus equipment and assets of discontinued operations.

WABASH MAGNETICS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.22	$.11
aRevenue	7,873,388	8,859,178
Earnings	385,835	192,488

a—From continuing operations.

COMPUTAX SERVICES
Six Months Ended April 1

	1973	1972
Shr Ernd	$.71	$.94
Revenue	11,500,183	10,272,947
Earnings	899,132	1,183,447

COMPUTER USAGE
Three Months Ended March 31

	1973	1972
Shr Ernd	$.22	$.11
Revenue	887,402	804,339
Tax Cred	89,843	38,500
Earnings	198,585	88,829
6 Mo Shr	.35	.16
Revenue	1,478,451	1,587,951
Tax Cred	139,268	57,500
Earnings	305,413	133,353

WAVETEK
Four Months Ended Jan. 20

	1973	1972
Shr Ernd	$.18	$.17
Revenue	2,272,653	1,715,019
Earnings	155,741	114,183

COMDISCO
Three Months Ended March 31

	1973	1972
Shr Ernd	$.25	$.12
Revenue	8,545,188	3,745,123
Earnings	308,753	127,320
6 Mo Shr	.50	.22
Revenue	11,831,247	6,516,711
Earnings	593,764	225,821

ELECTRONIC TABULATING
Three Months Ended March 31

	1973	1972
Shr Ernd	$.24	$.01
Revenue	557,517	411,882
Spec Item	100,000	.....
Earnings	141,051	8,839

TYMSHARE
Three Months Ended March 31

	1973	a1972
Shr Ernd	$.14	$.04
Revenue	5,383,237	3,585,558
Tax Cred	88,000	53,000
Earnings	421,333	130,177

a-Restated to reflect acquisition in January 1973 on a pooling-of-interests basis.

SANDERS ASSOCIATES
Three Months Ended April 27

	1973	1972
Shr Ernd	$.29	$.13
Revenue	43,914,000	40,538,000
Tax Cred	391,000	150,000
Earnings	1,318,000	572,000
9 Mo Shr	.75	.35
Revenue	125,703,000	106,895,000
Tax Cred	1,008,000	387,000
Earnings	3,431,000	1,591,000

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NEWSPAPER

NEWS IN BRIEF

Summations Due In Telex-IBM Suit

TULSA, Okla. – Final oral arguments in the $1.2 billion Telex antitrust suit against IBM will be heard this Monday (June 18) amid rumors that the judge in the case will hand down his decision at that time.

Lawyers for both sides have handed in their written arguments to Judge Sherman Christensen and have given him over a week to study those documents before the final arguments will be heard in court.

Several sources have indicated that Christensen has had enough time to study both the arguments and the evidence in the case so that he could make his decision when the court meets.

Power Cuts in New York Hit IBM Headquarters, Users

ARMONK, N.Y. – IBM headquarters here was caught with its power down in the wake of a recent heat wave.

"Con Ed couldn't supply enough power for the machines, the air conditioning and the lights," a spokesman said, and the giant reportedly had to close headquarters for a day.

Consolidated Edison had cut power as much as 8% in the New York City area. A spokesman for IBM's Data Processing Division said it received several complaints that computers were out of order after the power cut.

He said most of the complaints came from users in old buildings where power is normally about 1% to 2% below the regulation level.

Vote-Counting at Its Finest

CW West Coast Bureau

LOS ANGELES – A speed record for counting punched card ballots in the city election was reportedly set here when the first unofficial ballot total for the May 29 election was completed by 11:35 p.m.

The time was five minutes ahead of the previous record, according to City Clerk Rex Layton.

Walter G. Peterson Jr., elections supervisor, said the fast time was accomplished by extensive use of five helicopters and numerous automobiles to bring ballots in from outlying voting districts.

On the Inside This Week

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Study Finds IBM 4-Year Lease Lacking Appeal —*Page 25*

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Says Suit Records Destroyed

IBM Blasts U.S. on Papers 'Violation'

By E. Drake Lundell, Jr.
Of the CW Staff

NEW YORK – It may be a case of the pot calling the kettle black, but IBM last week accused the government of destroying documents that IBM said it needs to defend itself against the government's antitrust claims.

Government attorneys countercharged that this move by IBM was solely intended to delay trial of the case.

In a motion filed in the Southern District Court here before Judge David Edelstein, IBM claimed the government had violated pretrial order number one which relates to preservation of documents and that government attorneys had violated special orders that refer to the prosecution's conduct of the case.

In the new IBM move, the firm asked the court to require the government to "account for its destruction of documents in violation of pretrial order number one" and to even account for documents that were destroyed before that court order went into effect "in violation of the government's duties and obligations."

Edelstein withheld a ruling on the IBM request.

Instead he asked the government to state whether any EDP documents were destroyed by the government after the pretrial order forbidding such a move was entered and to report back by June 22.

The IBM motion comes just months after Edelstein found IBM guilty of violating pretrial order number one for its conduct in "procuring" the destruction of the computerized index or data base of documents as part of the IBM/Control Data out-of-court settlement.

At that time, the Justice Department had claimed the data base destruction would seriously hamper its case against IBM.

The pretrial order in effect requires both parties to the case – the government and IBM – to keep all their records relating to data processsing in their possession.

All government agencies that use computers are required to keep all of the records on their applications and use of the system for possible use in IBM's defense of the case.

However, IBM claimed that several government employees involved in data processing have never heard of the order "or any special obligation to preserve the government's files relating to EDP."

At the same time, the IBM attorneys charged that "at the very first substantive deposition taken of the government this past week it was revealed that EDP files were 'purged' in September 1972, six months after the entry of this court's order."

In addition, IBM said its request for files from some government employees had produced the response that the files had been destroyed and therefore were unavailable.

Justice Department lawyers retorted

(Continued on Page 4)

Is DPMA Ready to Accept Invitation to Join Afips?

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Computer users may get their first real representation in the American Federation of Information Processing Societies (Afips) if the Data Processing Management Association (DPMA) accepts an Afips offer of full membership.

The invitation to DPMA was tendered by Afips last week after the Afips board of directors "endorsed" the idea of DPMA as a full member and suggested the Afips Executive Committee meet with the DPMA Executive Council to ease the entry.

And while there may be some opposition to the idea within the ranks of DPMA, there is a better than even chance that DPMA will endorse the idea, according to outgoing international DPMA president Herbert B. Safford.

Major Problem?

The only major obstacle to full implementation of the plan might lie in whether DPMA should also become a member of the National Computer Conference Board and share in the revenues from the National Computer Conferences, some DPMA officials suggested last week.

At the same time, officials of both

(Continued on Page 2)

IBM Enhances Virtual Systems To Allow 3340, 3330 Intermixing

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has expanded the capabilities of its 3340 disk storage subsystems to allow users to intermix the newer storage with 3330-type disk subsystems. In addition, IBM added three other features to the 3340 to provide additional flexibility for 370 virtual users.

Previously supported only with DOS/VS systems, the 3340 will now operate under OS/VS software in intermixed configurations with 3330s. Both of the disk subsystems can be attached to either the 3830-2 storage control or the integrated storage controllers (ISC) and integrated file adapters available with some of the 370 systems.

The intermix capability will be provided through the operating systems at no extra cost but control storage extension will be required. On the 3830-2 the extension that allows intermix configurations will cost $470/mo on the IBM monthly rental (MAC) plan; $395/mo on the Extended Term Plan (ETP); and $432/mo under the Fixed Term Plan (FTP) which covers 12 to 23 months. Purchase price will be $18,800. The extension on the ISC of the 370/145 will cost $300/mo under MAC, or $14,400 purchase.

String Switch Feature

A string switch feature was also introduced which allows a 3340 subsystem to be dynmaically shared under program control between two direct access attachments of either the 3830 or integrated controller type. The string switch will cost $200/mo on MAC, $170 under ETP and $8,000 on purchase. An additional cost of $12/mo or $24/mo may also be required for a two-channel switch on the 3830-2, IBM said.

The 3340 enhancements in several configurations provide 370 users with two additional operating benefits. The string

(Continued on Page 4)

Sex by the Numbers

Special to Computerworld

STOCKHOLM, Sweden – A coding of "1" for male and "2" for female, proposed by the Japanese delegation to a standards conference here, was opposed by the British delegation on the grounds that for computers to "keep up with modern times" a third coding – presumably the character "3" – is needed for people who change their sex.

Other delegations, being mathematically oriented, then suggested that further character codes would be needed to describe bisexuals and those who fall under neither sex. No final decision was reached.

Safford Summons User Groups to Rally Against DP Fraud

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – The time has come for professional associations in the computer industry to speak out on computer-assisted fraud and promote efforts to prevent it.

Profile:

DPMA and

DP Fraud

Herbert B. Safford

That's the conviction of Herbert B. Safford, international president of the Data Processing Management Association (DPMA).

"We have to take a stand. It is our

(Continued on Page 2)

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
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Will DPMA Accept Bid to Join Afips?

(Continued from Page 1)

groups said last week they were sure many of the problems could be worked out between the two groups – which may mean that next week's DPMA conference in Chicago will be the last exposition put on by that group.

George Glaser, the new president of Afips, stressed he was "very much in favor" of the move to invite the DPMA into Afips and he would devote "substantial time and effort" during the next year to see that its membership is realized.

"It is very clear that (many of the Afips projects) would be useful to DPMA members and that they could add substantially to Afips efforts," he added.

In addition, he noted that 'Afips needs DPMA to make its membership" include all elements of the computer community under its banner.

To date, there is no strong user voice in Afips activities, several sources have noted, with the bulk of ita support coming from the Association for Computing Machinery which primarily represents programmer interests and the IEEE which is made up largely of engineers and computer designers, plus a sprinkling of special interest groups that use computer equipment.

DPMA, with almost 30,000 members, is made up largely of managers or management-level people in computer-using organizations – largely in the business area with a smattering in government and other areas.

Therefore, these sources said, its membership in Afips would provide broad-based user interests that have heretofore been somewhat lacking.

On the other side, Safford said that while the group had not yet had time to discuss the proposal, it would give it "very serious consideration."

About six years ago, he noted, Afips had offered an associate membership to DPMA, which was rejected at that time and the idea has been a "dead issue" ever since then.

The new offer was the "most encouraging" since then from Afips, Safford felt, and rated the chances of DPMA acceptance as better than even odds, although he said there would be a more accurate prediction on how the membership views the possible linkup after the international conference next week.

Jim Sutton, the only announced candidate for the DPMA presidency, said the offer was "enticing" and noted that joining Afips is the "route we will eventually go."

However, he brought up the problems of the conferences that are run by both organizations and noted the conflict, with exhibitors not wanting to be in each show since they occur at similar times.

He said the major issue now would concern conference scheduling and the percentage of revenue that DPMA could get from the National Computer Conferences if it waa willing to give up its yearly show for the one big show a year.

But at the same time Sutton said he was enthusiastic about what joining Afips could do for the industry and computer users.

Groups Urged to Fight DP Fraud

(Continued from Page 1)

obligation. If we don't, no one else will and the public will suffer," Safford said in a recent interview.

Some way should be found to develop an enforceable code of ethics to deter fraud through use of computers, he added.

"And it should be made very clear that even without a code of ethics any member found responsible for fraud should be censured by associations and throughout the industry.

"I think we can take a lot stronger stand than we are at the present time."

Safford favors licensing for data processing personnel "but it has to be well thought out and well-organized."

Safford, who said he was ashamed of the DPMA code of ethics because it doesn't have any teeth in it, thinks enforcement is essential for any code of ethics.

"It has to be enforceable either through censure by an association or by legal prosecution," he said, adding he thinks the enforcement will have to be by government agencies.

In urging a strong stand against fraud by computer, Safford said rules should be set up:

- To protect individual computer proprietary programs.
- To safeguard computer programs.
- To assure lockout access to computer programs by unauthorized personnel.

Computer user associations, he said, can aid EDP auditors by advising them how to protect computer system design, computer programs, program security and installation security, all aimed toward preventing fraudulent DP use.

Safford sees a great need for associations to enhance the image of their membership in the community, industry and government.

"I don't think we have done a good job in trying to raise our professional image. We are just sitting back and talking to ourselves. We don't talk to the community."

To strengthen ties with user companies, he suggested guidelines that would enable the companies to better assess performance standarda of computer personnel and for contract performance.

Similarly, he urged that associations develop guidelines for top management review of data processing installations.

They can advise management of what to look for in installations, what returns on investment to look for and on how to establish priority for applications, he said.

Is Interface Standard in Sight?

Special to Computerworld

HUDSON, Mass. – The chances of users being able to extend use of plug-to-plug peripherals and used computer systems have become much brighter, according to the June *Newsletter of the Society of Certified Data Processors.*

The improved position is the result of the defeat of the U.S. Ansi X3 Committee by England, Germany, Japan and Sweden, and the adoption by the International Standards Organization (ISO) of a modified Japanese proposal for worldwide standardizing of channel interfaces. The functional requirements of the Japanese proposal are now complete; electrical and engineering characteristics are being added.

Technically, the Japancse proposal is closely related to the channel interfaces of the IBM System 360. With modifications adopted during a recent ISO conference, it is believed to satisfy a 28-point requirements statement that was drafted by the U.S. delegation before the 1971 decision to stop U.S. work on the interface project.

The major impact of this proposal is expected to be in the used-computer market and in the plug-to-plug independent peripheral area.

U.S. Scramble Starts

Meanwhile, the Ansi X3 Committee, which is the official U.S. representative to ISO and had little to do with the Japanese project because of its opposition to the international standard, now must scramble to catch up with events. The committee is now reviewing the Japanese document in order to offer any comments or changes it may feel necessary.

However, the preparation of the American position will probably be delayed since no technical work in this area has been performed in the Ansi X3 Committee since 1971.

In addition, the date for the submission of comments on thc international standard is Oct. 31, and as the X3 Committee does not meet until then it may well be too late for any effective representation of the views of the U.S. to take place.

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Support Seen Necessary To Establish DP Controls

Plight of Non-Identity Found Crucial to Role

Auditors Get Word—Gain Management's Confidence

By Marvin Smalheiser
CW West Coast Bureau

SANTA MONICA, Calif. – If the EDP auditor is going to kayo computer-assisted fraud, then he is going to have to work a little more on his clout.

That was the recurring theme here recently at the first national EDP Auditors' Conference as more than 225 auditors wrestled with the auditor's image and the threat of computer fraud.

The need for standards for EDP auditors was another basic theme at the conference which was sponsored by the fledgling EDP Auditors Association, organized last fall.

The two-day conference featured speakers from across the country who emphasized that auditors must win the support of management to secure the "clout" to establish data processing controls.

Auditors, the speakers stressed, have a major difficulty in establishing their identity and finding how to influence management to set up these controls.

Russ Quinn, a general auditor with Rockwell International, El Segundo, Calif., expanded on the auditor's plight of non-identity.

"We're not sure what it takes to qualify as an EDP auditor," the keynote speaker emphasized. "We're not sure how we should apply our EDP audit resources; whether we should concentrate on systems controls, operations management, selection of equipment, project management or all of these."

But at the same time, he made clear it is the responsibility of the EDP auditor to "assure management it is obtaining a maximum return on its investment in EDP" and to give management visibility into its investment.

William H. Murray of IBM urged the auditors to independently assess the risk of fraud.

Murray, senior program administrator for data security at IBM's Data Processing Division, said the auditor must be customer-oriented and recommendation-oriented.

The goal should be to recommend action or provide visibility of the level of risk, he said.

The problem of standards was detailed by Robert Beals of Arthur Andersen & Co.

He said standards must be established for design and installation of systems, for training of auditors and to gain acceptance of management.

Beals was critical of the lack of software security built into hardware by manufacturers and the lack of audit software packages from manufacturers.

He criticized the failure of manufacturers to include controls in software.

T.B. Barron, senior EDP auditor for Great Western Financial Corp., called for basic standards for auditing and guidelines for staffing.

He warned the auditors against getting "too technically involved."

"If a guy is going to get to you he is going to get to you," he said, and counseled the auditors to do what is reasonable without making controls needlessly complicated.

Continuing the conference's central theme, Joseph J. Wasserman, who heads a computer audit software firm, called EDP auditors "the world's worst salesmen" and told them they will have to sell their function to management.

Unless they can sell themselves to management and get resources to work with, then auditors will continue to be severely inhibited in their efforts to monitor computer operations, he said.

Daniel Cashier of Coopers & Lybrand, Los Angeles, urged auditors to take a management-oriented approach relating their efforts to business objectives.

In EDP audits, he went on, the auditors should be assigned three important roles: performance of traditional audits, performance of operational audits and educational assistance to management.

"It is imperative," he said, "that systems be designed to include effective internal controls and to achieve optimum utilization of EDP resources and data."

Games Only First Attraction

PHILADELPHIA, Pa. – Computer games such as space war, blackjack and checkers help attract some students to the computer terminals at the Univeristy of Pennsylvania's Wharton School, but they soon find more rewarding pastimes there, according to Mark Gelberg, director of computational services.

Programs have been written to accompany such courses in Wharton's curriculum as econometrics and operations management.

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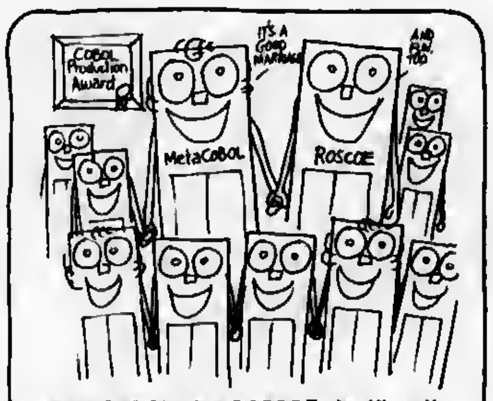

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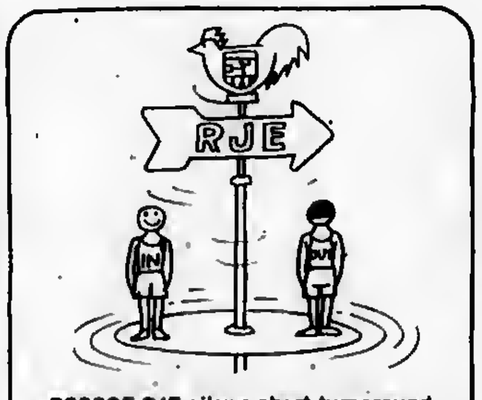

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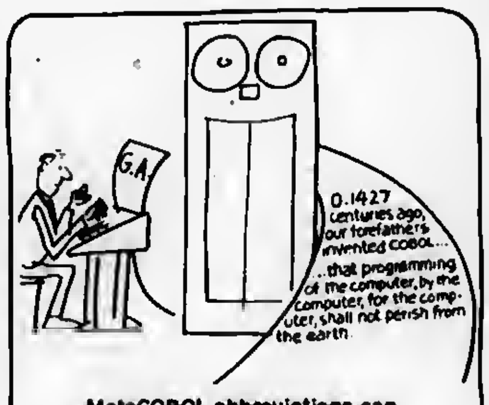
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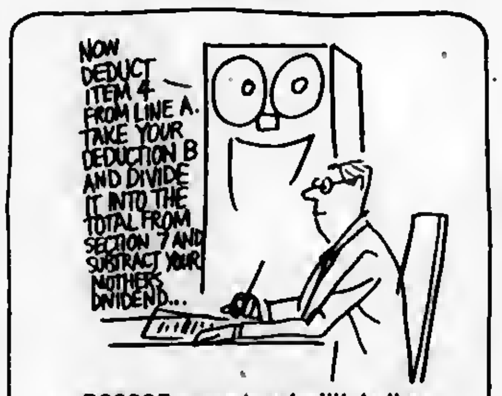
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Voting Lists Challenged in Court

By Patrick Ward
Of the CW Staff

NEW YORK – This city's most recent election using computer-prepared voting lists is under challenge in the State Supreme Court.

A voting rights group here has charged that use of "hastily prepared" printout lists in a recent school board election denied some citizens their right to vote.

State law requires use of buff-colored permanent registration cards for all elections. The buff cards carry the voters' signatures.

In the case of the school board election, though, the Board of Elections wanted to use computer printouts for voter listing because the buff cards would be needed again by the June 4 primary. Because of the time limit, the legislature decided to allow use of the printouts.

The Committee for Democratic Election Laws objected to the move, however. Their attorneys argued that state law specifically requires the buff cards so that voters' signatures can be checked at the polls.

The committee also had technical objections to using the printouts. "We felt there would be a lot of errors in that there were 3-1/2 million voters involved," said Judy Baumann, the committee's national secretary and a former computer programmer herself. "We don't have any objection to computer lists, per se," she said, but the committee thought the "lead-up process would not be sufficient."

After the election, Baumann said, "We had complaints from all over the city. We had people who had been registered voters for years who were turned away at the polls." People had been warned to bring identification to the polls, she added, but many long-time voters had not done so.

Neither the voting rights committee nor the Board of Elections could give a figure on the number of persons turned away at the polls.

IBM Hits Justice 'Violation'

(Continued from Page 1)

that IBM had taken some statements out of context in making the charges and had grossly misrepresented other government statements.

Furthermore, the Justice lawyers charged that the IBM position if accepted would allow IBM to go on a massive fishing expedition through government files that might take years.

In addition, the department lawyers noted they had complied fully with the IBM document requests and stated the new IBM motion should be denied with prejudice.

"For the second time in this lawsuit, defendant has devoted a mass of papers, with the usual errors of fact, unsupported assertions and self-serving statements, albeit sworn to, to the myth that the government came under some all-inclusive obligation to preserve documents" prior to a court order to that effect, the government attorneys said.

"However, by the very act of making these claims, submitting these affidavits and asking for an audience with the court on the subject, IBM's counsel have again served IBM's purpose to delay preparation and consideration of this case on the merits," the government said.

IBM said the government has "special obligations" to preserve documents which may be relevant to the defense of an action or which the other side of the case has asked for.

In addition, IBM said the government as prosecutor in this case had a special responsibility not to destroy or withhold information that might be useful to the defense, citing the recent Daniel Ellsberg case as one of the precedents for this claim.

IBM Enhances VS To Allow Disk Mix

(Continued from Page 1)

switch capability allow users to dynamically switch a disk subsystem between two control units so that two mainframes could share the same data base.

The intermix feature will be important to users who already have a 3330 capability but want to add 3340 disks. For installations with a diverse job mix, the 3340 data modules with a capacity of 35M or 70M byte/spindle offer a more flexible operating environment than the 100M byte/spindle capacity of the 3330.

In addition, the 3340 has a data transfer rate of 885 kbyte/sec compared with the 806 kbyte/sec rate of the 3330. For users with a long-term contractual commitment to the 3330, it will mean the 3340 technology can be added without abandoning the earlier disk subsystem.

An expansion feature doubles the maximum number of drives that can be attached to a controller to 32 drive/3830 or ISC on the 145. With the 158 and 168, up to eight strings or 64 drives of 3340s can be attached.

A remote switch attachment will allow the configuration of a string switch on the control panels of the multiprocessor 158 and 168 systems.

To support these hardware features, IBM said OS/VS1 and OS/VS2 will be extended to support the 3340 disks. OS/VS1 will be available with first 3340 deliveries on the 370/135 through 168 in March 1974. OS/VS2, Release 2 will be available for models 145 to 168 on the same date.

First deliveries of the hardware features are scheduled for June 1974. The 3340 will not be supported on 360 mainframes nor will it be supported on systems which use non-virtual operating systems.

Management Text Geared to Major User

BOSTON – A new book expounding on the decisions executives must make in dealing with DP people has been published by Allyn & Bacon here.

Written by two *Computerworld* staff members, *Computer Use: An Executive's Guide* is a management text for major users of DP services, or "corporate officers who must have the insight to evaluate present and proposed DP departments," according to one of the book's reviewers.

John Alexander, a division manager of the American Management Association, noted the book would also be helpful to corporate executives "not involved in DP directly," but involved in DP decisions.

Written by Edward J. Bride and E. Drake Lundell Jr. after more than two years of researching CW files and personal notes, the book covers various problem areas, including system (and software) selection, contracting, security, financing and personnel. Several appendices of DP applications and sample contracts are also included.

The book is available for $13.95 from Allyn & Bacon at 470 Atlantic Ave.

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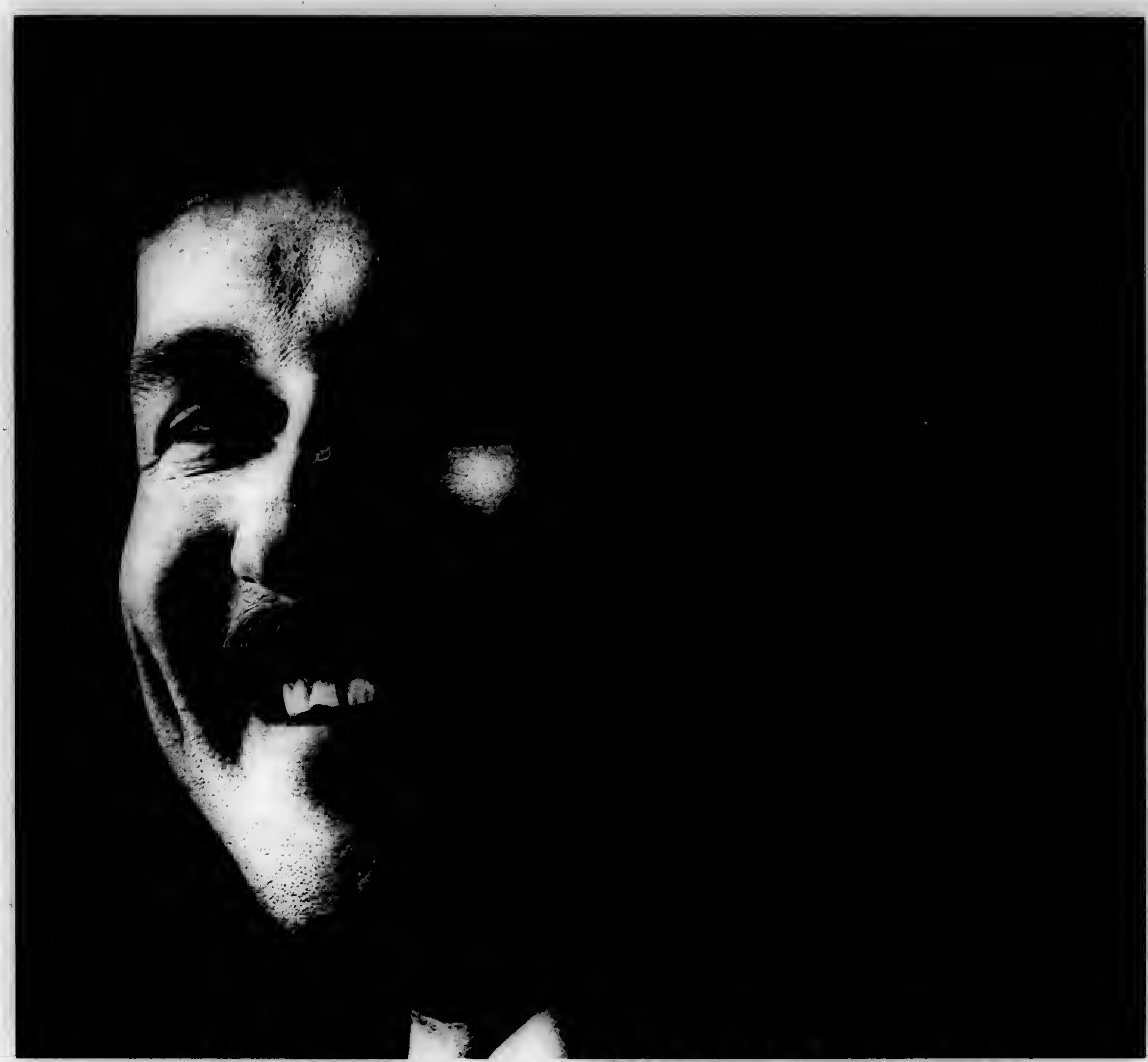

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Antitrust Laws, an Historical Perspective – Part I

Hatred of Monopolies an 'American Political Habit'

By E. Drake Lundell Jr.
Of the CW Staff

Antimonopoly feelings are woven into the very fabric of American life and law with a few threads from English common law and some from particular American experiences.

Since IBM is being sued by the U.S. Government on antitrust grounds, a look at the history of antimonopoly legislation can help the computer community understand the arguments of the case.

Therefore, *Computerworld* is presenting this series on the history of the antitrust laws and an outline of some of the major antitrust cases that have been tried, plus an analysis of how these past cases relate to the present action against IBM.

"Hatred of monopoly is one of the oldest American political habits and like most profound traditions, is consisted of an essentially permanent idea expressed at different times," according to an article by William L. Letwin on "Congress and the Sherman Antitrust Law 1887-1890" in the University of Chicago *Law Review* of 1956.

" 'Monopoly' as the word was used in America, meant at first a special legal privilege granted by the state; later it came more often to mean exclusive control that a few persons achieved by their own efforts; but it always meant some sort of unjustified power, especially one that raised obstacles to equality of opportunity," Letwin noted.

Historical Background

The early American colonists brought the idea that the government should not set up any monopolies with them from England, where in 1624 a statute on monopolies had severely limited the right of the king to grant exclusive privileges, and that statute is reflected in some of the earliest laws of this country.

For example, the colonial Massachusetts Legislature passed a law that "there shall be no monopolies granted or allowed among us," and several other states passed similar measures, even though none were as specific, in the time preceding the Revolution.

An antimonopoly provision was almost embodied in the U.S. Constitution itself at the urging of Thomas Jefferson. Several states, most notably New York, Massachusetts, Rhode Island and New Hampshire, advocated placing a prohibition of monopolies in the Bill of Rights.

But even though no mention of the monopoly question was contained in the final version of the Constitution, "No one argued that the prohibition was omitted because the public favored or was even indifferent to monopolies," according to Letwin.

The antimonopoly feelings later played a large part in defeating the Second Bank of the U.S., which had been condemned as a "monster monopoly" by no less a foe of the bank plan than President Andrew Johnson.

Antimonopoly feeling reached its peak after the Civil War as the country entered the Industrial Age and as larger corporations came to dominate the economic life of the country.

At about the same time, a fear of plutocracy was born, particulary in the sections of the nation still devoted to agriculture.

Fear of Wealth Prevailed

This fear of the rich captains of industry, the plutocrats who achieved their power and influence by wealth, replaced the earlier American fear of oligarchy, or government by the few.

The fear was based not so much on the worry that the new plutocrats would actually overthrow the American system of republican democracy, but rather a fear that with their great concentrations of wealth they would be able to subvert representative government and make it do their bidding.

Led by the grangers and the other patrons of agriculture, the small farmers began to lead the fight against monopolies, particularly the railroads, which they depended on to move their goods.

At the Illinois Farmers Convention of 1873, according to Letwin, the first resolution passed by this group declared all "monopolies, not regulated and controlled by law, have proved detrimental to the public prosperity, corrupt in their management, and dangerous to republican institutions."

The second resolution struck at the railroads, which were seen by the farmers as the prime example of a monopoly. It declared "the railways of the world, except in those countries where they have been held under the strict regulation and supervision of the government, have proved themselves arbitrary, extortionate and as opposed to free institutions and free commerce between states as were the feudal barons of the Middle Ages."

> *"'Monopoly' . . . always meant some sort of unjustified power, especially one that raised obstacles to equality of opportunity."*

Trusts Appear

Antimonopoly feeling became even more concentrated in the 1880s, when "trusts" or combination of firms in one industry began to appear.

Under the trust device, one firm would gain control of all others or most others in an industry and would divide the market between these firms, usually on a geographical basis.

Certainly the most famous of these was the Standard Oil trust, but trusts sprang up in almost all areas of American business life, including the paper bag trust, the envelope trust, the salt trust, the paving-pitch trust, the school slate trust, the sugar trust and even the whiskey trust.

As trust building took hold of business life in the late 1880s, the public clamor against them grew, with people claiming they subverted the government through bribery and victimized the consumer by driving out competition and raising prices.

But while there was a great deal of criticism against the trusts, few people could offer solutions for dealing with them and limiting their power. This was left to the politicians who soon got into the act.

Next week: The Sherman Antitrust Act becomes the monopoly law of the land.

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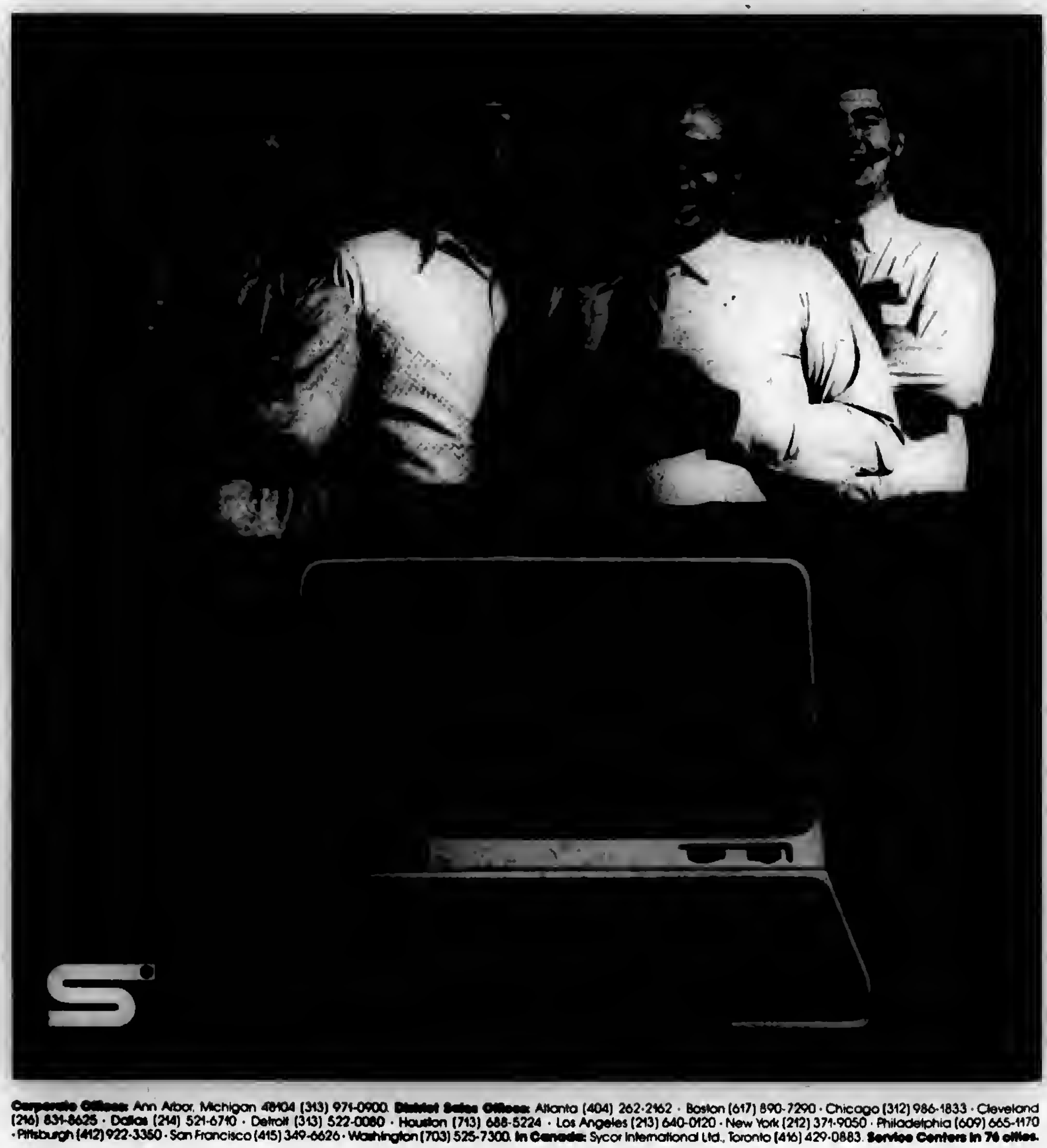

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Management Must Pick Goals, Panel Says

Good Training Program Fills Company, Trainee Needs

By Michael Weinstein

Of the CW Staff

NEW YORK – A good training program takes into account both the needs of the company and the desires of the trainees, according to an NCC session on in-house training – "Methods, Media and Interaction."

But lest anyone mistake the horse for the cart, said Dr. John Connelly, vice-president of manpower planning at Chase Manhattan Bank, "training is a management function.

"It is management who must decide what objectives the training program must fill. These objectives must then be translated in such a way as to benefit both the trainees and the company."

As an illustration of a training program with sound technical goals but questionable benefits for the trainees, Dr. John Hughes, an industrial psychologist at IBM, pointed to some computer schools which, "while they may teach students the mechanics of programming, many times can't find jobs for their graduates.

"In a case like this, while the training program met the goals of the company, it was far short of benefit to the students," he noted.

To bring these two objectives into line, Connelly advised users to analyze the population using the training. "It is important to show these people where their final work product fits into the entire system.

"As a regular practice at Chase, programmers frequently visit other departments. This is to show them how their work is helping others perform their function and make them aware of the problems in other areas," he said.

One way of determining if the training is working, is to develop feed-back procedures such as pretesting and posttesting.

Users should become familar with various media available for training and when such media can be used most effectively, according to Rudy Gartzman, consultant for Intergroup Production.

He stressed that the object of choosing a media was to optimize the time taken to train against the result obtained.

Film is the most vivid media, Gartzman said, as it has color, motion and sound.

The most effective training is that which allows the student to participate, Hughes said.

Another suggestion was to look within the company and find people who were sought out often for answers and opinions and make them instructors.

These people are not always the management personnel, Connelly said, but they are credible and understand the people they are teaching.

Many training systems are designed to get people to accept new methods – not just to teach new techniques – Connelly added.

This means users must consider all objectives honestly before deciding on a training plan. For example, if the object is to get the accounting department to accept on-line entry, then the training should involve showing the department how on-line entry works and where it fits into the operation. It is not necessary for them to learn progrsmming.

Theory, Technology 'Can't Get Together' In Social Sciences

NEW YORK – "Social sciences today are facing the same problem which plagued early business simulation, namely the inability of technologists and theorists to get together," stated William O'Leksy, research fellow at the Industrial College of the Armed Forces, at an NCC session on international relations simulation.

Simulation in the social sciences is not, as yet, widespread. This is due in part to the fact that it is much harder to generate a model around a specific problem, than to adapt a model for general use and plug a problem into it, according to Richard Van Atta, assistant professor at the School of International Services of the American University.

This "laziness" is holding social science simulation back, said George L. Draper, Joint Chiefs of Staff, U.S. Air Force. "Models have to be developed to meet a specific goal," he said. "Unless input is oriented to the user and his problem, the model loses credibility."

The question of credibility, or validity, is a major problem in the opinion of Jeffrey Milstein, professor of political science at Yale. This, he said, is one reason computers have not been integrated into policymaking activities to any large extent.

"The results of a simulation model are valid if considered as a source of alternatives," stated Milstein, "but they cannot be taken as the undisputed correct answers."

Draper attributed the lack of computer use by policymakers' to politics. "A policymaker wants support for his preferred position, not an objective appraisal of the situation. In other words, he wants to know how to get from A to B, but not whether he should actually be going from A to B."

The panelists agreed that computers were not essential to international relations simulation in many cases, that the work could be done manually if somewhat more slowly. "However," O'Leksy said, "using the computer guarantees the results match the input parameters. A computer won't alter parameters while going through calculations, wheress humans tend to do so unwittingly, largely because of idealogical biases."

The main focus of social sciences now, in Draper's opinion, should be an effort to pool existing software technology.

Error Riles Solons

PITTSBURGH, Pa. – A "computer error" concerning a new mass transit system has caused a furor among local politicians here. The Urban Mass Transit Administration has accepted blame for the "error" which showed costs of the Port Authority Skybus program as being $356 million, $128 million higher than had been predicted.

But the human error wss the result of doubling the final Phase C cost of the Early Action Program which combines Skybus construction with two bus-only express lanes and trolley car rehabilitation, an administration spokesman said.

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Executives Wonder...How to Get More From Employees

By Michael Weinstein
Of the CW Staff

NEW YORK – Many line personnel in data processing departments don't understand what they are supposed to accomplish in their jobs, Tad Kenney, manager of Executive Resources, told an NCC session on "Career Development."

"Managers often fail to meet with the programmers and operations personnel to define their jobs and responsibilities," he said.

J. Webber, assistant to the president, The Berton Group, found that "people are generally more interested in the hardware than the people."

Worker Power

"If you visit the floor of the NCC, you see exhibits on how to get more hardware, where to get more software, but no exhibits on how to get more from your employees," he added.

How do you involve personnel in the objectives of the company? Webber asked.

"Build a strong in-house staff, attack and use each talent by prior definition of objectives, and reward on attainment of these objectives," answered Dave Labelle, assistant vice-president of Manufacturers Hanover Trust.

"But not all rewards must be in terms of advancement into management positions," Labelle noted. "Many a good systems analyst has made a poor manager only because he did too good a job and management felt he had to be promoted.

"In our firm, we have built three different career paths – staff, technical and managerial – and at various times during their careers each Manufacturers Hanover employee can direct himself toward whatever goal he feels best for him," he said.

How does the firm determine when a given person has attained a goal for which he should be rewarded? "By testing," according to Gordon Gilchrest, vice-president of Insco System Corp.

Tests are a valuable aid to gauge what each level should know and allow each person to show he has attained the prerequisite knowledge for a certain level, he said.

While other panelists and members from the floor argued against testing, Gilchrest said he could not see a better option.

Testing can also be used to show areas of weakness. This was said to be successful at Western Electric where the tests were used to show how each person could improve rather than set up a ranking system.

For testing of this sort to be successful, Webber said, each person must be convinced that testing will not lead to punitive action.

Punitive does not always mean a direct action, Webber added. "Take, for example, the term 'maintenance group' or 'tape hanger.' Training should exist that allows people to move above a preset plateau," he said.

Less Philosophy

A suggestion for the small user who wants to start a training program but does not know what questions to ask initially was supplied by Gail Buerger, director of DP training at Peat, Marwick, Mitchell & Co.

She suggested users invite representatives from various DP training companies to submit proposals. The advantages of this approach are:

- It forces the user to define his objectives.
- It gives him a basis for evaluating cost if he were to obtain this service from an outside source.
- Most importantly, it shows him the methodology used by these firms to meet training objectives.

The user should realize, she added, that he is under no compulsion to accept any other proposals. The user should further differentiate between training problems and personnel problems. Many problems that first appear to require training solutions could in actuality be solved by better personnel managers.

Damage Responses Predicted

COLUMBIA, Mo. – University of Missouri engineers will use a digital computer to control dynamically an analog computer model they are building to predict how the Navy's Sanguine system for communicating with nuclear submarines will respond to damage.

By studying the model's response to simulated casualties and damage, the researchers aim to predict the behavior of the real Sanguine system in case of attack or equipment failure.

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Who Cares About Security?

NEW YORK – After listening all day to computer industry officials claim users are not interested in data security, two users said "not so."

There were seven hours' worth of data security discussions at the NCC, with an interim report on IBM's five-year, $40 million study as a focal point.

Toward the end of the day, Peter Browne, an official of State Farm Mutual Automobile Insurance Co., said there was only an "element of truth" in the claims that users were not concerned about data security.

He was reacting to a suggestion that IBM's study was started only as a result of a "gut feeling" by T. Vincent Learson.

Richard Mills of First National City Bank chided session chairman C.L. Foster of IBM, suggesting, "Why don't we call a meeting of all computer users not interested in data security, and see how many show up?"

Foster claimed users would only accept security if it were offered without additional charge.

ACM Chiefs Challenged on Bylaw Change

By Michael Weinstein
Of the CW Staff

NEW YORK – "I won't guarantee perfection, but we will get pretty close to Ivory soap," according to Joseph Cunningham, executive director of the Association for Computing Machinery, at the Members Officer Forum.

But if all is happiness at ACM from the executive views, comments from the rank and file represent a divergent outlook.

Issues used to challenge the executive members ranged from the cry of poor financial operation; publications that were alleged to be too esoteric and academic; the dropping of local support programs; and the issue of the executive changing the bylaws as a means to control the local chapters.

The underlying complaint seemed to be that the ACM officers do not care enough about the problems of the great mass of applications- and business-oriented computer professionals.

Officers stated it was too hard to produce consumer-type publications since the association had to solicit articles.

The rationale continued that these articles were always coming from the universities as companies did not like their employees to present articles for publication.

Anthony Ralston, ACM president, added there was not enough money to hire a large staff to put together such a publication.

One member asked for more activity within the areas of support for seminars in order to raise the professional level of the industry.

But probably the most emotional issue raised was the allegation that the officers of the association had changed bylaws without the advice or consent of the lay membership at a previous meeting held in Anaheim, Calif.

The substance of this change dealt with raising matters of importance.

Previously, any 10 members of ACM who felt some issue was important could petition for a general referendum.

The bylaw change stated that 5% (about 1,000 members) of the association had to petition for this general referendum.

The charge from some of the lay members is that the officers made this change to develop a tool to make the local chapters "tow the line."

The allegation is that the officers could use this situation to tell local chapters that if they do not follow the direction of the national body their charter will be taken away.

Jean Sammet, ACM vice-president denied this allegation, asserting that the real reason for raising the number of members was solely financial.

Polling ACM's members as required by raised issues cost the association about $5,000. ACM was only trying to make sure issues raised were truly important and not just the view of some splinter group, she said.

This explanation did not convince a member from a Texas chapter who stated that previously Ms. Sammet had told members the change in the bylaws had been raised for discussion at the previous Anaheim meeting in connection with a chapter that was violating the official policy of ACM.

Ralston said the officials had changed the bylaws and not the constitution and therefore it was unnecessary to notify members.

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Denver, Colo.

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Special to Computerworld

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User Support

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Dear Alan:

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Dear Mr. Ass.

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Trusting that their comp
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whom they mail to – I look
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Lafayette, Calif.

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User Support Needed

NBS Report on Interface Standard Misrepresented

The Taylor Report
By
Alan Taylor, CDP

About a month ago I wrote about the question of who should represent the U.S. in the area of channel interface standards. The point I was making was that many of the trade associations and user groups are not effectively supporting the national bodies concerned with standards. As a result, questions like the support or lack of support for channel interfaces, which is a very ordinary user need, were being decided by special interests.

In the case in point, as a member of X3 I was forced to vote either to approve a decision that the U.S. was not prepared to provide any technical support or even commentary upon a proposed interface standard or else come up with some viable way of providing support.

The question concerned had apparently been addressed very reasonably by an Ansi technical subcommittee which said specifically that "we believe that support for a channel-level interface throughout the ISO community is diminishing.

"The Ecma General Assembly has asked to withdraw standard support of the Ecma proposal for a channel-level interface as reported in Ecma/GA/72/44. The U.S. National Bureau of Standards Center for Computer Science and Technology Report on 'Means of Achieving Interchangeability of Computer Peripherals' has recommended that no attempt be made to develop a single, federal interface standard."

Now, what the European computer manufacturers want to do is of only incidental interest to me. Computer manufacturers have their own problems but computer users are the people I am concerned with.

So the area that concerned me was the U.S. National Bureau of Standards' comment extracted by the committee opposing – on the surface – a single standard. Trusting the committee to have extracted the material correctly, I did not at that time check more accurately into the background of this statement.

No Reality Behind Data

The article including my comments, and including the statement from the Ansi committee, was not out more than a couple of days when I had a call from Dr. Ruth Davis, the director of the Center for Computer Sciences in the National Bureau of Standards. It did not take her long to show me that my reading of the Ansi statement had been totally wrong.

Not that the content of the Ansi statement had been wrong – the bureau had in fact objected to a single standard. But it did want a number of standards, pointing out that a single standard was no better than the current de facto standardization and was simply playing into the hands of one segment of industry!

The words may have had the same form but the sense of the NBS report was in the opposite direction to the Ansi committee report and gave no support whatsoever for the refusal of the committee to even take a position on the Japanese proposal.

After I talked to Davis I read the report. I can't see how anyone who read it could think the National Bureau of Standards had reported against a concept such as improving the standardization of channel-level interfaces.

I don't know what to do about the Ansi committee's failure to accurately characterize the NBS support. I could of course argue against the position – but what would be the use? I have no real evidence of support.

The user groups have remained unanimously silent – perhaps because they fear that their suppliers will not give them support if they ask to have their own representation.

The large associations so far have not spoken – perhaps because they have to speak to all their members before they come up with a decision. This is understandable but at the same time it means they are so out of synchronization with the operations that a ballot is now totally meaningless.

What is the good of balloting with misleading data? Frankly I don't know, and so at this time I will only say that I plan to have the matter raised at the next X3 meeting and will report later on what happens.

In the meantime I will be happy to hear from anyone on the subject of this standard or of standards in general and how users can get support.

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Readers Respond

Dear Alan:

When you finish solving the problems of Robert D'Unger, you might tackle the problems of the *Reader's Digest* computer which has managed to shorten Robert Kahn and Associates to Robert Kahn Ass – and then addresses me as Dear Mr. Ass.

I attempted to block further mailings from them (their vice-president promised to remove my name from the list but did not) by filing it as pornographic material but unfortunately I did not keep the original envelope.

Trusting that their computer is one that never forgets a title – and knowing that their vice-president has no control over whom they mail to – I look forward to receiving the next one, at which time I will have it classified as pornographic and personally objectionable to me.

Robert Kahn
Lafayette, Calif.

Must Cobol Be Inefficient? – Part I

Cobol is inefficient. Yet, like the weather, no one does anything about it.

Cobol inefficiency is a technical problem which infringes only incidentally on the world outside the computer department. It results, however, in higher than necessary monthly bills to the using department.

It also may mean that new computer applications are postponed or cancelled, as a result of the EDP department's inability to guarantee operating costs – or because EDP is no longer believed if it does guarantee these costs. But unnecessarily high charges are symptoms rather than causes. It will do us no good to ignore the technical facts which cause them. Cobol inefficiency, if it is to be reduced, must be understood on technical grounds.

The real problem is that the measurement "normal programming" is inadequate. It is impossible to determine the inefficiency of the "normal programmer." Moreover, programming is not even the correct item to measure. What is important – when studying Cobol efficiency – is the capability of the *executed* program, by comparison with the full capability of the computer itself. It is *not* the capability of two contending programming methods that matters. Instead of the comparison with another programming method, the real study has to be related to the capability of the computer system.

The question is not whether a Cobol compiler produces more efficient programs than a hand programmer, the question is whether Cobol programs are running the system at 90% efficiency, or at 20%.

The Optimization of Cobol

To make Cobol programs really efficient, therefore, will be a formidable task. It will involve the same type of pioneering that initially going to Cobol programming did in the early days. It is not an item that can be just passed off to one member of the programming staff to do in his "free" time. However, since the alternative to efficient Cobol is a major reduction in the number of Cobol programming jobs existing in the 1970's, the importance of improving Cobol efficiency cannot be overestimated.

As always a new concept starts its own jargon. For Cobol efficiency the jargon nowadays is "program optimization." One "optimizes" Cobol programs rather than stopping them from being inefficient. Unfortunately, like most pieces of jargon, the words "Program Optimization" are misleading. As mentioned before, a program is simply a set of instructions. Inefficiency only occurs when those instructions are *executed;* when data is passed through the system. It is therefore not the programs that are inefficient, but the program/data/computer system which exists when the program is being executed that is inefficient.

Appreciating that it is the *executions* of Cobol programs that are inefficient, and not the programs themselves, opens up a major possibility that was ignored as long as programs alone were being blamed.

To start with, we have the item that was contributed by the programmer – the Cobol source code. This has been placed into a position within a work stream by a "scheduler." It is introduced by a group of parameter cards generally written in "JCL" or job control language. These may have been written by any one of a number of different people. We now have two independent sets of control variables, the scheduling and the JCL, that we can use without bothering the programmer.

The job is then followed by "input data" which is probably processed against some "files." These files themselves may change in size according to their current position within a particular time cycle, such as a week, a month or a year. Two more variables which can affect the operational efficiency, without involving the programmer.

The program code, as written by the programmer, has also been changed by one of a number of compilers into a machine code that is being executed under an operating system. The operating system is one that has been tailored to the particular needs of the installation by generating it under the control of various control cards.

Nor should we forget the control entrusted to the machine operator. He is often able to allocate the physical devices – tape units and disk drives. He may have the tapes and disks ready for loading, or he may not. He may schedule the machine well, or badly from the point of view of throughput. He also can certainly be considered to be a major factor.

That gives us eight sets of variables – the source program, schedule, JCL, input, file sizes, compiler, operating system, and operator – only one of which is under the control of the programmer.

Nor is this the end. Many other people, by their conduct, can make the profile of a particular job efficient or inefficient, and so contribute to the profitability of the installation. Surely in all these areas we can find methods for improving efficiency without having to leave everything to the programmer. With this available, surely we can make Cobol efficient in a systematic manner.

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Study Asks: Are Synthetic Benchmarks Possible?

By Don Leavitt
Of the CW Staff

FALLS CHURCH, Va. – The development of a representative library of standard benchmark programs focusing on specific DP tasks (rather than entire applications) appears to be technically feasible, according to Maj. Ed Spradling, assistant director of the Army's Business System Evaluation Directorate.

These benchmarks would be operational but synthetic programs composed of variable task-oriented instruction streams, data files and procedures from which the user can extract and tailor a sufficient number of programs to represent his workload profile.

By overcoming the problems involved in creating or extracting "real" benchmarks, Spradling said, the standard benchmarks – if they can be developed – should provide both user and vendor with a better way of evaluating proposed hardware systems.

While the task-oriented approach should make benchmarking more useful to both user and vendor, it should also ease the development of the logic that should be built into each of the modules from which the user/vendor creates his workload profile, he added.

Basic Tasks Identified

Spradling is chairman of a Department of Defense steering committee organized last fall to work up these standard benchmarks for DOD use. His committee and a task group under it have identified nine basic DP tasks that "probably" should be in the benchmark library: Modified Sort; Edit; Sequential Update; Indexed Sequential Update; Random Update; Report Extract; Compute; Remote Inquiry and Remote Update.

To shape these overall modules to the user's profile, Spradling sees a software program in the user's foreground running at the same time as his application program to find the "functioning factors" appropriate for the job.

It would be used to identify how much of the application systems being studied was devoted to each of the basic tasks.

Spradling's group is working on the logic of six of the nine basic modules it has identified. Beyond that, it has begun to shape the concept behind the standard benchmarks into a work statement that is soon to be released as a request for proposal for a study contract.

Under the RFP, Spradling will ask the successful bidder to look at the concept and validate it "to some degree." Is it workable? Is there anything that should be added? Delcted? These are the questions he hopes to have answered.

More importantly, in his view, the contractor will be asked to develop a generalized system design as appropriate for a method of profiling the user's workload, making it as transparent to the user as possible.

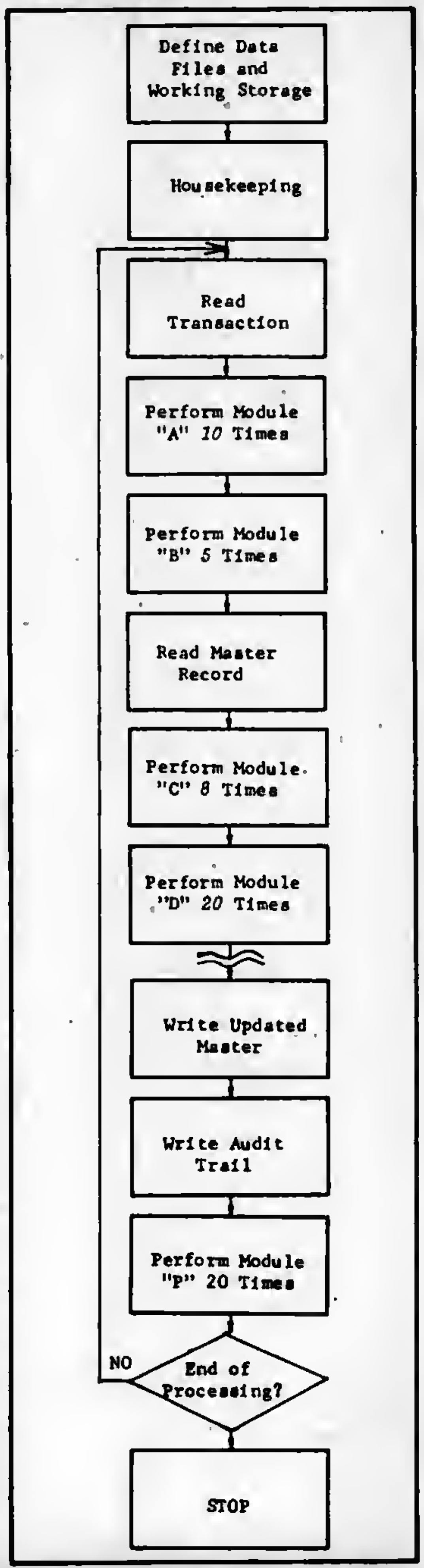
Spradling is enthusiastic, but not starry-eyed about the possibilities of actually getting the standard benchmarks operational. He anticipates that by year-end "we should know exactly where we are going. If it looks like we have something solid, we'll proceed." On the other hand, he admitted that his effort "may" be going up a blind alley.

Standard benchmarks may prove to be inappropriate for some evaluations, he said, noting that unique benchmarks might well be needed to check out very large systems.

He said his project is more precise than the National Bureau of Standards Task Group 13 which was organized earlier this year to study benchmarking in general.

Spradling's directorate is part of the Army's Computer System Selection and Evaluation Command, located in the Nassif Building here.

Each module within this synthetic update performs one type of operation. Parameter entries control the extent of each operation and how often it is repeated. Module A, for example, might include moving five characters 40 times; moving 1,000 characters five times; and moving 500 characters 15 times. →


Define Data Files and Working Storage
Housekeeping
Read Transaction
Perform Module "A" 10 Times
Perform Module "B" 5 Times
Read Master Record
Perform Module "C" 8 Times
Perform Module "D" 20 Times
Write Updated Master
Write Audit Trail
Perform Module "P" 20 Times
NO
End of Processing?
STOP

'Bacus' Presents System Usage, Rerun Data in Management Terms

NEW YORK – IBM 360/370 users who have accepted the concept that monitoring software can be useful, but who have been disappointed with the voluminous and hard-to-read output of some current systems, now have a chance to get what they're after with the Booz Allen Computer Utilization System (Bacus) package from Booz Allen & Hamilton Inc.

Bacus comes in two versions, one geared to Job Accounting data generated by DOS and the other to System Measurement Facility (SMF) generated by OS/360-370. That in itself is not unusual, but its extensive use of graphic displays – some printed directly on the 1403 line printer, others manually created from simple report output – sets Bacus apart, a Booz Allen spokesman said.

Bacus also focuses more sharply than other systems on editing accumulated data so the data makes better sense than it would if taken at face value. The evaluation of apparent rerun statistics is one of the Bacus strong points, the company noted.

The package works with codes carried in the JCL job stream to determine if a run is normal production or a rerun, and if it is a rerun, to show the reason for it. Management should be aware, the spokesman noted, of whether reruns are caused by operators or by machine problems so they can take corrective action.

The Bacus approach also allows for varying the number of production runs for different programs, so the mere fact that a program is run more than once in a given day is not necessarily interpreted as a rerun situation. By pegging this code scheme program-by-program, however, excess runs can be quickly spotted as such and reported, the spokesman said.

Bacus requires at least 90K bytes of main memory even under DOS, although the company said it could make some modifications if it has to fit a smaller partition size.

The package sells for $7,500 for "real" memory systems under either OS or DOS, and $10,000 for a VS version.

Booz Allen is at 245 Park Ave., 10017.

Source of Cobol Labels Listed

WILBRAHAM, Mass. – DOS/360 Cobol users can have better documentation than IBM's compilers provide, but avoid the sometimes overwhelming output of flowcharting packages, with the Cobol-Map II system now available from Hansco Data Processing Inc.

Cobol-Map II generates two listings normally as part of the user's compilation process. The first list is a fairly normal alphabetically organized cross reference directory, indicating by line number the source program references to every data and procedure name.

The second report, which Hansco said is unique, is a substitute for the Cobol compiler's listing. In addition to information usually available in that listing, the Hansco report charts bidirectionally the label references to and from each statement in the program.

With this listing, the first time a label is encountered, the system provides a table of all line numbers that make reference to the label. At each statement that refers to symbolic labels, Cobol-Map II lists the line number of the label origins, in the order of their appearance within the statement.

While the reports themselves are direct carryovers from the earlier Hansco Cobol-Map, they now include a feature which flags statements that alter the contents of a labeled field, if it is, for example, the receiving field of a MOVE instruction. By marking those statements that change a field's contents, the listings should permit more rapid debugging, Hansco said.

Cobol-Map II runs three to five times faster than its predecessor, largely because it is now a one-pass system rather than a five-program operation. It also requires much less JCL preparation.

Cobol-Map II is priced at $249.95 and is made up of relocatable modules. Documentation, an interface with the user's compiler and a year's maintenance are also part of the package.

Hansco can be reached through P.O. Box 236, 01095.

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Cooperative R&D Work Through AMM Saves Manufacturers $50,000 Annually

CHICAGO – A decade of cooperation on research and development in industrial engineering has helped companies participating in the Advanced Manufacturing Methods (AMM) project sponsored by IIT Research Institute save from $50,000- to $200,000/yr on operating costs, according to AMM manager Eugene L. Magad.

AMM now includes representatives from 38 companies from Europe, the U.S. and Japan. Organized around a steering committee and a series of working groups, the project has focused on software and quantitative techniques that provide better analysis, planning and control of manufacturing operations.

AMM was set up ten years ago with a small group of sponsor companies who put up seed money to get the project started and who continue to support it financially. New participants are welcome, but the most important requirement, Magad emphasized, is a genuine willingness to take part in the R&D activities.

Companies in the automative, appliance, electronics and business machine industries form the largest segment of support within AMM, Magad said, although the techniques and tools developed are product independent.

Future work under consideration includes assembly system capacity planning, model grouping, mixed model assembly line scheduling, survey of real-time systems for shop floor control, machine and equipment location planning and multiple shared man-machine simulation programs.

Fees for new clients are $20,000 for the first year, which includes all users' and programmers' manuals, 10 man-days of advisory visits, technical meetings, steering committee representation, access to computer software plus mail and telephone problem-solving.

Continuing participants receive all of the foregoing services for $7,500/yr with the number of days of advisory visits reduced to four.

IIT Research Institute is at 10 W. 35th St., 60616.

'Interrogator' Puts Report Prep, File Maintenance on Load-Go Basis

ST. LOUIS, Mo. – Non-DP users with access to a 32K 360 operating under DOS have another report generator and retrieval system to consider. The Interrogator from Simpli-mation Inc. is described as a utility system that includes many functions related to report preparation, file generation and file maintenance.

Interrogator is not intended to replace programming languages, the vendor stressed. Rather it is a load-and-go processor shaped to the user's needs through parameterized entries, or default options in lieu of specified entries.

The system can be used to process two files simultaneously, or as many as nine files consecutively. Processing of more than two files is possible as an added feature.

The system is similar to many others in its support of fixed and variable length, blocked and unblocked tape records, and either sequential or index-sequential disk files. But it is distinguished from many other report generators by its support, as both input and output, of 1400 series disk files.

In addition to allowing reformatting, expansion and contraction of files, and extraction of summary and detailed information from the files it is processing, Interrogator also includes a range of operation codes to determine the sequence of processing steps. Comparisons, sampling, counting, and bit testing or comparing are all available, including Boolean logic tests.

The Simpli-mation system utilizes five coding forms and in that respect is very similar to classic RPG systems. Sensing of control-level breaks, printing of all subtotals and rolling of totals to higher levels when breaks occur, and automatic page headings including date and page number are part of Interrogator.

Interrogator operates under OS, DOS or TOS, the company said, and may be cataloged under those operating systems that support that facility. It uses 20K bytes in an OS environment plus sufficient room for the largest file blocks. Under DOS it uses 12.5K bytes plus buffers.

Simpli-mation is at 410 Mansion House Center, 63102.

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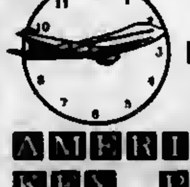

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Data Briefs

Cassette Feature Added To TC-71 Keyboard/Printer

RALEIGH, N.C. – Terminal Communications has added a tape cassette feature to its TC-71 keyboard/printer terminal. The TC-71 is designed as a replacement for the IBM 2740 communications terminal.

The TC-74 Tape Cassette Unit allows messages to be keyed into the terminal in an off-line mode and transmitted later. Similarly, data can be received onto the tape cassettes and read from the tape at any time.

The TC-74 costs $2,575 and rents for $81.50/mo. The TC-71 printer terminal costs between $4,800 and $5,700 or $165/mo. Delivery is 30 to 60 days from 3301 Terminal Drive, 27611.

RCA Teleprinter Offers APL

CAMDEN, N.J. – The RCA Model 38 ASR teleprinter is now available with an optional APL coding system.

The unit prints the 88 APL character set.

The Model 38 ASR is available as a private line or with optional data set. Thc private line version with APL coding leases for $75/mo including service from the Cherry Hill Offices, 08101.

Stores Combine POS,On-Line Credit

SEATTLE, Wash. – Nordstrom, Inc., with 12 stores in Washington and Oregon, has combined an electronic point-of-sale system with on-line credit authorization in all its stores.

The basic units are 215 NCR 280 retail data terminals installed on the selling floors. Each terminal is connected to an NCR 723 data collector, which in turn communicates with the NCR Century 101 computcr located at the firm's Seattle headquaters.

During business hours, the Century 101 computer is dedicated to credit authorization. After the stores close at night, the Century 101 polls the terminals. After processing, NCR 260 data terminals thermally print a variety of reports for management.

User Goes on Dataroute

OTTAWA, Ont. – M. Loeb Ltd., a wholesale grocery distributor hcre, has become one of the first non-time-sharing subscribers to the Dataroute, the new Bell Canada digital transmission system.

Installation was completed on June 1, 1973 between the company's IBM 370/145 located at the corporate data center here and a Remcon 2780 terminal located in Montreal. Present installation of a 24-hour, 4,800 bit/sec service will generate a savings of $3,000 annually in transmission costs, the firm stated.

The company plans to install additional systems in its other Canadian divisions as the Dataroute expands.

Tests Show

Users Can Share Satellite Circuits

By Ronald A. Frank
Of the CW Staff

NEW YORK – Experiments now being conducted on government-funded satellite data communications networks may help overcome transmission propagation problems when commercial packet-switched satellite systems become operational.

Researchers associated with the Arpa and Aloba communication networks have found several approaches to avoid transmission "conflicts" when more than one data user accesses a shared satellite channel simultaneously.

A stationary satellite acts as a "pure" transponder repeating whatever it receives and beams this transmission back down to earth, according to Leonard Kleinrock, professor of computer science at the University of California.

The broadcasted transmission can be heard by every user of the system, and in particular a user can listen to his own transmission on its way back down, Kleinrock told NCC attendees at a session on satellite packet communications.

When a portion of one user's transmission reacbes the satellite, while another user's transmission is being transponded, the two will "collide and destroy" each other, he said. One solution to this problem is a random retransmission delay to spread the conflicting packets over a period of time.

Another solution is to allocate fixed time segments or "slots" whose duration is exactly equal to the transmission time of a single packet. If all packets begin their transmission at the beginning of a slot, conflicts will be restricted to a single slot duration. This type of scheme is known as a "slotted Aloha" system, Kleinrock said.

A third method for allocating the usage of a shared packet satellite channel is to schedule the users and assign them to specific time periods. This approach is known as a reservation system.

When satellite time slots are freely utilized by an user having data traffic, there is a "channel utilization limit of 36% to insure that [transmission] conflicts are not too frequent," according to Dr. Lawrence Roberts, director of information processing research for the Arpa network.

Despite this limit and possible associated transmission conflicts, the free channel utilization method is preferrable to preassigning time slots to user stations and having them be unused, Roberts said. Tbe free usage by any station in the network is implemented in tbe Aloha system between Hawaii and California.

Common Queue

In order to further improve on the Aloha method, a reservation system can be introduced, Roberts suggested. Under this method, the satellite channel is divided into time slots of 1,350 bits. At required intervals a slot is subdivided into smaller segments which are used for transmission reservations and acknowledgements. The smaller slots are used on a contention basis with the Aloha technique. This reservation system creates one common queue for all stations.

Roberts also described some of the operating data gathered on tbe Arpa network. Experience on tbe Department of Defense net shows the data traffic is proportional to tbe total dollar value of computer services being moved through the system, he suggested.

"The total traffic generated by one dollar of computer activity is about 315 communications packets, with 50% being transmitted in each direction. If $200,000/yr in computer resource usage is generated within a geographic region, 2K bits of data traffic will be produced of which one-half or 1K bit is leaving the region, he said.

Within the next few years between 0.25K bits and 10K bits of data traffic will be exchanged internationally, Roberts predicted. In a related forecast, David Walden, senior computer scientist at Bolt Beranek and Newman said that the first shared satellite channels will be in service by the end of this year.

FCC: Vital Statistics Missing From Bell Claims on Net Harm

WASHINGTON, D.C. – The Federal Communications Commission staff has told AT&T that vital information is missing from its recent submission on harm caused by customer-provided equipment connected to the phone network [CW, May 16].

In a letter from the common carrier bureau, AT&T was told that the FCC staff has not found "statistically meaningful differences" between the harm caused by telephone company-provided equipment and customer-provided units.

The FCC staff said "vital information regarding the sampling mcthodology is missing" from the AT&T submission, and "key statistical parameters are not provided." The letter said figures provided by Bell "indicate that the rate of customer-provided equipment troubles . . . in comparison to the total number of Bell installed interconnected units is falling." This "tends to contradict some of the statements" from AT&T about harm, the FCC staff said.

Bell was asked to reply within 30 days to 13 specific questions regarding its statement.

The FCC letter also challenged the AT&T claim about unnecessary dispatches of rcpairmen by citing the Rochester Telephone Corp. Network Protective Device (NPD). The NPD has a provision that allows troubles to be tested from the central office without a visit to the user site, the FCC letter said, and it asked AT&T whether the Bell System planned to "incorporate remote testing features in conjunction with its use of connecting arrangements."

AT&T was asked to meet with FCC staff experts "as soon as possible" to review the "sampling methodology" of its study on harm.

Sycor 250 Replaces IBM 3270s

ANN ARBOR, Mich. – Sycor Inc.'s 250 Series of intelligent on-line terminals is plug-compatible with the IBM 3270 at a lower cost, the firm said.

The firm also introduced three printers to be used with the terminal.

The terminals have 8K bytes of read-only memory and up to 6K bytes of programmable memory, with all of the terminal's operating functions contained in the read-only memory.

The 250 Series is designed to operate as a remote communications terminal on multipoint or point-to-point private lines. The unit transmits data at up to 4,800 bit/sec in binary synchronous.

The printers – Models 2581, 2582 and 2583 – operate at 40-, 80- and 165 char./sec, respectively. All are capable of printing two separate continuous forms at once.

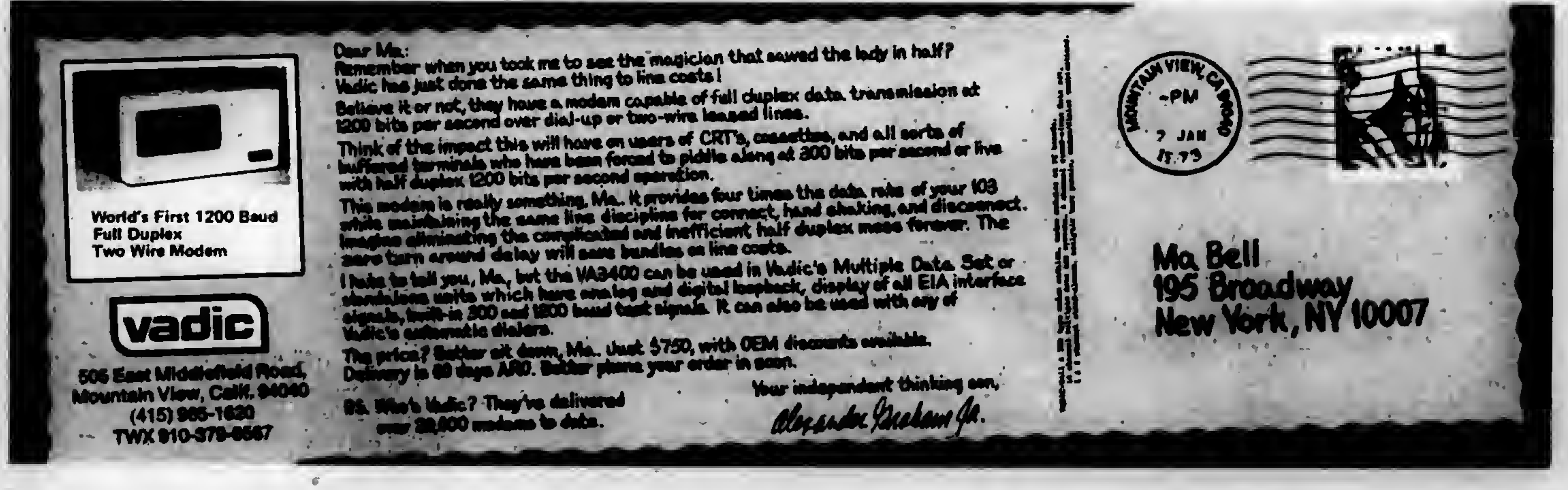
The Model 250, in clusters of four, rents for $480/mo on a one-year lease including maintenance. Purchase price is $15,650 for a cluster of four.

A Sycor spokesman said these prices compare with the IBM 3270 rental of $525/mo or $22,460 purchase.

Stand-alone price for the Model 250 is $122/mo or $4,310. The Sycor spokesman compared this with $135/mo and $6,100 for IBM's 3270.

The 2581 printer rents for $180/mo, including dual tractor feature and maintenance. The cost of the 3582 printer is $200/mo or $7,000 purchase, and the 2583 printer leases for $255/mo or $9,000.

Sycor is at 100 Phoenix Drive, 48104.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This modem is really something, Ma. It provides four times the data rate of your 103 while maintaining the same line discipline for connect, hand shaking, and disconnect. Imagine eliminating the complicated and inefficient half duplex mess forever. The zero turn around delay will save bundles on line costs.
I hate to tell you, Ma, but the VA3400 can be used in Vadic's Multiple Data Set or standalone units which have analog and digital loopback, display of all EIA interface signals, built-in 300 and 1200 baud test signals. It can also be used with any of Vadic's automatic dialers.
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Features Debut At NCC

Communications Units Enhanced

By Ronald A. Frank
Of the CW Staff

NEW YORK – Enhancements to previously introduced data communications systems were much in evidence at the NCC. Among this type of product was the programmable communications termination unit from Collins Radio Co., new diagnostic features for the General Datacomm Industries 201 modem, a Touch-Tone data entry capability on the General Computer Systems Inc. 2100 key-entry system, and a "Mini-Tec" CRT unit from Tec Inc.

Collins, Dallas, Texas, showed its programmable channel termination group (PCTG) that can operate as part of its time division exchange TDX-L1 system or in similar communications systems. The PCTG unit can control up to 64 lines in the 50 bit/sec to 9,600 bit/sec (low-speed) or the 2,000 bit/sec to 50 kbit/sec (high-speed) categories.

The Collins unit provides capabilities similar to the IBM 3705 and can also adjust bandwidth based on the terminal equipment that is interfaced and the programmability desired by the user. Both point-to-point and multidropped lines operating either in Ascii or Ebcdic can be handled. The unit can have from 8K to 32K of storage and costs $40,000 to $70,000 depending on configuration.

Diagnostics on Modem

General Datacomm introduced diagnostic features for both the dial-up and private line versions of the 201 modem. The 201-9 operates at 2,400 bit/sec on private lines with the Dataloop feature that allows remote loopback of the data set on the digital side in either point-to-point or multipoint nets.

Combined with a companion Analoop feature on the analog side of the line, the 201-9 at a remote site can be analyzed with respect to terminal, modem or line failure – all from a central site, allowing users to simplify fault isolation. The 201-9 costs $900 plus $300 for the diagnostics on multipoint systems or $200 for the diagnostics on point-to-point nets.

The 201-5 operates on dial-up lines and has built-in capabilities to detect DC supervisory signals. This means the modem can recognize when a circuit has been inadvertently disconnected, regardless of the reason. In a comparable Bell 201 data set if an EOT signal is not transmitted, no disconnect takes place and both the phone line and the terminal or CPU can remain dedicated to a dead line, the firm said. The General Datacomm 201-5 has the capability to detect and correct such a situation. The data set costs $1,200 from the company in Wilton, Conn.

Push-Button Input

General Computer Systems, Dallas, Texas, added a Datatone controller to its source data entry system that allows any Touch-Tone phone to enter data. The data entered on the phone is stored on disk and then entered onto CPU-compatible tape after formatting.

The operator at the phone can verify the data entered into the system by listening for two types of tones generated at the central site. A correct entry will cause a steady tone to be generated while an invalid entry will result in a "warbling tone" being sent to the operator. The controller can handle up to 32 phone lines and costs $635/mo, plus $35/mo for each phone line.

TEC Inc. introduced its small Mini-Tec CRT for TTY replacement applications. The CRT will be used as a data input unit for minicomputer-based systems. The unit can operate at six switch-selectable speeds from 110 to 9,600 bit/sec using Ascii code. It can handle asymmetrical data rates and contains a 960-character buffer.

The display can be interfaced with cassette tape or printer peripherals through an RS-232 plug, and it is compatible with Bell 202 or 103 modems or their independent equivalents. First deliveries are schedulcd for October from Tucson, Ariz.

Satellite Transmits Airline Reservations

Special to Computerworld

SYDNEY, Australia – Qantas Airways is now operating one of the longest computer links in the world between its reservations computer here and the airline's new North Amcrican Headquarters in San Francisco.

Using the Pacific Ocean Intelsat IV satellitc, Qantas is sending its data 22,300 miles above the earth. It takes about thrce seconds for a message to be sent from San Francisco to Sydney, processed and displayed on a computer terminal back in San Francisco.

Qantas' computer, known as Qantam II, is based on two IBM 360/65 processors which work with the IBM developed Ipars (International Programmed Airlines Reservations System) through a Honeywell communications front end. Ipars is housed with two additional IBM 360/65s for general data work.

As operating systems get more complex, efficient use of hardware gets more difficult. So a variety of new software tools have been developed to aid users in making their systems more efficient. DP evaluation programs analyze equipment utilization; simulation packages show how hardware will function before it's installed; hardware monitors check whether individual pieces of equipment are functioning according to specifications; and optimizers help make process coding more efficient.

These are some of the products we'll be looking at in our July 25th Software Supplement, edited by *Computerworld's* software specialist, Don Leavitt: Much of the information will be based on the experiences of companies who have used these products. And our research has shown that they can be quite effective. For example, one user we've talked to reported a 33% decrease in running time on a package of 13 programs after they implemented a computerized efficiency analysis.

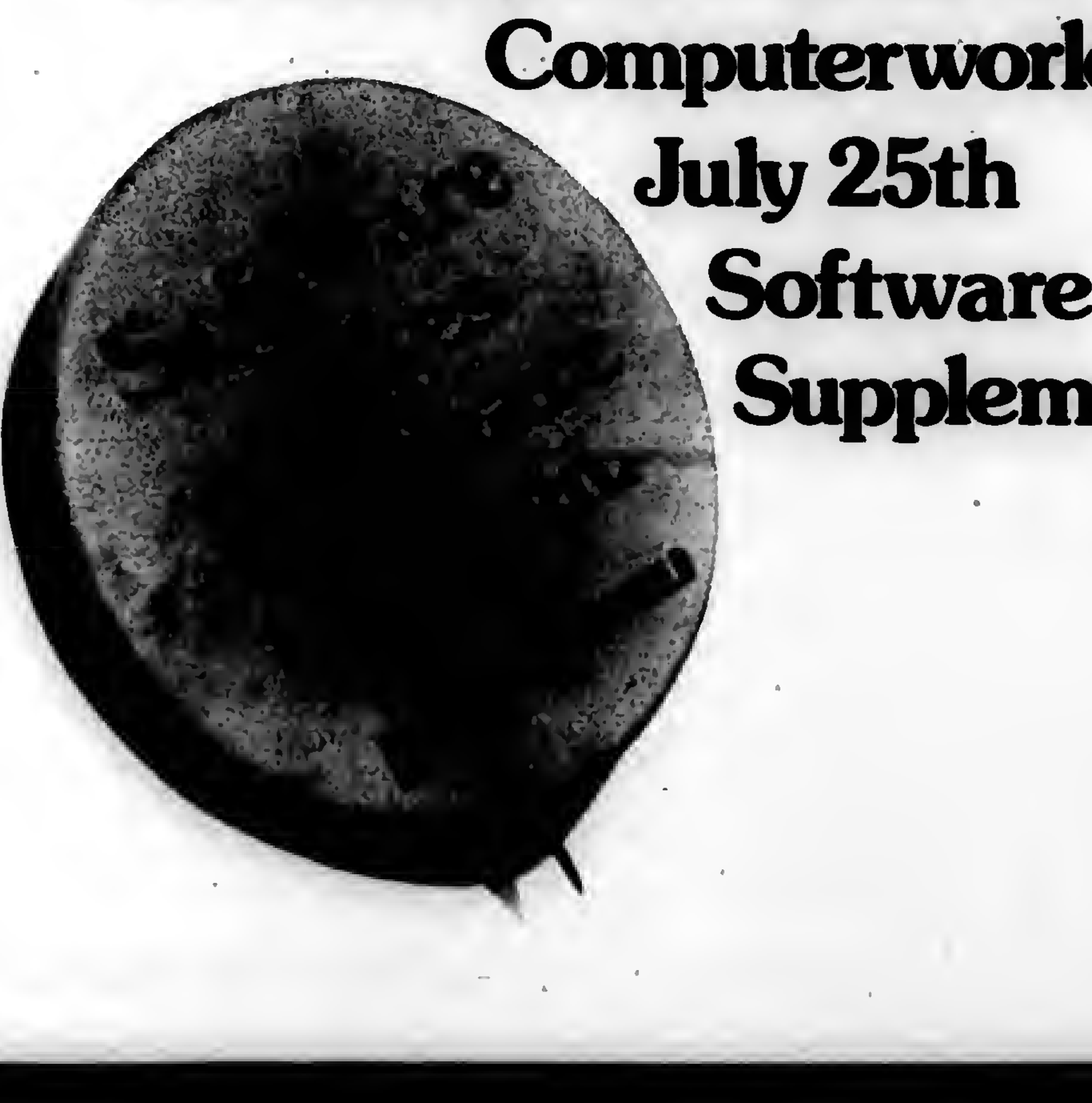
Greater efficiency for your EDP system. That's what you'll be learning more about in our July 25th Software Supplement. If you're a user, it'll be well worth the reading. And if you're marketing in this area, it'll be well worth the advertising. Closing is July 6th. Don't miss it.

For more information, contact the nearest *Computerworld* Representative.

Boston	New York	Los Angeles	San Francisco
Bob Ziegel	Don Fagan	Bob Byrne	Bill Healey
(617) 332-5606	(212) 594-5644	(213) 477-4208	(415) 362-8547

Or write to Judy Milford, Computerworld, 797 Washington Street, Newton, Mass. 02160

Efficiency's the word in Computerworld's July 25th Software Supplement



Everybody's talking about the great things Honeywell's doing for big computer users. And not-so-big users.

Our newly announced Model 6025 system. It offers new technology including MOS memory. It's an easy, economical way for small-scale and medium-scale computer users to enter the large-scale systems environment.

Our other highly successful Series 6000 systems. They're designed for a broad spectrum of business-minded users, and now they're more appealing than ever because of important improvements.

Our recently announced Multics System. It's designed for research, academic, and network-oriented users who need unique security, programming, and centralized data base features.

New Low-Cost Entry to Honeywell Series 6000. Regardless of the make of your present computer, if you're a small- or medium-scale user who wants expanded capabilities and long-range growth opportunities, Honeywell's new Model 6025 system is big news.

Easy Expansion. The Model 6025 is the new beginning system in Honeywell's Series 6000 family of large-scale computers. It competes aggressively in a lower range of processing capability, while retaining upward-compatibility features for significant future growth capability.

Easy Conversion. Particularly geared to the COBOL user, the 6025 system includes conversion packages for fast field-upgrade from less powerful and competitive systems, and Honeywell's traditional broad system support and training.

Easy-to-Use Software. The 6025 represents an inexpensive first step with Honeywell's General Comprehensive Operating Supervisor (GCOS) Executive System. GCOS is the software that automatically performs all Series 6000 data processing functions. It's widely acknowledged to be one of the best software products in the industry.

Multidimensional Processing. The Model 6025 can acquire multidimensional capabilities by adding a front-end network processor, and grow into a full range of multiprogramming operations. It can handle batch processing, remote job entry time sharing, message switching, and transaction processing, while maintaining constant access to a common data base.

Big Start on a Big Future. The Model 6025 can serve a company's far-flung operations by means of a nationwide or even worldwide communications network. You can achieve economies of scale to help your company stretch its data processing budget today... and for years into the future.

Our Series 6000 Computers. Now they run stronger than ever.

We've also made lots of important improvements in existing models of our large-scale Series 6000 systems—improving still further the multi-dimensional processing capabilities of Series 6000 and GCOS.

New Capabilities for Management of Network Processing

We've developed new software that provides improved control over the computer communications network. It's called Network Processing Supervisor (NPS)—a communications operating system resident in the 6000 system's DATANET 355 front-end network processor.

The DATANET 355 hardware is one of the many things that helps make Series 6000 so powerful. It performs the routine communications jobs associated with network management. Terminal and line control functions are transferred from the main computer to the network processor, thereby conserving the central system resources, reducing system overhead, increasing reliability and improving system throughput.

Our new NPS software for the DATANET 355 lets the user monitor, analyze and control his network right at the main site—without interfering with the normal system activities.
Advanced features include:
1. Statistical recording and reporting to provide current and historical information about network operation.
2. Supervisory control, making it easy to monitor and control the network events when necessary.
3. Complete system and data integrity, with automatic restart/recovery and support of fail-soft configurations.
4. Capability to journalize data for data integrity and information retention.
5. Customizing features to meet individual requirements.
6. A flexible and powerful message switching capability for terminal-to-terminal information exchange, completely integrated with the other NPS functions.

Satellite Systems for Regional Locations

Our new remote network processor doubles as a remote batch processor and as a remote message concentrator. You can place one of these satellite systems in each regional center of your computer network to handle local processing rapidly—at a low cost.
At the same time, they tie in your regional centers to the central system.

Broader Fail-Soft Capability

We've made the fail-soft capability of the upper range of Series 6000 systems available on the smaller 6030 and 6040 models. Such a fail-soft system has at least two of every system module, all running under the control of a single operating system. Should any module fail, only that module ceases to operate. The system continues to operate, making optimum use of the available modules and still providing all of its multidimensional capabilities.

There are multiple benefits from such a configuration:

1. Total backup for every module within the configuration offers high system reliability.
2. A unique on-line test and diagnostic capability permits removing a module from the system for servicing while the other modules continue to operate, thus greatly improving system availability and up-time.
3. Enlarged multiprogramming and multiprocessing capabilities make possible system performance to match the workload—for better throughput.
4. The price/performance is significantly improved, compared to the cost of two separate systems with the same throughput capability, as only one operating system is required to schedule and govern the entire hardware resource.

Larger Memory Sizes

Expanded memory sizes throughout Series 6000 offer users more latitude for growing applications and services. As many as four million bytes of memory can be used to do more work at the same time. And bulk store capability offers supplementary memory for high-speed data input and output—to strengthen time-sharing and transaction processing performance.

More Peripheral Options

We've added new peripherals (including new types of magnetic tape drives, and a new card reader, card punch and printer) to increase the range of choice for matching input/output requirements with system performance.

GCOS Operating System Enhancements

We've added a number of features (such as the File Management Supervisor) to the GCOS executive system to provide more data security and make data management easier for your staff.

Our Multics System. A great new way to bring the resources of the computer to multiple users.

Honeywell's Multics System represents an innovative concept for generating, controlling and distributing computer power—a concept of computer usage so advanced that it redefines the meaning of time-sharing and interactive processing.

(Multics stands for Multiplexed Information and Computing Service.)

Multics is a unique combination of computer hardware, software, communications and supervisory techniques. We believe it's one of the most powerful and sophisticated systems in the world.

Maximum User Orientation

Honeywell's Multics System incorporates many of the most user-oriented programming and supervisory techniques yet devised. These techniques are available to all users automatically through the Multics operating supervisor. For example, the Multics System provides small amounts of service to small users, and large amounts to large users, within wide limits, on immediate demand, and with maximum efficiency. For billing and control purposes, it keeps track of the amount of service each user receives.

Advanced Virtual Memory

The Multics System offers the most advanced virtual memory capabilities available. Virtual memory was included in the design from the very beginning. The primary purpose of the Multics System virtual memory is to achieve controlled sharing of information among the system's users.

Information is organized into *segments.* A segment may contain programs or data, or may be a directory of segments. Segments and their directories are organized into a single "tree-structured" hierarchy which forms the storage system for users, for administrative and accounting information, and for the software system itself.

The movement of this information from the main memory back and forth to secondary storage is completely automatic. Programs and data are *paged* through main memory. Only the currently active pages are held in main memory, with the Multics System fetching additional pages as required.

Increased Programmer Productivity

Explicit paging and segmentation techniques are automatically applied to the operating system, to all programs, and to data bases within Multics. The laboriously detailed programming typically needed to manage file inputs and outputs to and from memory is thus eliminated. A programmer may extract, revise and reorder at will from existing programs, just as though he were combining photocopies of paragraphs and chapters from a number of different books in a library. And just as in photocopying, the programs are not affected but remain intact and accurate.

Flexible, Easy-to-Use Programming Environment

The system has been implemented in PL/I, which is also one of the user's main programming languages. This lets him interface his application to the system on a module-by-module basis rather than through a single applications/system interface as provided by conventional systems. The use of the PL/I language enforces a modularity and consistency of programming style which makes possible the continuous evolution of software.

Open-Ended Growth Capabilities

The combination of the most powerful virtual memory system available and the advanced hierarchical memory "tree" concept, both of which encompass main and secondary storage, provide the Multics System with an essentially open-ended capability. Huge quantities of symbolically addressable secondary storage can be added to accommodate almost any requirement. Processors and memory can be added or removed from the system without interruption to users. And there is no need to shut down for system update, for accounting or management functions, or for user errors.

Decentralized Administrative Structure

Unique administrative monitoring and control features are used to allocate resources so that even a small user is protected.

Multics defines three distinct levels of administration: system, project and user. The system administrator allocates resources and memory to projects; the project administrator allocates the assigned resources among the users on his project. Each user, in turn, can allocate his assigned resources among other users.

Sharing of Information

Multics permits controlled sharing of programs and data through the use of the access control mechanism. The majority of segments on the system such as compilers, library routines and user procedure segments are pure procedures. Only one copy of them is needed regardless of the number of users who may be executing them. Having only one copy provides that 1) information never loses its identity in a system-wide sense, 2) the outbound portion of system traffic is reduced, and 3) use of main memory is greatly reduced.

Dynamic, Multiple-Level Security Control

Privacy and security for protected data and files were a primary Multics design consideration, and were implemented into the Multics hardware, resulting in superior security provisions.

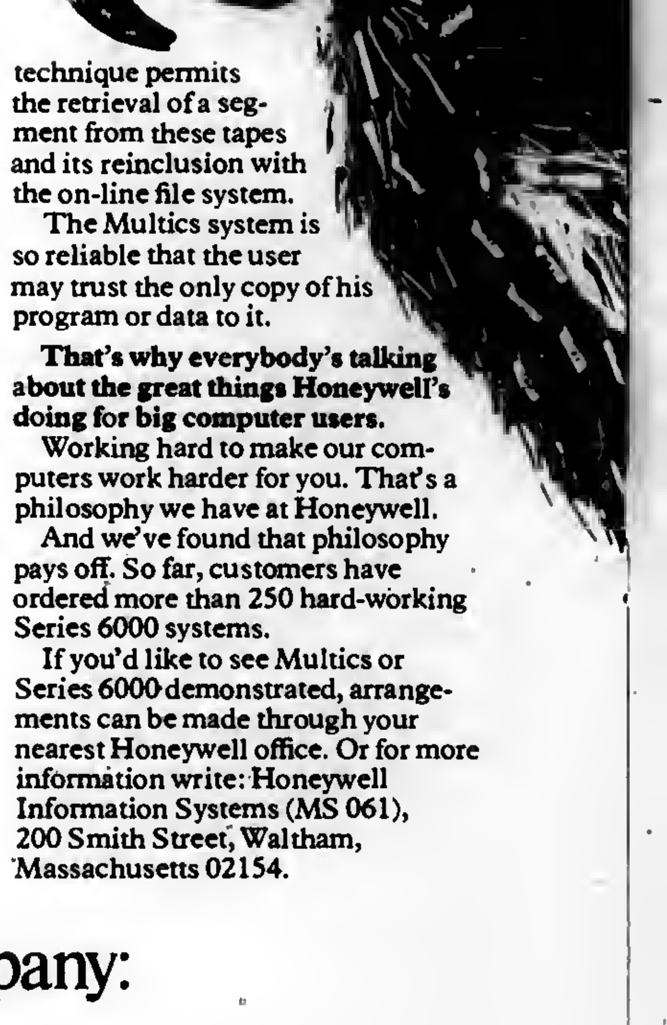
A uniquely effective concentric-ring security structure controls individual user access to selected programs and data—in addition to the more traditional privileges of read, write, and/or execute access.

The user may define the names of persons who may have access to each segment and the type of access they may have. Consequently, access to data may be precisely tailored to the application—rather than being restricted by the system.

The ring protection features, and paging and segmentation techniques provide close to ideal on-line system characteristics for security control.

A Reliable File System

Information which is stored on-line is protected by an incremental backup system. This system copies onto magnetic tapes every segment whose contents have been changed during the backup interval. A straightforward technique permits the retrieval of a segment from these tapes and its reinclusion with the on-line file system.



The Multics system is so reliable that the user may trust the only copy of his program or data to it.

That's why everybody's talking about the great things Honeywell's doing for big computer users.

Working hard to make our computers work harder for you. That's a philosophy we have at Honeywell.

And we've found that philosophy pays off. So far, customers have ordered more than 250 hard-working Series 6000 systems.

If you'd like to see Multics or Series 6000 demonstrated, arrangements can be made through your nearest Honeywell office. Or for more information write: Honeywell Information Systems (MS 061), 200 Smith Street, Waltham, Massachusetts 02154.

The Other Computer Company:

Honeywell

SYSTEMS&PERIPHERALS

The Lockheed System III is an integrated configuration of minicomputer hardware and software that is 98%-compatible with existing IBM System/3 RPG II programs.

'98% Compatible'

S/3 Replacement Costs 55% of IBM Price

By Michael Weinstien
Of the CW Staff

LOS ANGELES – System/3 users can obtain a replacement system from Lockheed Electronics Co. at about 55% the cost of the S/3.

The Lockheed System III is an integrated configuration of minicomputer hardware and software that is 98% compatible with IBM System/3 source-level RPG II programs.

The processor unit has 16K bytes of core memory field-expandable up to 64K bytes in 8K or 16K byte modules.

Mass storage is provided by a 5M-byte disk subsystem. The drive uses a removable pack of the IBM 5440-type, and one fixed disk.

A keyboard with video display provides operator interface to the system. A printer provides hard-copy output at a rate of 100 char./sec across 132 columns.

Tape Options

Options include magnetic and cassette tape. Magnetic tape unita are 9-track, 800 bit/in. and the drives are provided in 45- and 75 in./sec. speeds.

Cassette tape storage is 360K byte/track. These units are Ansi/Ecma-compatible with multidrive systems providing sort/merge capability. Tape speeds are 6 in./sec on write and 24 in./sec on read.

Both 80-column and 96-column card equipment can be used in the system. The 80-column peripherals include a 600 card/min reader and a 30 card/min punch. The 96-column equipment includes a combination reader/punch with 300 card/min read and 60 card/min punch.

Up to four additional disk drives can be added. Installation of an additional controller provides for four more drives.

Converting Ebcdic to Ascii

The IBM System/3 uses Ebcdic while the Lockheed uses Ascii, so Lockheed is supplying a free conversion program, a spokesman said.

Basic operating system is a version of DOS that operates in 6K bytes of core and utilizes a single disk drive. This operating system handles all system supervisory control, file management and disk utility functions.

A system control language (SCL) provides the control information to DOS. DOS can operate in a single job entry mode where the SCL is entered conversationally through the keyboard, or in batch mode, Lockheed said.

Source files contain symbolic code of programs in either RPG II or assembly language.

The Lockheed version of RPG II operates in a 24K byte system with one or more disk drives. The internal collating sequence is in Ascii.

Typical Price

A typical system consisting of central processor with 16K bytes of memory, 5M-byte disk subsystem, line printer, video display and keyboard console would cost $37,500.

This system could support the RPG II compiler, DOS, a sort/merge capability, data editor and source editor.

A similar system from IBM would cost about $65,000, a Lockheed spokesman said.

The Lockheed system will be maintained by the firm at 6201 E. Randolph St., 90040.

Calcomp 915/1036 Drum Plotter Includes Program-Selectable Pens

ANAHEIM, Calif. – Calcomp has released the 915/1036 drum plotter as a replacement for the slower and more expensive 1136.

The new top of the line plotter operates at 14 in./sec with a resolution of 0.002 in. Three program-selectable pens and interchangable drums (from 12- to 36 in. wide) are standard equipment. The multiple pens permit users to plot with multiple colors, Calcomp said.

To assure accuracy, especially when plotting on gridded paper, it is possible to compensate for differences in paper width.

The 915 portion of the system is a controller permitting use of optional programs atored on magnetic tape cartridges. Core upgrades are available to expand the basic 8K words to a maximum capacity of 33K words.

Five I/O channels allow integration of various input devices such as card readers, teletypewriters, flatbed plotters, or COM units. Use of these channels allows users to make the 915/1036 plotter the operating heart of a computer graphics system, the firm noted.

The standard magnetic tape unit is a 7-track, 200-, 556-, or 800 bit/in. NRZ1 unit. Options include a 9-track, 800 bit/in. NRZ1 unit; an operator selectable 7-track, 200-, 556-, 800 bit/in. or 9-track, 800 bit/in. unit; or a 9-track, 1,600 bit/in. phase-encoded unit.

Price of the 915/1036 is $22,720 which includes one-year maintenance from 2411 W. La Palma, 92801.

Future NCR Terminals, CPUs May Have Field-Alterable ROMs

DAYTON – NCR has developed a read-only memory (ROM) which can be reprogrammed in the field without circuit changes, which may be available in user products next year.

Thus, one Earom (electrically alterable read-only memory) has the potential to serve different applications by field-altering the memory chip, NCR explained.

Looking Ahead

Previously, separate chips had to be made for each application, the firm noted. The Earom is expected to reduce cost by eliminating the development costs for unique conventional chips in future hardware, it added.

The MNOS-LSI (Metal Nitride Oxide Silicon-Large Scale Integrated) chip measures 114 by 140 mils. The standard version is a non-volatile, 1,024-bit read-only memory applicable to moderate-speed, general-purpose data processing applications, according to a company spokesman.

The bits are organized as 256 addresses with four output terminals each. Memory contents can be erased and altered externally from the device leads with no restrictions. Output can be either TTL- or MOS-compatible.

Controller Handles Dual-Density Drives For Sigma Processors

IRVINE, Calif. – A controller for Xerox Sigma central processors that handles both single- and double-density disk drives is available from Telefile Computer Products.

The DC-32X disk file controller handles both IBM 2314 (203-track) single-density drives and (416-track) double-density drives. Selection of single- or double-density drives is made through the manual positioning of a panel switch. This switch eliminates the need for two separate controllers, the firm explained.

The switchable controller is designed for the Sigma 2 through 9 central processors. In another application, a dual-access switch can be used to permit either of two Sigma central processors to operate off-line, on-line or in dual access mode whereby either CPU can gain access to any of up to 16 spindles.

The basic DS-32X free-standing unit in its own cabinet with a two-drive capacity sells for $19,200. For an additional charge it can be field-modified to handle eight drives.

Delivery is 90 days from 17795 Sky Park Circle, 92664.

Correction

The price for 1M byte of Itel 155/PSU and the IBM DAT box [CW, June 6] is $22,500/mo on a five-year lease.

Hardwired Processor Performs Fast Fourier Transforms

NORTHRIDGE, Calif. – The Spectra 900 from Spectra Data Co. is a scientifically oriented hardwired processor designed to perform forward or inverse fast fourier transform (FFT) and coordinate conversion operations on complex data arrays.

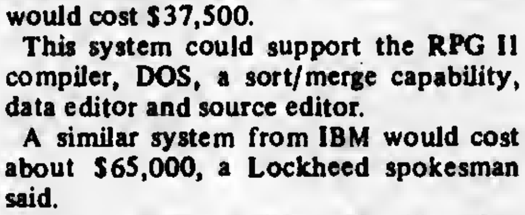
Computations are performed with 20-bit precision, and the most significant (rounded) bits are returned to associated memory along the block floating point exponent, the firm said.

The data path can be 16-, 18-, or 20 bits depending on the user's central processor. The chassis of the Spectra 900 can accomodate eight modules of memory – each 8K words by 18 bits.

Time for operation for the FFT ranges from 4.2 msec for 256 complex points, to 46 msec for 2,048 complex points and 103 msec for 4,096 complex points.

These speeds can be halved by plugging in two 900 modules in one mainframe chassis, the firm added.

Basic price for the FFT processor is $12,750 from 18758-6 Bryant St., 91324.



Spectra 900 Fast Fourier Processor

ECG Data Linked to 360/370

PRINCETON, N.J. – Medaq/r from Metromation Inc. is a system that transmits electrocardiogram (ECG) and other clinical data to IBM 360/370 computers for interpretation.

In a typical operation an ECG interface terminal automatically responds to a telephone call from a technician who may be located at any hospital with telephone service to the central processor.

After receiving verification that the line to the central processor has been enabled, the technician transmits patient identification and ECG data. During this operation the system guides the technician, signaling when an acceptable ECG has been received.

Data Digitized

This data is then digitized and passed to the host computer via data or multiplex channels. After the data is processed, results are transmitted to local and/or remote printers.

The first Medaq/4 is being installed at Upsher Laboratories of Kansas City, Metromation said. In this installation the system is tied to a 360/44 to process ECGs for various outlying hospitals. ECGs will be interpreted by a program developed by Dr. R. E. Smith of the Mayo Clinic.

Another software program available to users is the IBM-Bonner electrocardiogram interpretive program which allows the user to perform teleprocessing operations without a separate communications adapter.

Medaq/4 is one of a series of clinical computers available from Metromation. Other Medaqs include stand-alone ECG, clinical laboratory, cardiac catheterization and various monitoring systems.

Cost of the system is $25,000 from 1101 State Road, 08540.

Disk System Tied to PDP-11, Nova

N. SPRINGFIELD, Vt. – A disk system from Vermont Research Corp. allows PDP-11 and Nova minicomputer users to attach up to four disk drives through one DMA channel.

The series 5000 disk memories feature 666 track/in., 4,200 bit/in., 38 msec average access time, storage capacity of either 37M or 62M bytes, and data transfer rate of 842k byte/sec.

The 8100 controller can be interfaced to the Digital Equipment PDP-11 and Data General Nova. But the unit is microprogrammable and Vermont Research will restructure the unit for other mainframes by special quote.

Cost of the disk subsystem including controller is $17,000 and $15,500 for the 37M and 62M byte models, respectively. The firm is at Precision Park, 05150.

Firm Pays for CE Training

IBM 1620 'Doing Fine Down Under'

By Toni Wiseman
Of the CW Staff

SYDNEY, Australia – The climate "down under" seems conducive to a long and productive life for computers, but apparently in some cases users must pay for the training of their own customer engineers.

Armco Co. reported that its IBM 1620 is still going strong, successfully running a commercial data base system. Current applications include not only a seven-report system of sales, marketing and finance information, but also fabricated inventory, job costing, engineering design and market analysis.

Debtor and creditor processing is presently in the development stage.

Armco is more than pleased with the cost/performance of the 1620, which it purchased for 15% of the original purchase price. The one problem is maintenance because the computer is considered a "vintage" machine. "IBM did not have any persons trained on the 1620 Model II and hence charged us $5,000 to train two of their customer engineers," said Ross Mackay, Armco's DP manager.

"Before purchasing the 1620, we were running engineering design programs on a GE time-sharing terminal at a cost of $3,500 to $4,000 per month. All of these programs were simple to convert to the 1620," Mackay said.

Six Years Young

Armco purchased the computer from St. Andrew's University in Scotland three years ago; the 1620 was then six years old. The company installed it at its Sutherland, Australia, headquarters and began running engineering design programs.

Since then commercial applications have been added to the Fortran machine. These new applications necessitated the addition of a permanent file handling system, which the original scientific configuration did not include. A non-vendor system now handles fixed and variable length records.

The configuration includes 60K of BCD memory, three 1311 disk drives, card punch and reader, and a 600 line/min printer.

Not Overworked

The system is running well and efficiently, according to Mackay, but is in no way overworked. The computer runs 10 hours a day – six of routine work and four of testing.

"I expect to get another four years service from the machine," Mackay concluded, but he added that its useful life will depend largely on IBM's willingness to help maintain it.

However, Mackay expects IBM to give him one year's notice in the event they consider stopping service.

OEM Products

While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users. Further, while some of this equipment is not presently available to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.

1,200 Bit/Sec FSK Modem Handles Synchronous Data

FORT WASHINGTON, Pa. – Tele-Dynamics has announced the Model 7202S OEM data set, which operates at 1,200 bit/sec. The medium speed, FSK modem is capable of transmitting and receiving synchronous digital data over the public (DDD) network or private lines.

The 7202S can be operated full-duplex over four-wire lines or half-duplex over two-wire lines. Total synchronization time required is 60 msec from the start of received FSK data, including the carrier detector turn-on delay.

Immediate delivery is available from 525 Virginia Drive, 19034.

Serial Printer Uses One Hammer

SECAUCUS, N.J. – A 15 char./sec, 80-column serial page printer – the Facit 4553 – uses only one print hammer.

The one hammer design means fewer moving parts and thus, a more reliable operation, according to a spokesman for Facit-Addo, Inc.

Printout is made on pressure sensitive paper with characters formed in a 5 by 7 dot matrix. The serial page printer contains drive/control electronics including a character generator contained on two exchangable PCBs.

It is priced at $795 in single quantities with volume discounts available from 501 Windsor Drive, 07094.

Disk Plugs to Most Minis

GOLETA, Calif. – The M200 series of fixed-head disk memories is available in configurations which are plug-to-plug compatible with most minicomputers, according to Applied Magnetics Corp.

Interfaces available include those for the PDP-11, Nova, Super Nova, H316, H516 and others.

The disk subsystem is available with storage capacities to 9M bits.

Cost depends on size and number of disks and the interface ordered from 75 Robin Hill Road, 93017.

Closed-Loop N/C Controls Machines

IRVINE, Calif. – Synergistic Products, Inc. is offering its Model 1800 Computrol N/C unit for machine control.

The SPI Computrol N/C is an integrated circuit, absolute-positioning controller. It has a closed-loop servo system designed to drive and continuously monitor the X and Y motors on almost any two-axis positioning system. Special purpose computer circuits are incorporated in the system to permit performance of 24-bit additions and subtractions.

These circuits also monitor velocity, permitting velocity profiles that result in higher traversing speeds, with optimum start/stop characteristics, the firm said from 1902 McGaw Ave., 93705.

Other OEM Products

The HF Computer Controlled Receiving System – HR-240NS from Lorch Electronics Corp., Englewood, N.J. – covers the 2 to 32 MHz range and can be used in surveillance, communications and radio direction finding.

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A 10-in. thermal strip chart recorder from Esterline Angus, Indianapolis, Inc., is designed for applications involving oscillation of the writing element, slow change input signals and continuous unattended recording.

From AUERBACH...
Books that help you Plan and Control
Data Processing

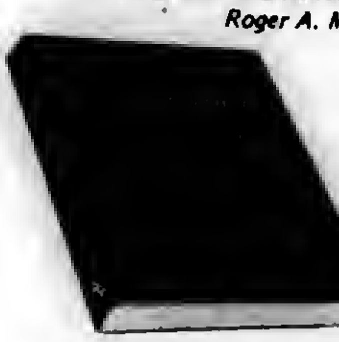
1. COMPUTERS: Auditing and Control
New
Elise G. Jancura, CPA, and Arnold H. Berger

Prevent computer assisted fraud from seeping into your business. This book covers controlling, verifying and evaluating the results of computerized functions with emphasis on methods of effective auditing to improve the credibility of computer produced information. Cost control, application development, equipment utilization, system design, standards, documentation and more are covered to fit the needs of accountants, controllers and DP managers.
P251 / $14.95

2. COMPUTER CONTROL GUIDELINES
Canadian Institute of Chartered Accountants

Here is a practical set of guidelines for preventing costly EDP errors before they occur. It sets minimum standards in seven universally applicable control functions – pre-installation, organizational, development, operations, processing, documentation, and outside data centers. P195 paper / $10.00

3. CDP REVIEW MANUAL - A Data Processing Handbook
Roger A. MacGowan and Reid Henderson



A comprehensive review for the CDP exam. 537 Q's & A's encompass all major DP subject areas: equipment, programming and software, DP management, accounting, mathematics, statistics, and systems analysis and design.
P225 / $12.50

4. TECHNIQUES FOR DIRECT ACCESS
New
Keith London
A much needed reference that introduces you to all aspects of direct access devices and their uses. Hardware characteristics and basic software approaches are described. Devices treated are those most widely marketed and those with the best performance. It also considers theory and fundamentals of file design, with specific discussion of sequential and random storage and access. Specialized file structures, file security and control, programming and general software are also covered. P208 / $14.95

5. MODULAR PROGRAMMING
Jeff Maynard
Covers economic and other advantages of the use of modular programming in data processing. First it describes the theory of modular programming, then it shows you how to apply practical considerations to the actual working of the system. Covers program production, methodology of modularization, and a simple system of conversion for any program specification.
P231 / $8.95

6. THEORETICAL ANALYSIS OF INFORMATION SYSTEMS, 4th Edition
New
Borje Langefors
This book describes the analysis and design of information systems from both the analytical and theoretical viewpoint. It covers not only management information systems but other applications as well. Primary emphasis is on basic principles of analysis in practical systems work and theoretical research.
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7. AUERBACH ON SMALL BUSINESS COMPUTERS
New
Explains the criteria for assessing the merit of computer usage in a small business environment. Also less costly approaches to data processing when a SBC is not needed. Everything you need to know to take advantage of SBC's.
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8. AUERBACH ON TIME SHARING, Revised Edition
A valuable reference for the present and prospective user of a time sharing service, this book aids the choice of a service based on the best information available. It surveys current technology, describes equipment and associated languages, specifies benchmarks for evaluation of a time sharing service.
P217 / $19.95

Send me the following books for a 15 day examination. If not satisfied, I can return them. Otherwise I will remit payment, plus shipping charges.

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Firm 'Finds' FBI's Fingerprint Reader Full of Related Uses

By Ken Shonk
Of the CW Staff

BUFFALO, N.Y. – Automatic signature verification applicable to credit cards and checks, rapid processing of aerial photographs, and access control through the use of unmanned personal identification terminals. These are all present development projects of Calspan Corp. using the technology the company developed for Finder, the FBI's prototype fingerprint reader.

"The personal identification terminals which read a fingerprint directly from a finger is the most advanced project," according to Ron Swonger, a development engineer directing Finder-related projects.

"We have a version operating now that has a false acceptance rate on unauthorized applications of less than one in 1,000."

The primary use for the terminals, the company said, would be access control, especially at access gates where it is not economical to have a guard. Losses of cargoes from theft and damage exceed $1 billion annually, Swonger said, pointing out the need for such access control.

The primary problem in the development of the personal identification terminal was designing for low-cost production as well as data transmission over low-cost communications lines, Swonger related.

Calspan developed Finder, which led to new advances in automatic image processing, under a five-year, $1.25 million contract with the FBI and in cooperation with the National Bureau of Standards. The NBS worked on the development of automatic registration, classification and matching algorithms, which comprise the search operations.

How Finder Works

A small general-purpose computer controls Finder's operations, which start with the loading of a standard fingerprint card. A flying spot scanner then scans each print with a 0.001 inch spot of light every 0.002 inch, resulting in 500,000 measurements per print in a half second. Photomultipliers measure the reflected light from each point on a 16-step scale.

Readings are processed through a special-purpose computer that enhances the image by moving a square "window" 25 points on a side across the arrayed data sequentially and changing all the grays to black or white.

A second "window" 16 points on a side analyzes the binary-image and identifies ridge endings and bifurcations, locations where the ridges split or end in Y's.

On each print Finder picks out about 80 of the tiny characteristics which differentiate between individual fingerprints, achieving a detection rate of better than 90%.

Calspan developed Finder and the personal identification terminal in its image-processing laboratory using two PDP-9s connected back-to-back with 16K bytes of shared memory. Some of the analysis of the criteria for image-processing development was also done on the company's IBM 370/165.

"Both signature verification and aerial photograph analysis applications of Finder's technology are still in the laboratory experimental stage," Swonger reported.

"The fundamental problem in signature verification is the variability," he said, "due to pen, position and paper as well as substantial changes in style and changing signatures over time."

Swonger noted an acceptable false reject and acceptance rate for a usable system would be about one in 500.

Computers 'Outpsyche' Psychiatrists

CW Hawaii Bureau

HONOLULU – The unreliability of the clinical method for arriving at psychiatric diagnoses has "led to several efforts to utilize computers for integrating clinical observations into psychiatric diagnoses," attendees at the American Psychiatric Association's annual convention were told here recently.

Reporting on the use of computers in assisting psychiatric diagnoses, Dr. Robert L. Spitzer and Dr. Jean Endicott of the New York State Department of Mental Hygiene said out of 100 consecutive patient admissions, 65 of their computerized diagnoses were in agreement with therapists' diagnoses.

In 20 of the cases the computer diagnoses were reported as helpful, while in 15 the computer diagnoses failed.

Failures were attributed to "poor ratings by the therapist, poor algorithms and inconsistencies between what was reported in the clinical records and what was noted on the automated forms and, finally, ambiguities in the official (psychiatric) nomenclature," Spitzer and Endicott said.

The researchers cited several advantages of computer-generated psychiatric diagnoses:

- "First of all, there is the value of necessarily perfect reliability in the sense that given the same data, the computer program will always yield the same diagnosis.
- Secondly, the computer program can utilize rules developed from a large and more diverse sample of actual patients than any single clinician can command.
- "Third, the rules by which a computer assigns a diagnosis are explicit and public.
- "Finally, empirically based rules constitute at least potential advances in our scientific understanding of the complex relationship between symptom characteristics and diagnoses," the researchers said.

The Line Forms Here For the Grocery Club

LOUISVILLE, Ky. – Consumers already have computerized car rentals, dating services and banking accounts, and now housewives here are being offered computerized grocery shopping.

Call-A-Mart is the computerized supermarket brainchild of Mark Weiss, who claims his service can offer same-day delivery of groceries at prices competitive with regular markets.

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"Initial membership will be limited to 3,000," said Weiss, "but within a year we'll be offering service throughout the city and across the river in Indiana."

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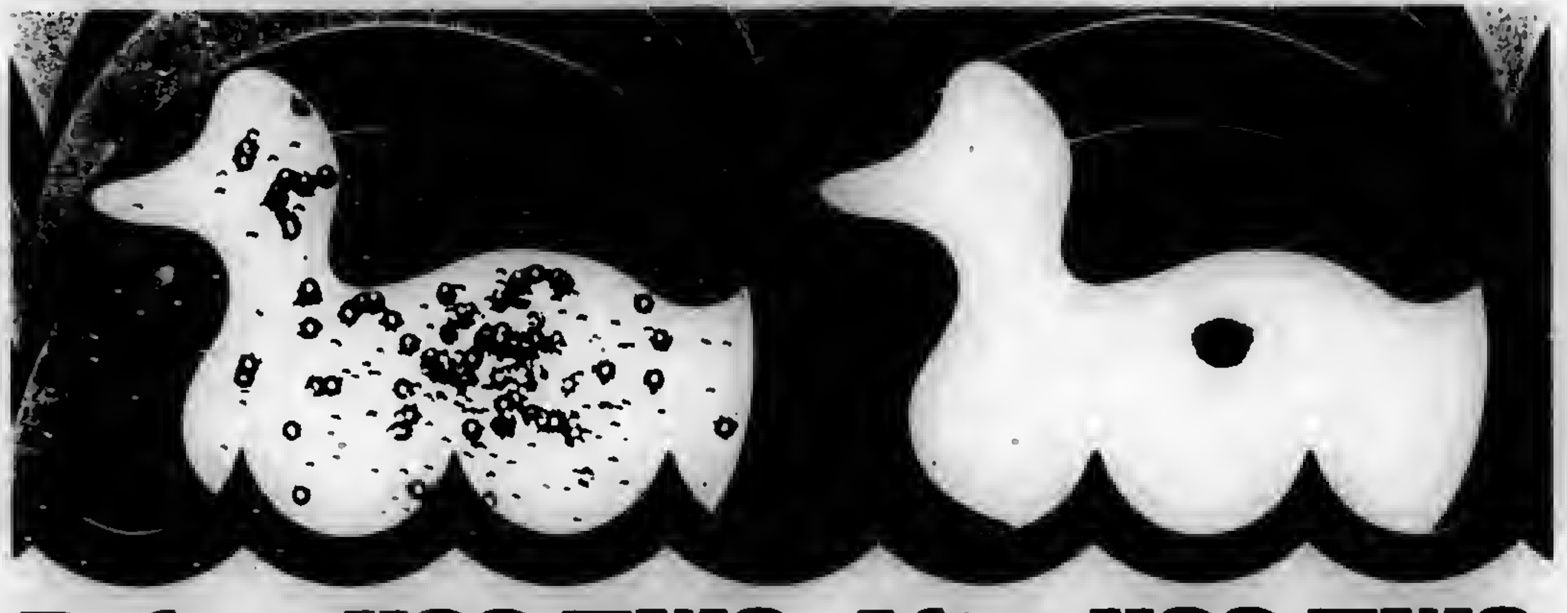

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Fred

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COMPUTER INDUSTRY

CI Notes

Univac Obtains License To Build Memorex Disks

SANTA CLARA, Calif. – Univac has obtained from Memorex Corp. a non-exclusive license to manufacture Model 651 and 652 flexible disk units for use in Univac products.

A Memorex official said Univac will buy the units on an OEM basis until it begins production.

Memorex is currently manufacturing the 651, and deliveries of the 652 are scheduled for the fourth quarter, after it has been configured to be media-compatible with the IBM 3740 data entry system.

Univac officials declined comment on the firm's plans concerning the disk units.

UCC Effects Realignment

DALLAS – University Computing Co. has realigned its organization into five divisions in order to strengthen the profit and growth potential of its commercial, banking and engineering/scientific computing businesses.

The divisions are: Commercial and Aerospace Group; Scientific and Engineering Division; International and Contract Services; UCC Europe; and Energy Group.

The realignment will allow specialization by product and by industry, eliminating excess equipment, facilities and functions, observed Donald G. Thomson, president.

AMS Cuts Payroll

SUNNYVALE, Calif. – Advanced Memory Systems, Inc. (AMS) has reduced its payroll by 110 overhead and support personnel.

The move is designed to reflect a closer relationship to presently expected levels of business, the firm said. Although new orders continue to be strong, AMS had prepared for a higher level of sales than is now expected, President Robert Lloyd said. Shipments of IBM-compatible systems are expected to be below the maximum levels specified in contracts, he added.

Cogar Corp. has ordered $500,000 of 1K MOS RAMs from AMS over the next year.

Supershorts

Decision, Inc., Oakland, Calif., has received a contract from Cummins-Allison Corp. for its OCR 7600 page scanner. The equipment, valued at over $3 million, will be marketed as part of Cummins' Keyscan data entry system.

– – –

Megadata Computer and Communications Corp. has licensed Leigh Instruments, Ltd., Ottawa, for the manufacture and sale of Megadata CRT terminals in Canada.

– – –

'IBM Goofed,' Study Claims

IBM 4-Year Lease Found Lacking Appeal

By a CW Staff Writer

NEWTON, Mass. – A survey of 370 users has indicated an "underwhelming" response to IBM's four-year term lease plan, indicating "IBM finally goofed in reading the marketplace," according to *EDP Industry Report*, a publication of International Data Corp., a market research firm here.

Although 76% of the respondents indicated they used their systems enough to consider the plan, which eliminates overtime charges, only 6% said they signed up for the plan on their rented virtual storage 370s.

Furthermore, the respondents indicated a key reason for declining what many estimated to be a 13% monthly rental reduction was their desire to keep their flexibility. Sixty-four percent said the lock-in, extension and termination constraints figured heavily in their decision, and 20% answered moderately while 6% said the constraints played a minor role and 10% said they were not a factor, according to the report.

Not only were positive responses to the plan seemingly slim, although the survey was taken only about a month after the plan was announced, but the plan may have backfired, "since its promise of long life for VS/370 seems to be promoting more interest in purchase and third-party lease," the report observed.

In addition, the response indicates that users are becoming more independent and more "confident of their ability to do it themselves; they more clearly see through IBM's moves," according to the report.

"For every user who had ordered a 370 for rental and who now plans to take IBM up on its four-year plan, almost two have opted for an acquisition method – purchase or third-party lease – that defeats IBM's apparent attempt to insure monthly payments for an extended period," the newsletter reported.

Although users frequently change their minds, current orders of VS 370 systems for rental at the time of the four-year term lease (4 ytl) announcement indicate 38 rentals, 15 third-party leases, three purchases and nine four-year terms.

In the survey, the net effect of the 4 ytl announcement is "negative." Twenty-two percent of the 158s and 168s on order "moved away from monthly payments to IBM while 10% that had planned to buy outright from IBM (direct or via third party) have accepted the 4 ytl," the report said.

The plan had the largest impact on 158s and 168s on order, with 158 future users leading in converts to the 4 ytl. About 50% are switching from one acquisition method to another, of which more than a third will go to a third-party lease and an equal number to the 4 ytl.

In the 168s, of the 75% considering switching methods, many are going from purchase to third-party lease, apparently to maintain more flexibility, the newsletter observed.

The plan evidently appeals less to users of small 370s, which may "illustrate the smaller user's need for flexibility and lack of equipment definition two or four years out."

The majority of responses from the 155 and 165 users, for whom the plan is not available, indicated they would consider it if eligible.

The 4 ytl did not seem to appeal to users already engaged in third-party leases. They indicated they converted to third-party lease for economic reasons in the first place, and the reasons still applied.

CIA Fears IBM Self-Division Before Government Suit Settled

By E. Drake Lundell Jr.
Of the CW Staff

LOS ANGELES – Will IBM divide itself and thereby gain respite from the current government antitrust suit against it?

That is currently the worry of the Computer Industry Association, which in turn predicts that such a unilateral move on the part of IBM could be disastrous for the rest of the industry and for the country at large.

Three Outcomes Seen

The association noted it sees three possible outcomes of the government suit against IBM if it is successfully prosecuted by the government – all of which the association feels would be unacceptable to the IBM management:

- IBM might have its marketing and competitive practices severely restricted and regulated by the government. This solution would probably be least odious to IBM since it would not bring about a reduction in IBM's control over the market in the near term, the CIA said.
- IBM would be required to reduce its market share in the industry – an antitrust solution that has been tried before, and which the association said would probably be most odious to IBM management.
- IBM would be restructured into several competing companies, as is suggested in the government suit against the firm. The CIA said that IBM management would probably not like this solution since it would effectively end its market control.

IBM's Move?

Then from the point of view of IBM management, what would be the ideal solution? According to the CIA, it might be a voluntary, unilateral restructuring of the firm into two new companies.

This could be accomplished, the association suggested, by setting up an IBM Data System Corporation and an IBM Business Systems Corporation, with the business systems unit consisting of all personnel, plants and leased equipment associated with the 370/135 and the 360/30 on down, in addition to the System 3 and the present office products division.

The other division would be responsible for all of the other products of the firm in the computer industries. The plants and laboratories of the firm would be split among the two new divisions, according to the plan.

While the idea of IBM splitting itself up voluntarily might seem farfetched, the association said, "We don't think so."

The group noted that the two surviving companies would each have less than 40% of the general-purpose computer market, and on that basis the government would probably drop its charges against the firm, it noted.

The new companies would also remain the dominant factors in the computer business, the CIA added, with each having revenues over $4 billion yearly.

In addition, such a split would protect the companies' stockholders "from the possible loss in value that would be inevitable if the government were to win a judgment and the numerous triple damage suits that would follow," according to the association.

Finally, the two new companies would not have any of the legal constraints on their competitive posture that now bind the overall corporation.

"The two new companies could swallow up that portion of the market held by the five dwarfs and still have only 50% of the market each" – a level that is not considered monopolistic.

The association is presently seeking opinions from users and members of the computer community on the idea and whether other parts of the computer business would agree with its assessment that such a move on the part of IBM would be a disaster for the industry.

Inforex Pact Found in Default

BURLINGTON, Mass. – The General Services Administration has notified Inforex, Inc. that it considers the firm's key-to-disk units in default under its contract to the Social Security Administration.

"Inforex denies that it is in default under the contract, and will vigorously contest the decision," Inforex President T:B. Horgan stated.

The dispute involves performance of the software in a benchmark run recently by the GSA, a spokesman said.

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Vendors Call CRT Terminal Market 'Very Competitive'

By Molly Upton
Of the CW Staff

NEW YORK – While several vendors acknowledge the CRT market is very competitive, few see any likelihood of further reduction of prices, at least in the next year, according to a recent *Computerworld* survey.

"The market is as competitive as possible," noted Jeff Lamm, sales manager of Infoton, Inc. He mentioned he is not concerned about competition from units offered on rental basis, as he said the Infoton Vistar/GT is cheap enough just to buy. The unit is priced at $1,595.

CW Photos by M. Upton

Lamm

Trischitta

Tektronix, known for its graphic CRTs, has come out with an alphanumeric unit, the 4023, "priced in the exact range" of other units, "which has to say something" about the market, noted Paul Trischitta, Philadelphia district manager.

CW Inquiring Photographer

Duke DeForest, vice-president of marketing for Beehive, said it's the old supply and demand factors. Although Beehive has a mini Bee at the low end of the line for $1,650, he said he doesn't foresee any run on the bottom end of the line.

He noted the user has increasing options from which to choose, and has to be careful he selects a terminal that will meet both his current and future needs in terms of compatibility.

Omron's vice-president of research and development, Russell C. Dubois, said his firm views its CRTs as part of a system, with the unit selected determined by requirements, rather than as a single price item. "Absolutely, it's a competitive market, but everything in DP is," he observed.

DeForest

The CRT market is expanding, and yes, there is a price war, according to Bill Terry, national sales manager of Lear Siegler, Inc.

Everyone is trying to bring down the price, he noted, but he foresees prices remaining stable for about a year, because of manufacturing and components costs. He added that further price reductions depend largely on conditions in the integrated circuits area.

Dubois

Terry

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Foreign Orders & Installations

Postipankki, the Finnish Postal Bank and PostGiro, has ordered two Trace (transaction control and encoding) document processing systems from AB Recognition Equipment Industri to process up to half a million daily transactions for the users of the postal giro.

Kassenartzlicke Vereinigung, an association of four regional medical insurance societies in West Germany, has ordered four Univac 1106 systems for administrative tasks including a nationwide integrated network to coordinate the clearance of doctors' bills and social insurance claims.

Eastbourne Waterworks Co., Great Britain, has ordered a Century 101 system from NCR. The system will provide engineering data such as water treatment reports, in addition to handling business applications.

E.B. Eddy Co., a Canadian paper producer, has ordered nine Series 1000 Model 75 control systems from Measurex.

Bentalls, a British department store, has installed 45 NCR 280 electronic point-of-sale terminals.

Packages or In-House?

Myths of Software Vendors Revealed

By a CW Staff Writer

NEW YORK – Software vendors, or firms considering entering the market, tend to believe at least three separate myths, according to Burton Grad, director of development for cross-industry applications at IBM.

At an NCC session on the status and future of software products he warned that too long a delay in seeing the reality in any of these areas could be disastrous.

The myths, he said, are: there is no monolithic body of software that can be packaged; there is no market of users; and there are no easy profits.

Today, programmers in the 50,000 or so U.S. installations are writing something like a million and a half new programs each year and, on top of that, "we're writing lousier code than we've ever written before," Larry Welke, publisher of *ICP Quarterly* said.

This situation, he added, exemplifies the "funny thinking" that accounts for the inefficient use of most DP. The in-house development of so many programs makes sense only "if there are 49,000-odd ways of processing payroll."

Twenty-five years into DP and we find ourselves asking no more of a program than "does it work?" Welke noted. Users shouldn't have to depend on their own skills to get the basic applications into operation, he said.

Instead, the acquisition of software packages, even if they have to be tailored somewhat, can lead the DP management to business-like thinking. Packages have clearly defined functions, clearly stated cost (below in-house development costs) and – perhaps most important – availability within specified time constraints.

They can relieve the in-house programmers of essentially mundane tasks so they can spend more time understanding the system software and optimizing its operation for the installation's needs. That may well be vital, he noted, "when OS becomes no more than a subset of something much worse."

Package user Adrian Basili, chief of application studies for Western Electric, tended to agree with his fellow panelist, but added that his shop tends to use system and support packages, rather than applications. "We know the logic we want in the processing and feel we can write it better in-house," he said.

Earlier in the panel discussion, Phillipe Dreyfus, president of CAP Europe, a software development firm in Paris, spelled out problems in attempting to sell software in Europe, but noted that the market is growing anyway. IBM is the dominant vendor, overall, he admitted, but its position varies drastically from country to country.

Political and legal differences mean there are "zero openings" for any broad-based business-oriented applications packages. Techically-oriented applications, and system and utility packages are saleable, he said.

The way European businessmen operate has an effect on the potential market as well, Dreyfus continued. Phone calls and mail responses are not really acceptable: personal visits are required. Europeans also tend to be more secretive in their operations, which makes it hard to know what their requirements are, but leads to "common law acceptance" of contract terms without concern for patents and trade secrets, he added.

Contracts

Data Dimensions, Inc. has been awarded a contract by United Press International for the development and implementation of a Regional Information Storage and Retrieval System.

Keane Associates, Inc. has received a contract worth over $170,000 from the Industrial Ceramics Division of Norton Co., Worcester, Mass., to design, develop and test an inventory control system.

Atlantic Research Corp. has been awarded a contract by the Baltimore Regional Planning Council to develop an improved Emergency Medical Service communications system to serve six jurisdictions in Maryland.

Continential Can Co.'s Metal Operations has chosen Scientific Time Sharing Corp. to support the company's nationwide accounting operations. Value of the contract is expected to exceed $165,000 annually.

Xynetics, Inc. has begun delivery of a $1.5 million shipment of Model 2000 plotters to Camsco, Inc., Richardson, Texas. The plotters will be incorporated into the Camsco computerized systems used in the apparel and shoe manufacturing industries.

GTE Sylvania Inc. has received a contract for about $3 million from the U.S. Navy to perform a competitive concept validation study for a global communications system.

A facilities management contract involving the installation and operation of an NCR Century 101 computer system for four area commercial banks has been signed in Libertyville, Ill.

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For either OS or DOS, Boothe provides reporting programs which allow for the generation of the following reports: JOB ACCOUNTING, MULTIPROGRAMMING THROUGHPUT ANALYSIS, RESOURCE UTILIZATION, OPERATOR EFFICIENCY and PROGRAMMER PERFORMANCE ANALYSIS.

The OS version of CIMS offers an additional REPORT WRITER system which allows the user to generate specific reports. The REPORT WRITER accepts SMF data as well as any other sequential data. Reports are generated to show the impact of virtual storage paging, device utilization, wait time, CPU dependence and storage allocation requirements. The Report Writer supports HASP accounting records and provides a flexible method of providing installation charge back reports.

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EM&M Seeks to Expand To a Multiproduct Base

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Electronic Memories & Magnetics Corp. (EM&M) plans to create a multiproduct base that ultimately will lead it into the systems business.

Edward Farris, vice-president and general manager of the Computer Products Division, said: "We now realize that in order to get our cost of selling down, we must bring to the market more than just memories."

He said EM&M is looking to expand the product base through internal development, OEM agreements and acquisitions.

Mainframes Unlikely

A front-end processor as well as other peripherals are possibilities, he said, but there is no burning desire to get into the mainframe business.

EM&M, he said, is three to five months away from introducing a peripheral outside the current memory line.

Core has been EM&M's bread and butter and Farris said he believes it will be an important part of the memory market for a long time to come, semiconductors notwithstanding.

"I expect to see a dramatic increase in the growth of core bits used in the next five years," Farris said, citing the trend to larger and larger memories.

Semiconductors now "are not able to obtain the cost/performance in any volume to take a mainframe position. If a guy needs two to three million bits of memory, core is still the lowest cost way and highest performance way," he said.

Farris, however, said core and semiconductors are complementary and will grow together.

"Ultimately we have to be in the semiconductor business and there is no doubt in my mind that semiconductors will take the position in the hierarchy of memory that core now enjoys."

Semis Attractive

EM&M, he said, is making substantial efforts to develop semiconductor capability and is shipping bipolar devices.

An N-MOS memory will be available in the third quarter and in production in the fourth quarter, Farris said.

It will be used for a memory for the 370 Model 145, if it is ready in time; otherwise bipolar will be used and N-MOS integrated later, he said.

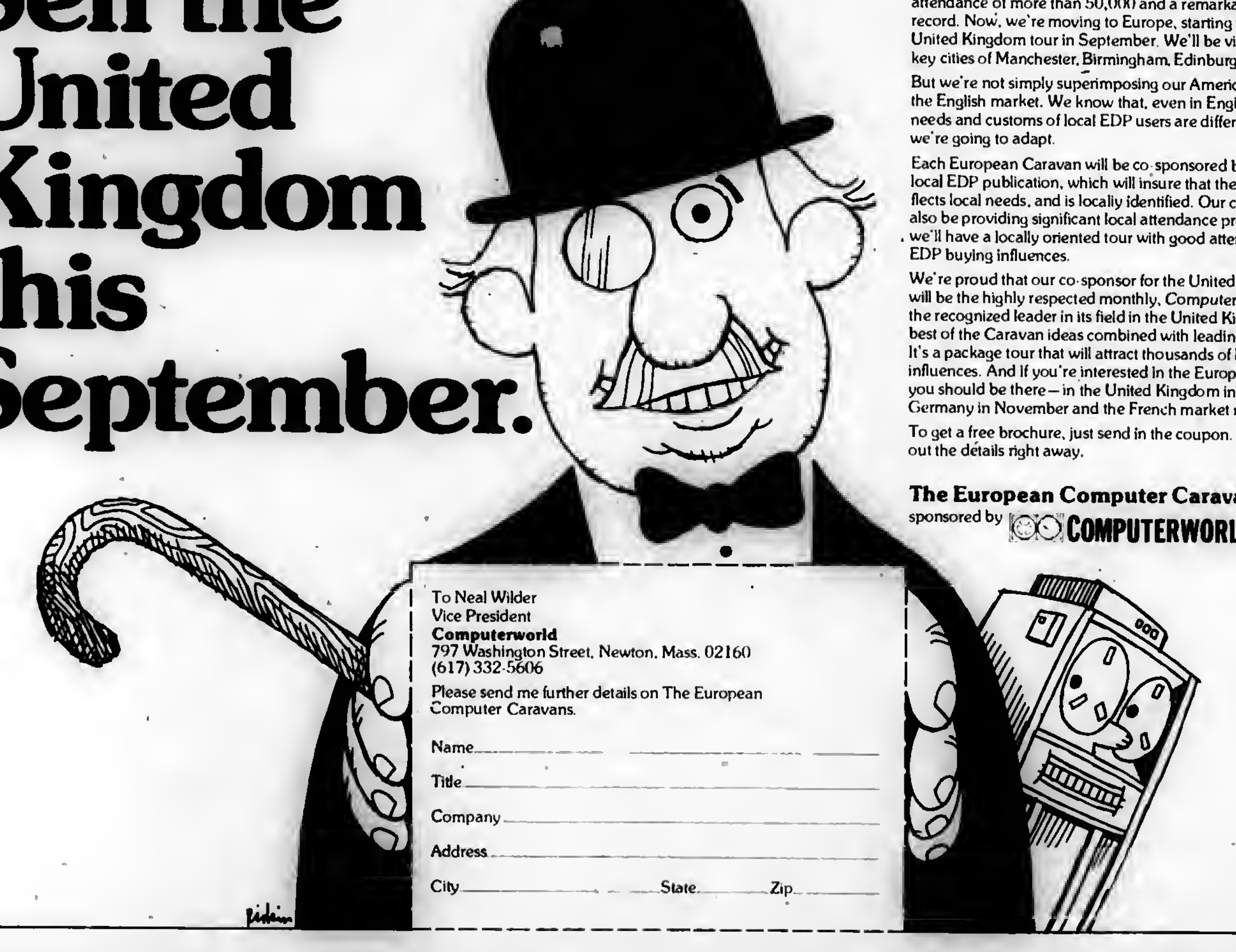
Farris said the overriding problem in the market now is an extremely severe price erosion in core add-on and replacement memory, but noted "there is a general firming up of prices."

One of the reasons for the price erosion, he said, was that "very few of us recognized the cost of supporting this product.

"We all came out of the OEM business and didn't know what was required to support the end-user product. We didn't do a good job of estimating the cost of support."

Farris said EM&M's Memory Products Group will have a "banner year" in 1973.

Sell the United Kingdom this September.



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DP Exports Spur Rise in UK Industry

LONDON – A rise in exports of computer products spurred an overall increase in the industry in the UK, according to a report published by the Department of Trade and Industry here.

Export deliveries reached a total value in 1972 of $276.3 million of total deliveries of $762.3 million during the year and the proportion is expected to continue to increase, the report indicated.

As an example of the growing significance of exports to the overall industry picture, the report cited the improvement in exports over 1970, before the industry experienced its slump.

Home deliveries in 1972 reached $490.9 million, a 5% improvement over the 1971 figure, but still less than the 1970 level of almost $508 million.

Exports, however, were not only 12% greater than in 1971 but topped the 1970 figure of $247.1 million.

The portion of export deliveries grew 7% from 1971, and at the end of the year export orders accounted for almost 45% of total orders on hand, 2% greater than three months earlier and 18% above the previous year, the report showed.

The fourth quarter was a record for the industry, with total computer output of $244.8 million, an improvement of 5% over the third quarter of 1972 and 19% higher than a year ago.

The year as a whole also set records for computer output, with a total of $849.2 million, a 5% increase over 1970 and 8.5% rise over 1971.

Eldorado Shifts Lineup

CW West Coast Bureau

CONCORD, Calif. – Gene N. Landrum, president of Eldorado Computer Corp., has assumed additional duties as a corporate vice-president at the parent company, Eldorado Electrodata.

Dennis Mandell, formerly western regional sales manager of Eldorado Computer Corp., has been promoted to director of marketing for the computer company.

Landrum said his new duties would not lessen the emphasis on the computer effort, which he said is "going full steam."

Expansions

Singer Business Machines has started construction of a 12,000-sq-ft sales and service center just west of Stemmons Freeway in North Dallas.

Hewlett-Peckard Co. is erecting a 260,000-sq-ft, two-story building on the company's 97-acre manufacturing facilities site in Colorado Springs, Colo.

Four-Phase Systems, Inc. will lease a newly constructed 135,000-sq-ft facility in Cupertino, Calif., for office and manufacturing space to produce the firm's Intelligent Terminal Systems.

Iomec, Inc. is constructing a 60,000-sq-ft building in Senta Clara, Calif., for consolidation of all disk drive manufacturing operations for its DataStor Division.

Capital Computer, Inc., a service corporation, has doubled its office and production capabilities by moving to new headquarters at 1800 Silas Deane Hwy., Rocky Hill, Conn.

MSI Data Corp. has built a 47,000-sq-ft manufacturing facility adjacent to the company's headquarters at 340 Fischer Ave. in Costa Mesa, Calif.

Modular Computer Systems, Inc. has rented a 20,000-sq-ft building next to the company's headquarters in Fort Lauderdale, Fla., to serve primarily as the firm's national training center.

Hewlett-Packard will begin construction this summer of two general-purpose buildings of 135,000-sq-ft each on the company's 55-acre industrial site in Santa Clare, Calif.

GTE Data Service, Inc. will build an 18,000-sq-ft building in Muskegon, Mich., to consolidate its two computer operations in Muskegon and Owosso, ~~Mich~~.

The San Francisco Division of Systems, Science and Software has moved to a new 70,000-sq-ft facility in Heyward, Calif., to better accommodate the recently created bay area division.

Decision Data Computer Corp. has begun construction on a 48,000-sq-ft addition to its headquarters and manufacturing facility in Horsham, Pa.

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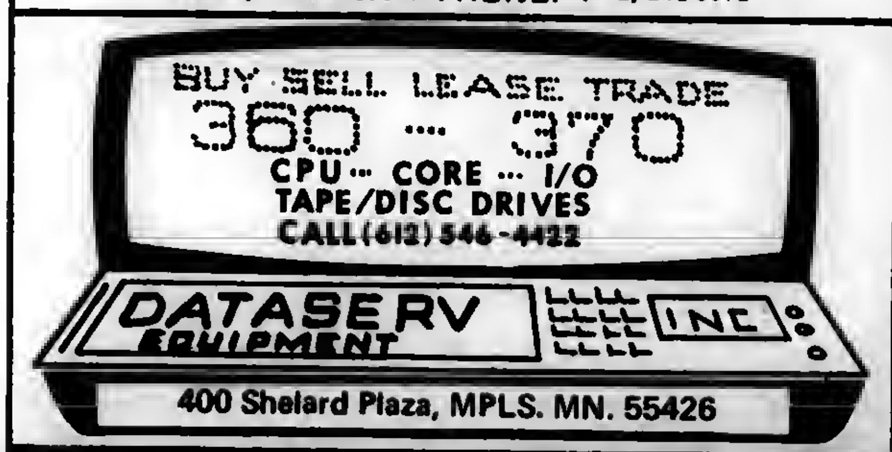

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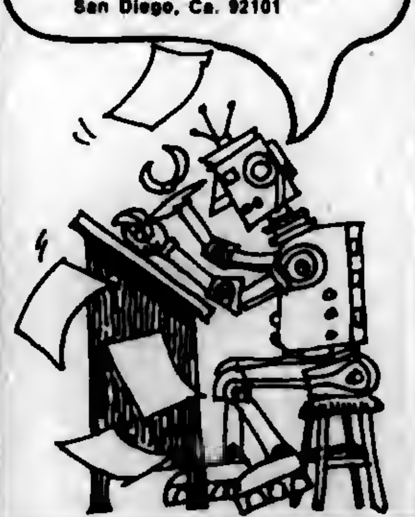

Acquisitions

Allen-Babcock Computing, Inc. of Los Angeles has acquired **Areo Data Processing Services** of Portland, Ore., a wholly owned subsidiary of Amerco, Inc.

Computer Machinery Corp. has agreed in principle to acquire **Cipher Data Products, Inc.** through an undisclosed rate of exchange of common stock. Cipher supplies magnetic tape drives and cassette transports.

A group consisting primarily of British companies has acquired **Advanced Systems Inc.** for 520,000 shares of common stock at $5 a share. The principal firm acquiring Advanced Systems shares is **Education Sciences Ltd.**, Advanced Systems' licensee for Britain and Western Europe.

Boeing Computer Services, Inc. has acquired a significant equity interest of **The Leader Corp.**, a New Mexico-based financial data processing firm, with an agreement to obtain 100% ownership within a three-year period.

Datamation Services of New York City has acquired the **New York DP operations** of Infonational, Inc. of San Diego, Calif. for an undisclosed amount of cash and commissions.

Varisystems Corp. of Plainview, N.Y., has acquired the **data terminal product** line of Maxson Electronics Corp. for an undisclosed amount of cash and future royalties.

Computer Horizons Corp. has agreed in principle to purchase **Republic Systems and Programming, Inc.** of East Orange, N.J.

Control Data Corp. has acquired **Systems Resources Inc.** of Dallas, which it will maintain as a subsidiary.

Computer Congenerics Corp. has acquired **Compute America Corp.** for an undisclosed price.

General Automation Nets Record

ANAHEIM, Calif. – A strong third quarter has helped General Automation, Inc. achieve record earnings and revenues for the nine-month period ended April 30.

The firm has exceeded the sales and earnings for the full 12 months of fiscal 1972, noted President Lawrence A. Goshorn.

Quarter Earnings Up

In the quarter, earnings rose to $564,000 or 23 cents a share compared with $301,000, including a $140,000 special credit, or 15 cents a share in the comparable year-ago period.

Revenues for the period rose to $7.8 million compared with $4.1 million a year ago.

Nine-month earnings totaled $2 million or 91 cents a share, including a $586,000 special credit. This compares with $912,000 or 50 cents a share in the year-ago period, when a $442,000 special credit was included.

Revenues reached $19.8 million in the period, up from $10.6 million a year ago.

The firm has expanded its sales organization to "better align management responsibilities with the markets and industries targeted in our long-range objectives," Goshorn added.

Datapoint Earnings Head Upward

SAN ANTONIO, Texas – For the third successive quarter, Datapoint Corp. has reported record earnings.

In the three months ended April 30, the firm, formerly Computer Terminal Corp., earned $592,000 or 32 cents a share compared with a loss of $561,000 or 43 cents a share in the same period last year.

Revenues reached $5.3 million, up from $1.4 million a year ago.

Shipments on an "as sold" basis rose to $8.8 million compared with $2.6 million in the comparable year-ago period.

Nine Months

For the nine months, the picture was also bright, with earnings totaling $1.1 million or 64 cents a share compared with a loss of $1.8 million or $1.36 a share in the year-ago period.

Revenues also rose, to $12.2 million from $3.3 million.

Datapoint has secured a $6 million revolving line of credit from the First National Bank of Chicago and Frost National Bank of San Antonio. This represents a $2 million increase.

Under an amended lease financing arrangement, North American Corp. has agreed to purchase $5 million of equipment on lease by Datapoint, if available, during each of the two years beginning May 1, 1973.

Data Products Triples Earnings for Year

WOODLAND HILLS, Calif. – Tripled earnings and record revenues were the news from peripherals-maker Data Products Corp.

In the year ended March 31, earnings tripled to $2.3 million or 34 cents a share from $703,000 or 10 cents a share a year earlier.

Revenues rose 18% to $59.8 million from $50.9 million a year ago, and backlog at year-end totaled $34.1 million, up from $23.4 million.

During the year, the firm reduced its debt by over $9 million, doubled its working capital, and increased its tangible net worth to $5 million, a spokesman said.

Hazeltine Signs Lease Financing Agreement For Display Terminals

GREENLAWN, N.Y. – Hazeltine Corp. has agreed to sell up to $13.5 million of equipment under short-term rental agreements to Hazeltine Leasing Co., a limited partnership formed by U.S. Leasing International, Inc. and the St. Paul Leasing Co.

The agreement can be extended to cover the purchase of up to $17.5 million of additional equipment in the following year, and includes such units as the Hazeltine 1000 and 2000 display terminals.

Hazeltine also granted to U.S. Leasing International, Inc. and The St. Paul Companies, Inc., the parent company of St. Paul Leasing, the rights to purchase up to 25,000 shares each of Hazeltine Corp. common, at $10 per share over five years. The rights on half the shares are subject to Hazeltine Leasing extending the agreement for the second year.

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Computerworld Stock Trading Summary

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SOFTWARE & EDP SERVICES

EXCH		PRICE 1973 RANGE (1)	CLOSE JUN 14 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1	0	0.0
A	APPLIED DATA RES.	2- 4	2	0	0.0
O	APPLIED LOGIC	1- 3	1 1/2	0	0.0
N	AUTOMATIC DATA PROC	52- 94	55 1/4	-2 1/2	-4.3
O	BRANDON APPLIED SYST	1- 1	1/2	- 1/8	-20.0
O	COMPUTER DIMENSIONS	2- 5	3 1/2	+ 1/4	+7.6
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	1- 5	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	2 3/4	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	- 1/4	-14.2
O	COMPUTER TECHNOLOGY	1- 3	1	0	0.0
O	COMPUTER USAGE	4- 9	5	- 1/8	-2.4
O	COMRESS	1- 2	1/4	0	0.0
O	COMSHARE	4- 9	4 1/2	- 1/4	-5.2
N	CONDURA CORP	6- 15	5 5/8	- 1/8	-2.1
O	DATATAB	2- 4	2	+ 1/4	+14.2
O	EDP RESOURCES	1- 3	1	0	0.0
A	ELECT COMP PROG	1- 2	1 1/8	- 3/8	-25.0
N	ELECTRONIC DATA SYS.	33- 56	32 3/4	-3 1/8	-8.7
O	INFORMATICS	2- 6	3 3/4	+ 7/8	+30.4
O	I.D.A. DATA CORP	1- 1	5/8	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 1/2	0	0.0
O	LOGICON	4- 7	3 5/8	- 1/4	-6.4
A	MANAGEMENT DATA	2- 5	2	+ 1/4	+14.2
O	NATIONAL CSS INC	8- 41	20 3/4	+3	+16.9
O	NATIONAL INFO SRVCS	1- 2	1	0	0.0
P	ON LINE SYSTEMS INC	13- 17	12 7/8	+ 1/8	+0.9
N	PLANNING RESEARCH	3- 7	2 5/8	- 1/8	-4.5
O	PROGRAMMING METHODS	21- 24	21	-1 1/4	-5.6
O	PROGRAMMING & SYS	1- 1	3/4	- 1/8	-14.2
O	RAPIDATA INC	6- 24	6 1/4	- 1/4	-3.8
O	SCIENTIFIC COMPUTERS	1- 2	1	0	0.0
O	SIMPLICITY COMPUTER	2- 4	2 7/8	- 1/8	-4.1
O	THS COMPUTER CENTERS	3- 4	2 1/2	- 1/4	-9.0
O	TCC INC	1- 1	1/2	+ 1/8	+33.3
O	TYMSHARE INC	6- 12	7 1/8	+ 1/2	+7.5
O	UNITED DATA CENTER	5- 6	4	0	0.0
N	UNIVERSITY COMPUTING	5- 11	5 3/8	- 5/8	-10.4
A	URS SYSTEMS	4- 8	4 1/4	0	0.0

PERIPHERALS & SUBSYSTEMS

EXCH		PRICE 1973 RANGE (1)	CLOSE JUN 14 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	12- 34	13	+ 7/8	+7.2
O	ADVANCED MEMORY SYS	5- 23	6	- 1/4	-4.0
N	AMPEX CORP	4- 7	4 3/4	- 3/8	-7.3
O	ANDERSON JACOBSON	3- 6	3 1/4	- 1/4	-7.1
O	BEEHIVE MEDICAL ELEC	6- 10	7	+ 1/4	+3.7
A	BOLT,BERANEK & NEW	6- 12	6 1/2	+ 1/2	+8.3
N	BUNKER-RAMO	6- 18	10 1/8	+ 3/8	+3.6
A	CALCOMP	5- 13	7 1/4	- 1/8	-1.6
O	CAMBRIDGE MEMORIES	10- 15	9 1/4	- 1/4	-2.6
O	CENTRONICS DATA COMP	13- 28	18	+1 3/4	+10.7
O	CODEX CORP	9- 19	11	+1	+10.0
O	COGNITRONICS	1- 3	1 5/8	+ 1/8	+8.3
O	COMPUTER COMMUN.	1- 4	1 1/2	+ 3/8	+33.3
A	COMPUTER EQUIPMENT	2- 3	2 1/4	0	0.0
O	COMPUTER MACHINERY	6- 13	6 1/2	0	0.0
O	COMPUTER TRANSCEIVER	2- 6	1 7/8	+ 1/8	+7.1
N	COMRAC CORP	15- 32	16	+ 1/4	+1.5
A	DATA PRODUCTS CORP	2- 4	2 7/8	- 1/8	-4.1
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 5/8	0	0.0
O	DI/AN CONTROLS	2- 4	2 1/8	0	0.0
N	ELECTRONIC M & M	3- 6	3 3/8	+ 3/8	+12.5
O	FABRI-TEK	3- 5	2 5/8	- 1/8	-4.5
O	GENERAL COMPUTER SYS	6- 9	6	0	0.0
N	GENERAL ELECTRIC	56- 76	58 7/8	-1 7/8	-3.0
N	HAZELTINE CORP	5- 9	6	+ 3/4	+14.2
O	INFOREX INC	6- 23	7 5/8	-1 5/8	-17.5
O	INFORMATION DISPLAYS	1- 2	3/4	+ 1/8	+20.0
O	INFORMATION INTL INC	10- 15	9 3/4	- 1/4	-2.5
A	LUNDY ELECTRONICS	4- 9	4 1/4	+ 1/8	+3.0
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
A	MILGO ELECTRONICS	15- 28	15	- 1/2	-3.2
N	MOHAWK DATA SCI	4- 13	5	+ 1/8	+2.5
O	ODEC COMPUTER SYST.	2- 6	2 1/4	0	0.0
O	OPTICAL SCANNING	2- 7	3	0	0.0
O	PERTEC CORP	5- 8	5 3/8	- 1/8	-2.2
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	4- 9	4	+ 3/8	+10.3
O	PRECISION INST.	2- 6	3	+ 1/2	+20.0
O	RECOGNITION EQUIP	4- 8	4 3/8	- 1/8	-2.1
N	SANDERS ASSOCIATES	7- 18	8	+ 3/8	+4.9
O	SCAN DATA	2- 6	1 1/2	- 1/8	-7.6
O	STORAGE TECHNOLOGY	12- 34	13 1/4	- 3/4	-5.3
O	SYCOR INC	9- 14	11 1/4	- 1/4	-2.1
O	TALLY CORP.	2- 14	3 3/4	0	0.0
N	TEKTRONIX INC	30- 53	33 1/2	+2 1/2	+8.0
N	TELEX	3- 6	4	+1	+33.3
O	WILTEK INC	10- 18	10 1/2	0	0.0

SUPPLIES & ACCESSORIES

EXCH		PRICE 1973 RANGE (1)	CLOSE JUN 14 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	6 1/4	0	0.0
A	BARRY WRIGHT	6- 13	7 3/8	+ 1/4	+3.5
A	DATA DOCUMENTS	17- 22	17	- 1/8	-0.7
O	DUPLEX PRODUCTS INC	7- 10	8 1/4	+ 1/2	+6.4
N	ENNIS BUS. FORMS	5- 8	5 1/8	- 3/8	-6.6
O	GRAHAM MAGNETICS	10- 20	10 1/4	0	0.0
O	GRAPHIC CONTROLS	9- 12	8 7/8	0	0.0
N	3M COMPANY	78- 89	83 3/4	- 3/8	-0.4
O	MOORE CORP LTD	53- 60	55	+ 1/2	+0.9
N	NASHUA CORP	42- 58	47 1/4	+1	+2.1
O	REYNOLDS & REYNOLDS	40- 51	41 1/8	0	0.0
O	STANDARD REGISTER	14- 20	14 3/4	0	0.0
O	TAB PRODUCTS CO	10- 23	10 1/2	0	0.0
N	UARCO	17- 23	16 3/8	+ 3/4	+4.2
A	WABASH MAGNETICS	5- 7	5 1/8	0	0.0
N	WALLACE BUS FORMS	17- 26	17 1/8	- 7/8	-4.8

COMPUTER SYSTEMS

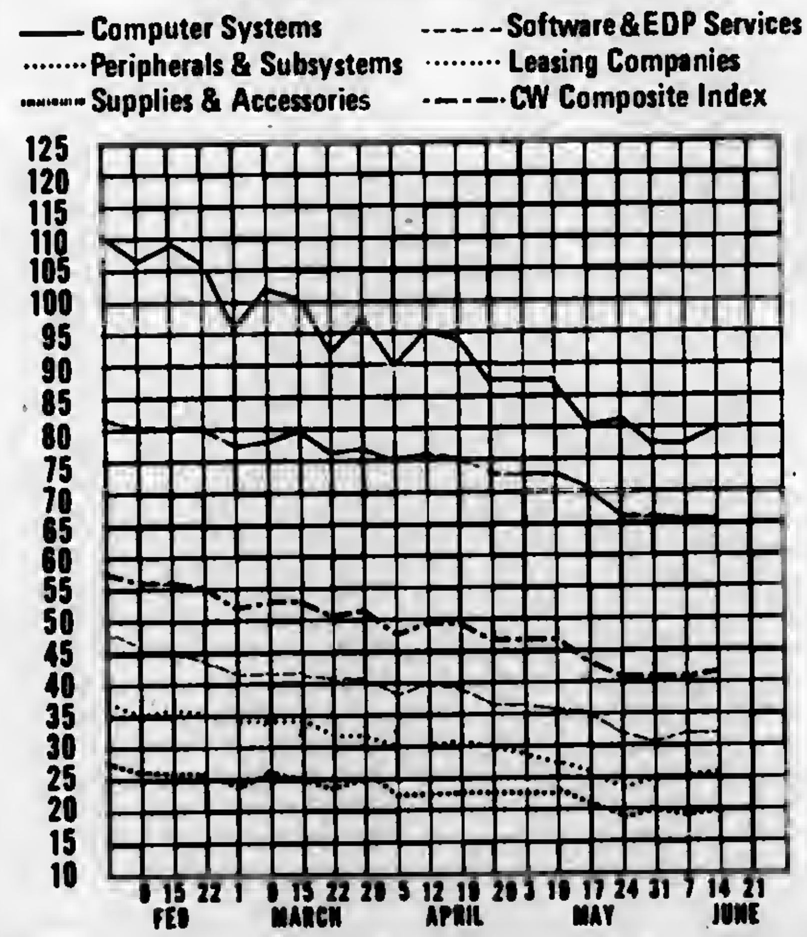
EXCH		PRICE 1973 RANGE (1)	CLOSE JUN 14 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	211-245	228	+3 7/8	+1.7
N	COLLINS RADIO	17- 26	17 1/8	- 7/8	-4.8
N	CONTROL DATA CORP	35- 62	35 1/4	-1 3/8	-3.7
O	DATA GENERAL CORP	26- 46	32 1/4	+1	+3.1
O	DIGITAL COMP CONTROL	2- 6	2 1/8	- 1/8	-5.5
N	DIGITAL EQUIPMENT	73-105	81 3/4	-2 1/8	-2.5
N	ELECTRONIC ASSOC.	4- 9	4 1/2	- 1/8	-2.7
A	ELECTRONIC ENGINEER.	6- 11	6	+ 7/8	+12.2
N	FOXBORO	23- 32	28 5/8	+1 1/2	+5.5
O	GENERAL AUTOMATION	26- 55	27	-1 1/2	-5.2
O	OKI COMPUTER CORP	1- 3	1	0	0.0
N	HEWLETT-PACKARD CO	74- 95	76	-6 1/8	-7.4
N	HONEYWELL INC	99-139	103 3/8	+1 5/8	+1.5
N	IBM	307-340	321	-1	-0.3
O	INTERDATA INC	7- 13	9	+ 1/4	+2.6
N	MEMOREX	2- 19	4 7/8	+ 3/4	+18.1
O	MICRODATA CORP	3- 10	2 7/8	+ 1/8	+4.5
N	NCR	27- 37	35 3/8	+ 7/8	+2.5
N	RAYTHEON CO	25- 34	25 3/8	- 3/8	-1.4
N	SPERRY RAND	36- 50	39 1/2	+ 1/4	+0.6
A	SYSTEMS ENG. LABS	3- 8	3 3/4	+ 7/8	+30.4
N	VARIAN ASSOCIATES	10- 20	11 1/2	- 1/2	-4.1
N	WANG LABS.	13- 34	15 1/2	+1 1/4	+8.7
N	XEROX CORP	141-169	155 5/8	+2 5/8	+1.7

LEASING COMPANIES

EXCH		PRICE 1973 RANGE (1)	CLOSE JUN 14 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	1- 5	1 1/4	0	0.0
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	6- 17	6 1/2	+ 3/8	+6.1
O	COMMERCE GROUP CORP	3- 4	3 3/8	- 1/8	-3.5
O	COMPUTER EXCHANGE	1- 1	1/2	- 1/8	-20.0
A	COMPUTER INVSTRS. GRP	2- 8	3	+ 3/8	+14.2
O	COMP. INSTALLATIONS	1- 2	1	- 1/8	-11.1
N	DPF INC	5- 9	6 3/8	+ 1/2	+6.5
N	DATRONIC RENTAL	2- 3	2 1/8	0	0.0
A	DCL INC	2- 3	1 1/2	0	0.0
A	DEARBORN-STORM	14- 26	14 1/4	- 1/4	-1.7
A	DPA, INC.	5- 8	5	0	0.0
A	GRANITE MGT	2- 6	3 1/2	+ 3/4	+27.2
A	GREYHOUND COMPUTER	3- 6	3 3/4	- 1/8	-3.2
A	ITEL	4- 12	5 1/2	+ 1/2	+10.0
N	LEASCO CORP	9- 18	9 3/8	+ 1/4	+2.7
O	LEASPAC CORP	2- 8	2 1/8	+ 1/4	+13.3
O	LECTRO MGT INC	1- 2	1 1/4	0	0.0
O	NRG INC	6- 15	7 1/2	+1 1/4	+20.0
A	ROCKWOOD COMPUTER	1- 3	1 1/4	+ 1/8	+11.1
N	U.S. LEASING	16- 36	19	+2 5/8	+16.0

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

BEEHIVE MEDICAL ELECTRONICS
Six Months Ended March 31

	1973	1972
Shr Ernd	$.22	$.03
Revenue	1,512,389	789,550
Earnings	204,314	24,302

VARIAN ASSOCIATES
Three Months Ended March 31

	1973	1972
Shr Ernd	$.23	$.06
Revenue	60,774,000	51,459,000
Earnings	1,621,000	423,000
6 Mo Shr	.43	.13
Revenue	115,572,000	97,671,000
Spec Cred	.....	a258,000
Earnings	3,073,000	925,000

a—Gain on sale of land less writeoffs.

DATRONIC RENTAL
Three Months Ended March 31

	1973	1972
Shr Ernd	$.16	$.04
Revenue	1,181,167	857,736
Earnings	108,387	24,840
9 Mo Shr	.43	.20
Revenue	3,012,225	2,458,016
Earnings	292,516	134,722

FOXBORO
Three Months Ended March 31

	1973	1972
Shr Ernd	$.16	$.26
Revenue	35,111,000	38,816,000
Earnings	732,000	1,194,000

BARRY WRIGHT
Three Months Ended March 31

	1973	1972
Shr Ernd	$.23	$.19
Revenue	9,260,018	7,529,416
Spec Cred	.....	a92,947
Earnings	362,085	312,682

a—Gain on sale of land and buildings.

DOCUTEL
Three Months Ended March 31

	1973	1972
Shr Ernd	$.85	$.16
Revenue	6,836,000	4,318,000
Tax Cred	1,049,000	176,000
Earnings	2,126,000	353,000

SCAN-DATA
Three Months Ended March 31

	1973	1972
Revenue	$1,613,506	$1,238,581
Earnings	1,849	a(315,196)

a-Restated to reflect changes in accounting procedures.

AUTEX
Six Months Ended March 31

	1973	1972
Shr Ernd	$.17	$.25
Revenue	2,709,434	2,039,543
Spec Item	a38,778	b38,250
Earnings	113,777	120,116

a-Charge; from termination of proposed construction less tax credit.
b-Credit; from tax-loss carryforward.

BOOTHE COMPUTER
Three Months Ended March 31

	1973	1972
Shr Ernd	......	$.23
Revenue	$11,281,000	15,332,000
Spec Cred	.....	a298,000
Earnings	(1,086,000)	481,000

a-Gain from sale of stock of a 50%-owned company.

LEASCO
Three Months Ended March 31

	1973	1972
Shr Ernd	$.72	$.53
Revenue	170,810,000	152,789,000
Earnings	11,666,000	8,604,000

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THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

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June 27, 1973

Vol. VII, No. 26

NEWSPAPER

NEWS IN BRIEF

2,722 Tried, 852 Pass 1973 CDP Examination

PARK RIDGE, Ill. – A total of 852 candidates passed the 1973 examination for the Certificate in Data Processing (CDP). The 852 who passed all five sections of the exam represented approximately 31% of the 2,722 who sat for the exam last February, according to the Certification Council of the Data Processing Management Association.

The new CDP holders join the nearly 14,000 who have passed the examination since it was first given in 1962.

Scorecard Here! You Can't Tell by the Code Numbers

PITTSBURGH – Well, they won't substitute code numbers for candidates' names again in two suburbs here after last month's fiasco.

The Systems and Computer Services Bureau and the Elections Bureau had promised returns on all May 15 primary borough and township elections and suburban school district races by between 5 a.m. and 6 a.m. of the next day, but the actual delivery was far afield.

The computer was programmed to spew out code numbers instead of candidates' names along with the corresponding vote totals, but by the time the code numbers were converted to names, duplicating machinery was insufficient to produce the final tallies in the projected time frame.

The duplicators took until 2:30 p.m. (May 16) to give the Democratic returns for each suburb and were still working on the Republicans late that night.

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System Analysis From Scratch

By Michael Weinstein
Of the CW Staff

AKRON, Ohio – "When top management asked me to perform a computer system analysis, it was obvious they did not want me to return with flip charts and discuss disk data set contention, operating system optimization and channel loads," stated D.E. Brotherton, technical adviser for management information systems at General Tire and Rubber (GT&R).

For management to understand his project, Brotherton said he had to revise some basic and commonly held definitions about system efficiency.

Management tended to look at the computer in the same light as any other manufacturing equipment. It wanted to know how much work the system could perform and how much work it was presently performing.

An added advantage of any analysis would be to develop techniques to measure how the work potential could be changed by adding new features such as peripherals or more operating staff, Brotherton said.

Discarding classical system analysis approaches, Brotherton decided to build an analysis method from scratch that would answer these questions.

Basic Definition

His basic definition was that system capacity is the capability of a given computer configuration with operators and operating system (excluding card equipment) to produce visible work expressed in units of production per unit of time.

Put another way, system capacity at GT&R is the amount of jobs the system could perform per unit of time.

A second definition was that computer system utilization equals the ratio of the actual use of available computer system capacity to the total computer system capacity – expressed as a percentage.

And finally, computer system efficiency is the ratio of a

(Continued on Page 4)

Justice Demands Daily Fines for IBM If IBM Papers Not Released by June 29

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – In one of its strongest moves to date, the Justice Department last week asked Judge David Edelstein to impose stiff civil and criminal penalties against IBM if it continues to refuse to turn over documents to the government for its antitrust action.

> *"I am not required by law to deliver the documents to the government and shouldn't do so." – Bruce Bromley, IBM attorney*

If IBM continues to refuse to release the documents, Justice said, it should be required to pay 5% of its net daily earnings in penalties and a stiff criminal contempt fine.

June 29 Deadline

In the government request, IBM should be required to deliver the documents to the government by June 29 or be found in contempt and required to pay a fine from that date forward for each day it fails to deliver them.

The fines, if they are levied, would be paid directly into the U.S. Treasury for the time that IBM is in contempt, the Justice Department said.

The criminal contempt citation could cost the company $1 million, if Justice is successful, and the civil penalties could amount to around $175,000/day for every day that IBM refuses to turn over the documents, sources estimated.

At contest are 1,200 documents that IBM turned over to Control Data in their antitrust action, but which IBM has so far refused to give to the government for its case, claiming they were handed over to Control Data "inadvertently."

(Continued on Page 4)

DPMA Seeks Stronger Bond Between Members, Public

By Patrick Ward
Of the CW Staff

PARK RIDGE, Ill. – The Data Processing Management Association has zeroed in on 11 topics of concern for the data processing community and has urged its members to "assume their responsibilities to help resolve them."

Along with predictions of establishing a lobby in Washington in the next year, DPMA released to its members a *Guidelines for Government and Public Liaison* report to help them get more involved in representing their profession and sharing their expertise in government, schools and their communities.

> *The Data Processing Management Association will hold its annual conference this week at the Conrad Hilton Hotel in Chicago.*

The 11 issues mentioned in the report are:

- Conversion to the metric system and the related ramifications affecting the computer community.
- Computer-implemented voter registration.
- Computer abuse of personal or private information.
- Bureau of Standards recommended standards for the information processing community.
- Computer services offered by banking institutions.
- The government's use and expansion of data banks.
- The value and recognition of the RBPE and CDP designations.
- Shared time processing – government and industry.
- Selection procedures for equipment.
- Standard performance requirements with respect to staff and equipment.
- Data acquisition, security and ac-

(Continued on Page 4)

Bride Named Editor

Herbert Grosch Appointed CW's Editorial Chief

Grosch

NEWTON, Mass. – Dr. Herbert R.J. Grosch will join *Computerworld* July 2 in the new position of editorial director.

Already effective is the promotion of Edward J. Bride to the post of editor.

In making the announcement, CW publisher Patrick J. McGovern explained that Grosch will be responsible for overall policy and direction of the CW editorial department, including general guidance for the editorial page.

Bride will implement the ideas of the editorial director, check out trends in the user community and the computer industry and administer the operation of the editorial department.

Grosch's activities in the computer arena go back three decades, to the University of Michigan where he received his

(Continued on Page 2)

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
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Human Language Used as Source Code

By Don Leavitt
Of the CW Staff

NEWTON, Mass. – Ordinary English – without any of the excess baggage of programming languages – has been successfully used as the source code for various business-type applications in a Navy-funded research project being conducted here.

The Genie project includes a two-stage translator which converts the human language input into a programming language – Basic or Snobol, thus far – before compiling and executing the program. It is successful, the researchers feel, because the translation problem has been attacked with several methods.

The work is being done by Edmund C. Berkeley, one of the founders of the Association for Computing Machinery, and two local high school seniors, Andy Langer and Casper Otten.

"The reason for our breakthrough," Berkeley said, "is that we have been using a number of principles all together, rather than trying to apply just one. We have applied mathematical, linguistic, grammatical and cryptographic techniques seasoned, when all else failed, with common sense."

The result, he added, is that Genie has been able to consider its input from the point of view of the human who wrote it in the first place.

Genie's input comes in three parts. An orderly list of instructions, much as a manager would provide a new clerk, is supplemented by a worked example of what the manager/programmer wants done. A Calculation layout form defines the contents of each column and total to be included on a printout.

Genie's logic is flexible enough, the researchers said, to "understand" the context of words in the original instructions and to apply the appropriate synonym, from a stored dictionary, to standardize the terminology as a first step toward converting it into a highly structured programming language.

The translator is able to distinguish, for example, between "total" used as a noun and as a verb. It also can recognize that various terms – "total," "add" and "sum" – may all logically refer to the same operation.

Dependence on a synonym dictionary appears to rule out generalized use of a single Genie system for all application areas. But development of special dictionaries might make the Genie logic available to many users who prefer working in languages appropriate to their interests, rather than in a conventional programming language.

A report on the current status of the Genie project, with examples and discussions of its limitations, is in the June issue of *Computers and Automation*, published here by Berkeley Enterprises, Inc.

Societies' Place on Codasyl a ?

Special to Computerworld

SYRACUSE, N.Y. – The executive committee of the Conference on Data Systems Languages has apparently moved to expel most data processing societies from the conference, according to several reports.

Hamilton Armstrong, president of the Society of Professional Data Processors, said that Warren Simmons, executive secretary of Codasyl, has refused his society's application for a seat on the Codasyl Planning Committee on the grounds that "the committee has now been disbanded."

Armstrong said this would mean the removal – without apparent appeal – of many representatives of the societies and user groups from Codasyl.

It was, he commented, particularly unfortunate since the Planning Committee in an authorized publication, the *Codasyl Newsletter*, had specifically invited increased participation in the affairs of the conference by professional societies and user groups through Planning Committee membership.

The Codasyl Planning Committee, under the Codasyl Constitution, must provide input for the other committees of the conference, in particular for the Programming Languages Committee. The Programming Languages Commitee determines the changes in the Cobol language.

The lack of activity of the Planning Committee has come under recent fire both from members of the committee itself and from the Programming Languages Commitee which complained last year that the Planning Committee had been asked to supply detail as to the use of the report writer, and had failed

Grosch Named CW Editorial Chief

(Continued from Page 1)

doctorate in astronomy in 1942.

He worked for IBM, MIT and GE before joing the government in 1967 as director of the Center for Computer Science and Technology at the National Bureau of Standards (NBS).

Active in Space Program

He has been active in the nation's space program, having helped secure a pioneering facilities contract for GE to operate the Nasa computing facility at Huntsville, Ala.

He also operated the IBM-Nasa computing center before being named manager of the IBM space program in the early sixties.

Most recently he was senior research fellow at the NBS facility, a post he resigned to join CW. He is also a fellow of the British Computer Society.

Grosch is a charter member of the Association for Computing Machinery and a founder of Share, the IBM user group.

He has spoken to technical and general audiences in 17 countries and in 44 states and provinces.

He is also well-known as the author of Grosch's Law: computer economy is as the square root of the speed (or, as he now phrases it, "to do it 10 times as cheaply, you must do it 100 times as fast").

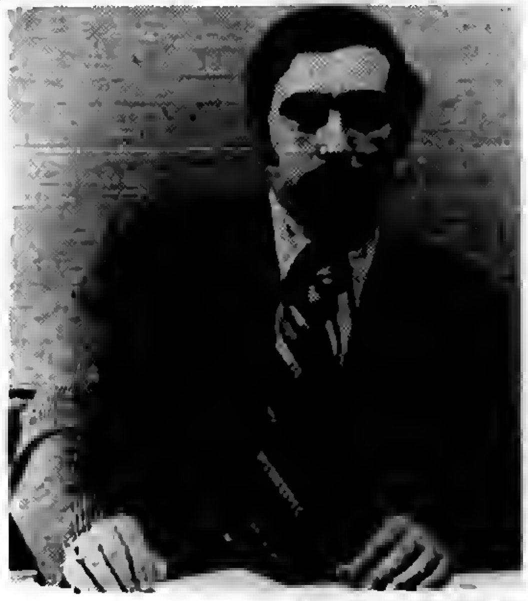
This law has become widely used as a pricing tool in the computer industry, McGovern commented.

'Adventures Ahead'

Grosch apparently does not believe that computer technology has leveled-off; he commented that there are "adventures ahead in information technology and its applications that will make what we have today look like Napier's Bones."

The big challenges, though, are "human: to be imaginative, to be honest, to be compassionate," he added.

Bride has been with *Computerworld* for four of its six years in existence. He has served as editor of the Societies/User Group section and the Small Systems User page, as well as general news editor.



CW Photo by Leslie Flanagan
Bride

He is the forum manager of CW's Computer Caravan, and has spoken before professional societies on such subjects as computer security and the role of the press in the computer community.

He also coauthored a new management textbook, *Computer Use: An Executive's Guide*, published last month by Allyn & Bacon [CW, June 20].

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Plan for Handicapped

Teachers Fight Data Bank

By Toni Wiseman
Of the CW Staff

ANNAPOLIS, Md. – With all the talk about a "Big Brother" society, invasion of privacy and protection of confidential information, things looked pretty grim when the Maryland State Department of Education decided to create a data bank on handicapped children.

The issue intensified when the Prince George's County Educators' Association voted to oppose the bank, with teachers refusing to fill out the necessary data sheets.

Robert Danks, director of the Data System for the Handicapped (DSH), claimed that teachers opposed the system because of a lack of information on how it works and why it was being set up.

The teachers also objected to having to make what were termed "medical decisions," which they felt they were unqualified to make.

"This is an inaccurate view," said Danks. "The entire project is an 'after-the-fact' type of thing. It isn't an invasion of privacy because the information is already on file with an agency. They are merely being asked to copy the information from the child's file – information provided by a qualified medical doctor or psychologist.

Six agencies are cooperating in the DSH venture in an attempt to secure the information each of them needs to function in an optimal manner. The agencies include the departments of education, juvenile services, mental health, public health, social services and mental retardation.

The question of privacy, access and protection is easily solved, Danks said. DSH is using the state's computer which will be the central storage place for all data.

"However," Danks said, "the only people who will be able to access that data are the officials for the specific agency. Each agency controls its own information. There is no sharing of information other than statistical summaries and frequency tabulations."

As a safety control, each agency's data is stored separately on disk packs so that essentially there are six separate computer systems.

"The child's name is on the form when we receive it," Danks explained, "but when we process the file, we create a Soundex code number for it, a non-returnable code, and this goes into the computer. It is simply to identify records one from the other and to avoid duplication." All DSH forms and IBM cards keypunched from the forms are destroyed after the number has been assigned, Danks added.

Also, during processing a one-time list matching name and Soundex number is developed for an agency. This allows the agency to update or change any record it chooses.

The state, Danks emphasized, cannot access information on a specific individual. It looks at the system only in terms of the entire state's population, he said. Each agency has veto power over its data, and it alone can correlate data with names.

Forms Industry Faces Shortages

By a CW Staff Writer

COLORADO SPRINGS, Colo. – The business forms industry will face a severe shortage of printing and carbon papers over the next few years, according to industry sources.

The problem is not a lumber shortage, but can be traced to financial difficulties caused by a 1972 tariff increase of 350% on Canadian supplies, which cut off many sources, according to a study by Arthur D. Little, Inc. (ADL).

The costs of new U.S. pollution control requirements will also impact the prices and legislation has already closed a number of paper mills. The average price from the April 1, 1973, level to the end of 1974 is expected to increase 18% to 25% for printing paper, and between 30% to 50% for the one-time carbons, according to the study.

Other causes of the shortage, the study noted, are depressed product prices, heavy corporate debt burdens, a continuing increased demand for higher profitability items such as boxboards and toilet paper, thus discouraging the paper-makers from producing computer paper, and financial pressures which have halted new mill construction.

Of the 16 plants currently being built, according to Beldon Menkus, a consultant in New Jersey, only 6% of the production capacity is intended for computer printouts.

The business forms industry's paper consumption is expected to increase by at least 50% in five years from its 1972 level, according to Anthony S. Niskanen of ADL. The ADL study indicated, however, that the paper industry will be unable to add any significant new capacity until late 1976.

The paper industry has noted that the shortage particularly applies to the area of under 16-lb paper, which takes in most computer paper, but does not affect newsprint and the high quality rag papers.

Watershed Modeling Keeps Big Blue Big

LINCOLN, Neb. – Scientists have turned to computer modeling to manage the water supply of the Big Blue River Basin in southeast Nebraska, a mixture of grassy plains and rolling hills supporting half a million acres of irrigated cropland.

With extremely variable precipitation from year to year, resulting in an erratic water supply as well as varying groundwater levels and water tables, the basin's problem was too complex for pencil and paper alone.

The watershed modeling program was started in July 1971 by the state's Water and Resources Research Institute and the Conservation and Survey Division, using University of Nebraska personnel.

All of the physical data concerning the basin is converted into math terms and used by the computer to predict development trends, according to Warren Veissman Jr., director of the research institute.

"With the aid of the computer model, it is possible to tell what will happen in 10 or 20 years to the water supply if different management techniques are applied, all before committing resources to a specific program," Veissman said.

"It may be that, no matter what, the groundwater is going to be lost eventually. In that case, the computer could help determine ways to prolong the supply until the community can shift to a different economy."

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Judge Holds Off on Final Judgment in Telex-IBM Case

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – Due to the complexities of the case and the need for further study of the documents, Judge A. Sherman Christensen last week decided not to issue a temporary opinion in the $1.2 billion antitrust case brought by Telex against IBM.

Christensen also indicated he had decided not to issue a tentative decision at the close of final arguments in order to prevent any insider trading in the stock of either company by the courtroom attendees.

However, Christensen indicated he would reach his final opinion fairly soon – possibly within 30 to 60 days – because he wanted to rule while all of the evidence was fresh in his mind.

In the concluding argument before the judge, Floyd Walker, Telex attorney, claimed Telex not only wanted the monetary damages allowed under the Sherman Antitrust Act, but also wanted the judge to issue injunctions against IBM that would prohibit what it considered to be predatory practices.

"The ability of IBM to destroy the (plug-compatible manufacturers) must be denied them," Walker said, indicating the court had the jurisdiction "and power to create a competitive situation in the marketplace."

He asked first for an injunction that would prohibit IBM from offering long-term leases such as the fixed- and extended-term plans and that would free users from the penalties associated with such leases now in effect.

In addition, he asked the court to issue an injunction that would require IBM to release interface specifications for all new products at the time that they were introduced and marketed.

Walker also contended that IBM should be required to reveal all of its product improvement plans when it introduced a product so that situations, such as with the 370/155, could be avoided, and so that competitors would know of the changes that were planned in various products over their lifetime.

For the defense, IBM attorneys indicated the DP market was extremely competitive, growing from just 13 firms in 1952 to over 1,700 in 1970.

In addition, they argued that the plug-compatible distinction is a "meaningless and artificial" way to study the market and that the judge should consider the entire market for products and services in deciding on the relevant market and the share held by IBM.

The Telex-proposed market definition does not make any sense, IBM lead attorney Thomas Barr stressed.

IBM produced its product not to compete just with the independent peripherals companies as claimed by Telex, but also to compete with other systems makers and leasing companies, so that the Telex claim was false.

Barr also claimed that Telex was not damaged by any IBM actions and that its problems resulted solely from management weaknesses and mistakes, not IBM competition.

Barr further contended that Telex was presently in a good position and that it was growing fast.

IBM has been successful in this market solely because of "skill, industry and foresight," Barr indicated, saying that IBM has gotten to its position in the market because it produces a better product and the customers know it.

U.S. Demands Daily Fines for IBM

(Continued from Page 1)

IBM claims the documents are privileged because of the lawyer-client relationship and that they were prepared by a member of the IBM legal team.

However, outside sources have indicated the documents consist largely of memoranda prepared by IBM executive Hillary Faw, who had worked directly for Thomas J. Watson Jr. but who recently was switched to the staff of IBM counsel Nicholas Katzenbach.

Some sources have even indicated the reason for the switch was to allow IBM to claim the Faw memos were privileged when they were found to be damaging to the IBM antitrust cause.

IBM has been fighting the release of the documents ever since Edelstein ordered them produced last September.

IBM's appeal to the Federal Appellate Court here was unsuccessful and a motion made by IBM to the Supreme Court to stay the execution of the Edelstein order was unsuccessful on June 13 of this year, when that court in a 5 to 1 decision turned down the IBM request.

Request in Limbo

However, the Supreme Court ruling, in which three justices excused themselves from the hearing, did not hear the merits of the case and the court has not decided yet whether to take it up next year. All it did was strike down an IBM request that the order be delayed until the Supreme Court decided whether to hear the case.

At the same time the Justice Department demanded that IBM be found in contempt and fined, IBM attorneys also agreed the company should be found in contempt, in order to get the issue of the documents and Edelstein's ruling fully aired before an appellate court.

In a letter to the court from Bruce Bromley of Cravath, Swain and Moore, IBM's outside attorneys, the firm requested that the court "cooperate" in issuing a contempt citation to facilitate a full review of the order and the documents.

Bromley admitted he had the documents in question in his possession, but said he had "come to the conclusion that I am not required by law to deliver the documents to the government and shouldn't do so."

However, the government attorneys asserted this position is "in direct contradiction" to the ruling made so far by the District Court in New York and also indicated that it contravened the last ruling of the Supreme Court in the matter when it refused to grant IBM a stay.

Bromley in his letter to the court said if IBM were to deliver the documents as requested by Edelstein, that might consitute a waiver of privilege in the case, even if the Supreme Court later found that on the merits of the case the documents should be held privileged.

"Because of the importance of the attorney-client privilege to the administration of justice, the risk of irreparably depriving IBM of its claim of privilege and the risk of infecting other cases, I have respectfully concluded that I shouldn't produce the documents unless and until it has been finally determined that they should be produced," Bromley said.

However, Bromley said that IBM was "willing" to have the documents reviewed by a special "Master" to determine whether the documents in fact contain information protected by the lawyer-client relationship.

DPMA Guides Stress Strong Member-Public Bond

(Continued from Page 1)

curacy verification with respect to on-line data such as vehicle files, criminal records and tax data.

On Every Level

The call to volunteer action extends to DPMA members at chapter, regional and international levels.

On the chapter level, the report urged DPMA members to volunteer as "interested members of their community" to influence city and county DP decisions.

To accomplish this, the report recommended that chapters pick a member as a contact man and identify the local government DPers in their membership. Selling this "free assistance to the city and county officials – can be done very easily," the report stated, "if you start with the mayor or city manager. Tell him what DPMA is all about and the excellent talent you have available to assist him in the information processing part of his administration."

Education Service

The report noted that many local school systems have both educational and business DP facilities, and suggested this is another area where DPMA can serve the community.

Again, it is a question of telling "the DPMA story" to the school administrators. Interested chapter members should do liaison work, the report said. Memberships should be polled for contacts with the academics.

On the grade and high school levels, "chapter members can assist in the development of the curriculum and help the teachers by acting as advisers."

For adult education, the guidelines recommended surveying the community's employment needs and then contacting school administrators with a proposal. This would list the names of volunteer teachers for courses ranging from computer fundamentals, to keypunch and high-level programming.

Volunteer service as an upaid consultant "is the best approach to serving the school administrator in his business DP needs," the report found.

This local involvement would not make DPMA into "a service organization like Lions or Moose; however, our educational activities could extend to joint efforts with the service clubs." A strong effort ought to be made to "contact other organizations within the community for joint activities," the report continued.

In a public relations vein, the report recommended that chapters set up editorial boards "that can respond to letters to the editor, newspaper editorials of a local nature and general newspaper articles in our field of expertise."

At the regional level, the report favored choosing an interested member to monitor legislation that might affect the DP community.

"A council should be set up to review this legislation and, if warranted, communicate a position paper to a legislator sponsoring the particular bill."

Beyond this, the report suggested that a member from a chapter within the legislator's district get in touch with him. "Appropriate controls should be built into the system to make sure we are not violating any lobbying restrictions."

New Legislation

Members could also contact the region's legislators "to explain our willingness to work with them in developing new legislation."

As for education at this level, "The state/province superintendent of schools should be contacted to inform him of our interest in data processing curriculum, development at all levels including college, approval of private data processing schools and our . . . interest in educating the public . . . "

At the international level, the report called for DPMA to hire a legislative reporting service to keep the association informed on legislation that might affect the DP community. DPMA could then respond with a position paper sent to the bill's sponsor.

In addition, DPMA "would also publish summaries of complete position papers in computer-related journals and the newspapers as warranted by the subject covered."

The report stressed personal contacts with national legislators. "The idea here would be that as the committee takes a position on specific items, the personal contact man would then meet with the individual responsible for the piece of legislation to review our position. This could be accomplished by phone, mail or face-to-face contact with little cost to DPMA."

Similar contacts should be developed with officials in government agencies, the report suggested.

System Analysis From Scratch...

(Continued from Page 1)

standard cost of production to the actual cost of production expressed as a percentage.

To put these definitions into a working model, Brotherton set up a graph measuring job/hr on the y-axis against the multijob level on the x-axis.

Job/hr was the average number of jobs completed per hour during a specified measurement period.

A specified time period was considered an eight-hour shift, 3 shifts a day, etc.

The multijob level coordinate referred to the average number of jobs simultaneously in a state of execution.

Thus Brotherton chose to ignore events at any one time and quantify his results over a shift or other measurement time.

"Work through the system is really directly dependent on the jobs run," he said.

"For example, the best job mix – between I/O- and CPU-bound jobs would produce the steepest line on the graph."

With his theory worked out, Brotherton went to the floor to test his analysis system on GT&R's 370/155 system.

Keeping the job mix and time periods constant he developed statistics that would serve as a base for later comparisons.

Once the base statistics were documented, Brotherton could change variables – e.g. the number of tape drives attached on-line – and see the results on his graph.

His system realized unexpected support when over one test series, Brotherton noted a 6% production reduction when he thought that none of the variables had changed from the base tests.

But he found on investigation the operations staff had reduced the number of operators from three to two. Later testing using first two operators then three operators – keeping everything else the same – showed that the 6% reduction was a direct result of running with one less operator.

Another advantage of his approach was that if GT&R wanted to see the effect of putting faster tape units on-line, Brotherton could determine after a few test runs the actual effect of this change in his graph before a commitment to purchase.

Or he could determine whether the elimination of several tape drives affected production more than the cost savings.

Thus the analysis method allowed Brotherton to relate back to management on two parameters: how many jobs were being completed and at what cost; and a method of measuring the effects of varying the job mix or hardware configuration on the work/cost result.

Antitrust Laws, an Historical Perspective — Part II

Even Sherman Felt His Bill Was 'Totally Ineffective'

By E. Drake Lundell, Jr.
Of the CW Staff

With the basic American antimonopoly feelings concentrated on the trusts in the 1880s, the politicians were quick to adopt the issue.

The Democrats in particular grabbed onto the issue, since it tied in closely with their antiprotectionist feelings, and adopted resolutions against the trusts at both their 1880 and 1884 conventions.

But their strongest statement against the trusts came at the convention of 1888 where they said "the interests of the people are betrayed when, by unnecessary taxation, trusts and combinations are permitted to exist, which, while unduly enriching the few that combine, rob the body of our citizens."

The Republicans were also forced to adopt the antitrust sentiment, but perhaps more for defensive reasons than because of a true belief in the subject.

The Republican Party, with close ties to the wealthy factions of society, was becoming known as the "party of the monopolists" by many. The idea that it was the party controlled by the rich was catching on.

In part to beat off this image the Republicans also came out against the trusts, declaring at their 1888 convention that "all combinations of capital, organized in trusts or otherwise to control arbitrarily the condition of trade among our citizens" should be condemned and legislation should be passed to limit such combinations.

Since the Republicans won control of both the presidency and both houses of Congress in the elections that year, the job of limiting the trusts as promised at their convention fell to them.

Senator John Sherman, one of the most respected men in the Republican Party, therefore took up the antitrust cause early in the new Congress, perhaps seeing the antitrust issue as the monument that could cap his career.

In introducing the original antitrust bill, it was not Sherman's purpose to outlaw all combinations, just those that stifled competition, raised prices, etc.

However, after an opening round of debate, the original bill was sent back to the Judiciary Committee, where it was rewritten into the bill that would finally become the law of the land.

But Sherman was not happy with the bill.

In fact, he called it "totally ineffective in dealing with combinations and trusts. All corporations can ride through it or over it without fear of punishment or detection."

But despite this criticism, Sherman was among the majority when the bill was adopted 52 to 1 by the Senate, even though many historians say he voted for it just because it still bore his name.

The law, after debate in the House, passed and was signed into law on July 2, 1890 by President Benjamin Harrison.

The first section outlaws "every contract, combination in the form of a trust or otherwise, or conspiracy, in restraint of trade of commerce" between the states or with foreign countries and declares that anyone found guilty of such action shall be found guilty of a misdemeanor punishable by a fine of $5,000 or a year in jail or both.

Section two, however, is the key to the major antitrust actions brought by the government in recent years, such as the government's present action against IBM.

It declares: "Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce . . shall be deemed guilty of a misdemeanor, and, on conviction therefore, shall be punished by a fine not exceeding $5,000, or by imprisonment not exceeding one year, or by both said punishments, at the discretion of the court."

Section three takes the provisions of section one and makes them applicable to the territories of the U.S.

Section four gives the jurisdiction for trying cases under the act to the circuit courts of the country and gives the attorney general the duty to try the cases and also permits the courts to issue temporary restraining orders against a company or person being tried if the court feels such action is necessary.

Section five allows the court to summon necessary witnesses, while section six allows the government to seize the property owned by anyone violating the law.

The seventh section gives anyone who has been injured by a trust or other illegal combination or monopoly that is illegal under the law the right to sue in any court in the U.S., "and shall recover threefold the damages by him sustained, and the costs of the suit, including reasonable attorney's fees."

The final section makes it clear that wherever the word person is used in the rest of the bill, the same applies for corporations and associations.

Next week: How have the various courts applied the basic law in past cases?

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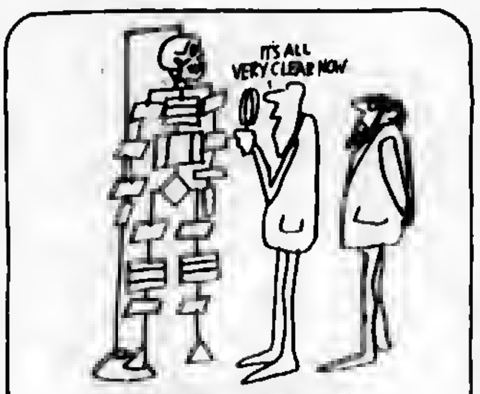
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Reliability, Availability, Serviceability

Papers Reveal IBM User Dissatisfaction in '69

TUSLA, Okla. – The "leading edge" of IBM users was increasingly concerned about reliability, availability and serviceability (RAS) problems with their systems in 1969, according to Management Committee minutes based on an IBM user survey.

According to the minutes of the study, which is among the court documents in the IBM-Telex antitrust suit, 46% of these customers (266 installations) were dissatisfied with their RAS experience. On the average they were experiencing 148 interrupts a month, accounting for 44 hours of lost time. In addition, an average of 26 hours of rerun time was required.

"As a result, 25% of the customers felt that RAS characteristics would be a significant deterrent to their application growth."

The committee noted the typical customers in the study were using the systems over 400 hours a month and that "one-half of these customers was spending significant dollars on backup with the top half averaging $7,800/mo for this purpose.

Degree of Dissatisfaction

"The degree of dissatisfaction moved up with the complexity of the applications and with the size of the system, i.e. Model 30 users are more satisfied than Model 65 and 75 users."

The source of the problems experienced by the users, the study said, was about one-fourth hardware, 20% software, 30% customer personnel and input; and 4% maintenance, with the rest unknown.

Scientist Plays Old Shell Game

ROCHESTER, N.Y. – A University of Rochester scientist is constructing computer models to determine why animal shells developed the way they did and what variant forms they might have otherwise taken.

He said he can produce a readout on computer-controlled CRT of shells that could have evolved, and rotate the image through three dimensions.

Dr. David M. Raup, a geologist, said it is possible to change numbers in the model to come up with "all the forms that could have evolved. This enables us to see the non-existent forms, those nature rejected as well as the ones it chose."

The method is used to find out "why evolution did what it did and (more important) why it didn't do what it didn't."

Raup said his work has concentrated on shelled animals such as snaids and clams.

In considering alternate forms that nature did not choose, he said, "It's likely to be some basic mechanical or physiological reason that a shape didn't work."

Finding Frauds

CW West Coast Bureau

SACRAMENTO, Calif. – Auditors, DP expertise and computer-assisted fraud seem very much in the news.

The National Association of Insurance Commissioners is reportedly initiating a major study to determine how auditing techniques can be improved to detect frauds involving computers.

It was also reported at hearings here on the Equity Funding insurance scandal that a similar study may be sought by the Institute of CPAs.

In addition, the state legislative analyst has proposed to an assembly committee that the California Department of Insurance hire a supervisory level person with computer background who could set up computer training programs.

William Behnk, who presented the analyst's report, said the supervisor would coordinate the effort to train the insurance department's 50 field examiners.

Data Bank Compiled On Bad Checks, Cards

By Toni Wiseman

Of the CW Staff

NEW YORK – Fraudulent use of credit cards, checks and airline tickets is being curtailed by a computer-based customer transaction monitoring system.

The Validata system from TRW is being used in the western U.S. by airlines and car rental companies, and is currently being installed in New York by TWA.

Validata's computer stores current data on 135,000 lost or stolen airline tickets, 50,000 lost or stolen checks and 750,000 lost or stolen credit cards, according to Peter Bryan, director of TRW Validata.

In the case of an airline, if the passenger wants to pay for a ticket in any way other than cash, the agent presses the appropriate button for check, ticket number or credit card number on a keyboard. Within seconds, an approved message from the computer flashes on the screen – or a negative response.

The system also displays the number of transactions the customer has made in the past several days. If that number is high, the card will be verified.

ANS Labelling Means Little, X3 Secretary Brown Claims

Special to Computerworld

WASHINGTON, D.C. – Robert Brown, secretary of the ANS X-3 Committee, told members recently that labelling products "in conformance with ANS standards" meant little. In accordance with previously established policies of the American National Standards Institute and of the Computers and Business Equipment Manufacturers Association, no action, beyond a letter requesting a change, is usually made when merchants incorrectly identify goods as being up to Ansi policies, he said.

The news came after a magnetic tape cassette was displayed at the meeting bearing the phrase "Ecma/ISO/Ansi standards complied with."

X-3 members noted that, as there was no current Ansi standard for magnetic tape cassettes it was not possible for the labelling to be correct.

DP Publication Launched

CW West Coast Bureau

LOS ANGELES – A new computing publication, *Popular Computing*, has been launched by Fred Gruenberger, a professor at California State University, Northridge.

Initial issues are in a newsletter form and contain articles about computer problems, puzzles related to computing, book reviews, tabulated results to old problems and reviews of desk calculators.

Subscription rate is $15 a year from Box 272, Calabasas, Calif. 91301.

Big advantages

Research on Conference Formats

Computer Compiles Responses

Group Decision-Making Gets the 'Silent' Treatment

By Ken Shonk
Of the CW Staff

LOS ANGELES – Interactive, computer terminal networks offer the best capabilities for studying the nature of group decisions and then setting up conferences in which computerized rules and procedures, formulated to optimize accuracy, control the decision-making process, according to Dr. Norman Dalkey, a UCLA engineering professor.

Working at UCLA's Computer Center for Behavioral Studies (CCBS), Dalkey also said that "social ecologists, for example, could hold a conference to work out a world ecology model as the "Limits to Growth" people did without ever directly communicating with each other.

"The computer would statistically compile the group decisions of what factors were important and what assumptions should be made in the model from the judgments of each individual."

The idea of a conference in which there is no spoken conversation may resemble a sorcerers' convention, but the idea is based on Dalkey's research into group decisions.

Dalkey's past research has shown that the individual with the strongest personality or highest status usually sways the rest of the group to his point of view; open discussion of a question degrades the accuracy of the group's answer as compared with the answer compiled from individual judgments before discussion: and individuals rate their competence rather poorly as opposed to a group, which does a rather good job.

Dalkey plans to computerize the "Delphi" decision-making format in which each member of a group responds to a question independently and anonymously, thus eliminating group pressure or the sway of a particularly dominant person. The responses are collected and statistically evaluated and then reported back to the group as the group decision.

The advantage of this method Dalkey said, is that researchers in decision-making have shown Delphi to be more accurate than traditional conferences.

"The speed of the computerized system, offering almost instantaneous data collection, analysis and feedback, would allow easier and wider use of Delphi, which is already frequently used in government and industry in making projections," said Dalkey, one of the originators of Delphi 25 years ago.

"Our present set of experiments with the computerized Delphi system aims at learning more about how subjects use information in making judgments or estimates of uncertain quantities," Dalkey said.

"Ultimately, we're interested in manipulating factors such as the presentation order of factual material, group interaction and value judgments that affect group decision accuracy to improve the decision process. All of these factors would have to be controlled in any conference situation for the results to have any real use."

Within the next several months the CCBS system, which became operational the first of this year, will be tied into a national computer network. CCBS's terminal network has 24 stations tied into a PDP System 10 with 256K. Each terminal has a CRT display and teletypewriter and voice communication facilities.

Dalkey's research has also concentrated on computerizing a statistical way of making value judgements.

In the first step in approaching an issue or problem each individual lists those characteristics he considers important. The individual then takes the entire list and groups those characteristics he considers the same or similar.

The computer then processes the resulting similarity matrix and comes up with the overall group judgment of just what is important.

A shake-down experiment in which 27 engineers were asked what seven characteristics most affected the quality of their life reduced 227 items to 12 basic factors.

Using CCBS's computer terminal network in his more recent research into group decision processes, Dalkey discovered that the manner which a group is gven information relating to the question they are to answer is important.

"Additional information, for example, won't determine an individual's answer," Dalkey noted, "but it does increase accuracy, all of the improvements coming from the first two or three pieces of additional information. Interestingly enough, each additional item affects the answer relatively independently; it's the order that's important."

Locust Swarms Focus Of Pest Control Study

LONDON – The plague of the locust is almost as devastating today as it has been for thousands of years for farmers in Africa, the Middle East, Afghanistan and Pakistan, but computers are helping scientists move closer to locust control by studying their lifestyles.

Since only swarming locusts destroy crops, Dr. Tony Cosens of the Center of Overseas Pest Research (COPR) has set up a test chamber to discover why locusts swarm and how they can be prevented from doing so. The locust hangs in the middle of an airstream and, by the use of lights, a moving conveyor belt below and varying "weather conditions," an illusion of flight is produced.

Data is processed on an enhanced Hewlett-Packard 2116B and the relevant data is stored for later use.

COPR can claim much of the credit for the reduction in size and number of locust swarms in recent years. The last serious outbreak, in 1968-69, was nipped in the bud by forecasting where the gathering swarms would fly and then eliminating them by the use of insecticides.

DP Yields Corny Results

SULLIVAN, Ind. – An annual farmers' corn yield contest's entries are validated yearly by a disinterested observer – a computer.

Project: 200, established by the producers of Funk's G-Hybrids, is a high-yield corn growing contest, with more than 5,500 entries in 1972. The summary of the participants' entry data is also helpful for studying techniques used by corn growers striving for higher yields.

For example, the 1972 summary shows that almost half the growers fall-plowed their corn land.

in small packages!

This new low-priced NCR Century 101 system offers small and medium size businesses the big kind of computer power they need to grow.

The newly released peripherals for the NCR Century 101 processor require a minimum of space, yet they provide the power and versatility of units twice their size.

The basic system, including processor, card or paper tape reader, line printer, and one dual platter disc unit covers no more space than 2½ feet by 10 feet! It can be placed in rooms where larger computers just won't fit. And, because it generates little heat, air conditioning requirements are minimal.

Big advantages in small packages include free standing add-on dual platter disc units, each having a storage capacity of 10 million bytes. A line printer that turns out 300 lines of crisp printing per minute. And an optional 30-character per second I/O Writer.

The 101 processor, heart of the system, includes features like a high-speed memory that can expand in practical increments from 16K to 64K. An optional multiplexor that provides control for 10 communications lines, with no increase in cabinetry. Seven-way to nine-way simultaneity. And many other features just as significant.

Later, as your business grows, you can expand this modular system to meet increased information requirements. Larger capacity disc units and higher speed printers can be added if and when you need them.

For the price, this new system from NCR offers big performance for businesses on the grow. Average systems range from just $1820 to $3800 per month!

Call your local NCR office for the specific advantages your business can expect from this newest member of the NCR Century family.

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Computers & Terminals

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By minicomputer standards, our new Nova 840 is big and hairy and costs a lot of money.

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The 840 also comes with a whole list of peripherals and high-performance options, including a superfast new Floating Point Unit that handles single and double precision arithmetic at speeds that match most big computers.

HAIRY SOFTWARE

But hardware is only the vehicle. What makes the 840 a different kind of machine is software: the most powerful software available with any computer at anywhere near its price. Proven software we can deliver today.

It has a Real-time Disc Operating System that supervises the whole system; our new Fortran 5, that produces globally optimized, fast-executing code that's as efficient as machine language; Batch; remote job entry software; timesharing BASIC; and Extended Algol.

Dual Operations on the 840 lets you run any two major software streams concurrently and with complete security: multi-terminal timesharing BASIC along with remote job entry, or a real-time control application while you're doing prototype development in Algol.

THE PROOF

With all that hardware/software muscle, the 840 has embarrassed a lot of far bigger computers in price/performance benchmark comparisons.

For instance, there was the XDS Sigma 7 that was 40% faster running an independently conducted Fortran benchmark. And then got wiped out by the 840's more-than 10-to-1 price advantage.

Or the DECsystem-1050 that cost eight times more than the 840. And was actually 7% slower running the benchmark.

If you think those benchmarks are too good to be true, just call us. We'd love the chance to give you a lot more details on the benchmarks and how Data General software makes that kind of price/performance possible.

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We know that Data General isn't the only minicomputer company with a big hairy machine.

We also know that the 840 is, capability-for-capability, feature-for-feature, consistently less expensive than the competition.

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Editorials

A Voice for the User

It appears likely that the Data Processing Management Association will become a part of the umbrella organization in the computer industry known as the American Federation of Information Processing Societies.

For years Afips has lacked any true user voice in its policy-making councils – a lack that has been apparent to almost all observers.

DPMA membership can help fill this void in Afips and give the computer user the voice he needs in determining policy in the organization that purports to speak for the entire computer community.

Let's hope the negotiations over DPMA membership don't get bogged down in economic matters relating to the conferences run by both groups. The good of the computer user and the industry should outweigh petty organizational or economic problems.

...More Power to Him!

The recently concluded National Computer Conference proved the computer industry can no longer take the user for granted.

In its quest to include practical user-oriented sessions in the NCC, Afips has provided the user with a new forum to speak his mind.

Perhaps most typical of this new attitude was the impromptu debate that emerged at one technical session. One panelist took the unprecendented step of challenging the validity of a paper presented by another panel member.

The discussion was joined by conference attendees who staunchly defended the need for practical problem-solving sessions at a professional computer conference.

There will always be technical pioneers in our industry who will present their exhaustively researched findings at computer conferences. We should not discourage these contributions to the state of the computer art.

But neither should we object to more practically oriented problem-solving sessions. The user, too, deserves some answers.

Taking Care of Business

IBM has leveled a serious charge at the Department of Justice in its claims that the government has destroyed documents that might be helpful to IBM.

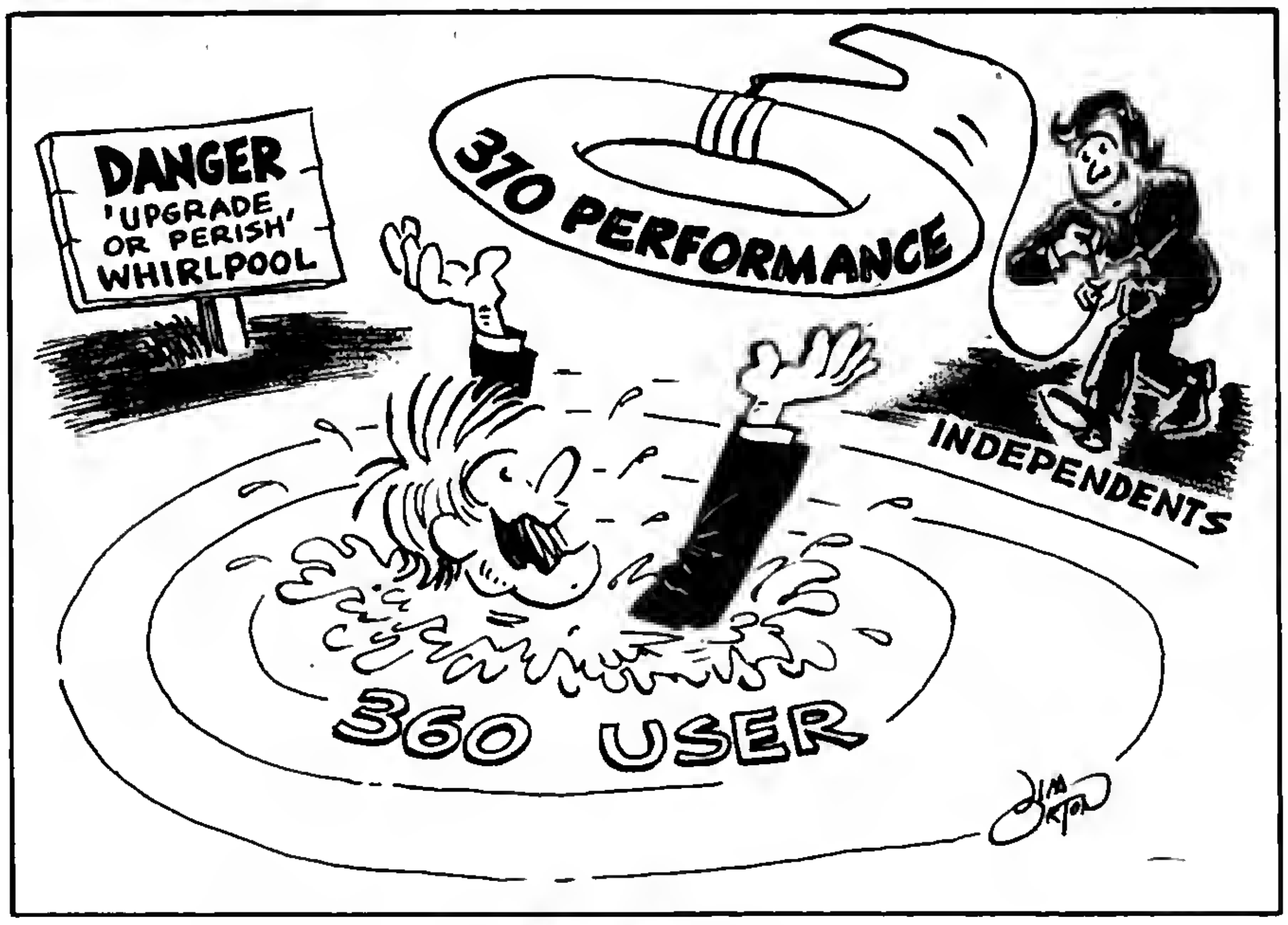
But at the same time, the IBM request for document preservation by the government is extremely broad and includes every document relating to data processing that is in the government, the world's largest computer user.

The defendant clearly has the right in trials of this type to ask for – and to receive – all the government documents that are relative to its case. The government, as shown in the Ellsberg case, does have a special obligation to produce the evidence it has that would be useful to the defense.

But it would be a mammoth job for the government to keep, store and classify all of its materials relating to data processing, particularly since many of them are scattered, and the value of most of them to IBM is questionable.

What must be done, then? The government should not engage in any further destruction of records that are truly useful to IBM.

And IBM should limit its request for government documents to those that are germane to the case and should not use the excuse of government document destruction to further delay this already dragged-out case.



'Bless You, Sir!'

Letters to the Editor

Breaking a System— What It Really Proves

"Be Safe – Try to Break Your System" [CW, June 6], suggests such tests, if negative, will be of doubtful value. They only prove that the attempt to penetrate failed, not that penetration is impossible. Furthermore there is no assurance that the test, even if successful, will identify all weaknesses. To be worthwhile the penetration tests should be based on a detailed analysis of the system.

Robert V. Jacobson
Vice-President
Sentor Security Group, Inc.
New York, N.Y.

Beware Ignorance Of Software Basics

It's lovely when your critics prove your points. I did suggest that while RPG was useful in some applications, the RPG-only programmer was likely to remain ignorant of some standard data processing techniques.

Along comes Jerry C. Swantek who feels certain that segmentation and subscripting are excuses for more expensive hardware. Of course segmentation reduces core requirements, and subscripting is as old as Von Neumann and is used on everything from minicomputers to the biggest machines.

But these are software techniques, and it was this sort of ignorance of basic software capabilities that I warned against. I have in my time reduced hardware costs 30% and at the same time gone from an RPG-only computer to one that offered both Cobol and Fortran.

John R. Culleton, Jr.
Sykesville, Md.

20 Lbs of Trash Are 20 Lbs of Trash

The last paragraph in the article about hospital MIS [CW, June 6] ("Cost of running the system comes to $82,750/mo and is expected to save at least that much in the long run, officials believe") reminds me of a recent article in *Consumer Reports* magazine, concerning the evaluation of the newest appliance fad – trash compactors.

"Is it really worth spending $200 to convert 20 lbs. of trash – into 20 lbs. of trash?"

M.D. Kovalik
Columbus, Ohio

Private Enterprise Vs Local Government

A June 6 article in *Computerworld*, "Counties May Pay Too Much . . . ," repeats allegations made by a local politician that Iowa Data Processing "overcharges" our clients and generally provides poor service, but missing from the article was the fact that the politician's government, Linn County, Iowa, has been seeking for some time to go into direct competition with us for some of the services we offer counties throughout this state. Also, his comments were part of a sales campaign waged to induce one of our clients to drop our services and employ his county's data processing department instead.

When the politician quoted in the article, Merle L. Kopel, tried to sell Linn County's DP services to one of our clients, Johnson County, for voter registration, the Johnson County auditor investigated the cost-effectiveness and services of both systems.

The Johnson County auditor rejected Kopel's overtures more than two months before CW printed Kopel's remarks.

The article quotes Kopel as saying that Iowa Data Processing "ran last year's primary election and mistakes abounded." The fact is that we have never run any election for Kopel or his county.

Kopel also said that Linn County cancelled a contract with us when he took office recently. The facts show we cancelled out Linn County six months before Kopel took office.

Kopel claimed we overcharge for certain supplies. The fact is that we provide the supplies in question to our clients without charge! He further stated that we quoted a price for supplies to him, but we made no such quotation . . . we were not allowed to.

We wrote him a letter last February asking for an opportunity to submit competitive bids on election supplies, but that request has never been acknowledged.

We use the transaction method because it allows our counties to predict their exact costs (they must budget 18 months ahead of time) instead of being liable for unknown amounts of extra computer time caused by operations problems or program development; and also because we are in the business of providing a complete service, not just selling computer time. Our service provides everything from the forms to register voters to post-election analysis.

Our firm is accused of using "scare tactics" in marketing, according to the article. We defy anyone to substantiate such a charge.

The article also accuses us of getting self-serving special interest legislation onto the books. Our only involvement with legislation occurred a couple of years ago when, because of our specialized knowledge, a group of election officials from throughout the state invited us to help them work for needed election reforms.

Thus any work on legislative bills was done at the request of those united election officials, approved by them at every step, and we have not been involved in lobbying since then.

Stanley R. Zegel
General Manager
Iowa Data Processing
Cedar Rapids, Iowa

Car Pools in Demand

To restate L.A. Jaroch's request in the June 6 issue of *Computerworld*, I would also welcome any information available in setting up car pools.

Michael J. Mahoney
Columbus, Ohio

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

On Interface Standards

Official Gerrymandering Decides Who Speaks for U.S.

The Taylor Report

By

Alan Taylor, CDP

In two previous columns the question of whether the computer community wanted to consider suggested interface standards was raised. In the first column [CW, May 9] the recommendation by the American National Standards subcommittee responsible for determining the American position on a proposed international standard (that the U.S. not participate in an international standard interface project) was reprinted, together with the published committee reasoning. This reasoning included a statement that the National Bureau of Standards was opposed to even a single federal standard in that area.

In the second column [CW, June 20] it was reported that NBS's Dr. Ruth Davis, pointed out that the NBS comment had been taken completely out of context. She noted that the NBS strongly supported action in the interface standard area. What the NBS did not want was a single standard – instead they wanted several.

As the NBS comment was the only data supplied by the ANS committee in support of their opposition to the Japanese draft, the vote result was meaningless. It raised the question again as to just who really did speak for America – and just what authority they had, or control they were under when speaking.

The senior committee that "approved" the American position on the Japanese standard was the ANS X3 Committee. Under American National Standard Institute regulations, X3 – like the other ANS committees – is supposed to be balanced so that interests of the general public, people involved in working with the standards, and makers and buyers of potentially standardized equipment are all effectively represented.

Balance is achieved – so goes the theory of the American National Standards Institute – by restricting the membership on these senior committees to trade associations, rather than single companies.

Serious Abuse Possible

This is necessary, according to the Ansi guide, to prevent abuse through unfair representation of industry segments. The committees are supposed to exercise caution in allocating representation to individual companies, as abuse here would – so Ansi says – cause the erosion of the foundation of Ansi operations, and eventually the entire Ansi structure would fall.

The X3 Committee, however, includes representation from computer mainframe companies, not from their trade association, the Computer and Business Equipment Manufacturers Association (Cbema). These companies individually vote on an equal basis with other members, and so far, have voted about 10 times under the provision that allows company membership, if the trade association does not have a standards activity.

Where Cbema would normally have one vote, it actually has 10. Mainframe manufacturers, such as Burroughs, IBM, Xerox, etc., should logically find their voting power in a trade association matched against the peripheral manufacturers, who do not make mainframes, and who are therefore much more interested in having standardized interfaces, but this does not occur. At present, the peripheral manufacturers don't have 10 votes – they don't even have one. And yet they are substantially concerned, involved and affected. X3 is simply not balanced properly, and how can this not be considered an abuse of Ansi's goals?

The pretext for this gerrymandered voting situation may or may not be legal. The official reason is that Cbema has no standardization activity, and therefore declines membership.

The concept that Cbema has no standardization activity will be news to many people. It certainly was to me.

Cbema (previously Bema) has had a standards department for a long time – at least 10 years. I worked with it in 1963.

Cbema certainly has a director of standards. In fact activities of the standards departments were a major part of the Bema organization. Cbema certainly has standardization positions to push.

In the most recent issue of the X3's Steering Committee report it is noted that Cbema opposes any certification process for any X3 standards! (Ansi is officially in favor of certification processing.)

Moreover Cbema, through its paid staff, provides officers for standardization committees, and even makes decisions officially on behalf of the committees.

The actual decision to go ahead and instruct the delegates to the International Standards Organization to vote against the Japanese standard was made by a Cbema employee and Ansi committee secretariat, Robert Brown. He was aware the National Bureau of Standards report had not been adequately quoted, and there would also be serious oppositon to the decision in that the technical subcommittee concerned had simply not done its job. A secretary should not have made the decision, but Brown did, so showing that Cbema does have a standardization activity, and is in fact a participant in perpetuating the gerrymandering of the X3 committee. Brown pleaded that in view of the urgent need to have some form of a decision, he was making it.

Presumably, Ansi is aware of this decision and this background. It is aware of the importance and influence of an Ansi committee secretariat. They are aware of the impact of having 10 votes where only one is usual.

However, Cbema holding the secretariat, and other standards activities, is apparently not considered by the president of the institute (Roy Trowbridge) as being a standardization activity.

In fact, Trowbridge recently had the matter investigated. The investigation stopped after Cbema claimed it did not have any standardization activity. Then Trowbridge proceeded to accept the gerrymandered effect on the X3 voting as all right. Some investigation!

As a result of Trowbridge's ruling, it now seems unlikely that any change in the X3 membership (to bring it into line with any realistic interpretation of the Ansi rules) will be forthcoming.

This Ansi action again brings up the question as to who really speaks for America. As I see it, it now appears that a small group, such as X3, can speak for America, under the protection of the president and staff of Ansi, although membership is gerrymandered, and the data upon which its votes are based is taken out of context.

Of course there is always the possibility that even the president of Ansi can go too far. He does not have unlimited authority, and he does have to answer to his members, as well as his board of directors. But only they can do anything now to protect against the abuse of special interests pulling down the Ansi building.

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Cobol Standard Your Responsibility, Grace Hopper

"Afghanistanism," in newspaper parlance, is the practice of a paper dramatically attacking distant problems which do not impact its advertising income, while leaving untouched the nearby areas in which it could be effective, but also embarrassed.

Thus, during the recent civil rights movement, it was regarded as an example of Afghanistanism for the Northern newspapers to attack Southern practices on discrimination, while staying quiet about similar problems in their own towns.

Reading about Dr. Grace Hopper's advice to users [CW, June 13[I could not help feeling that the leading lady of computers has apparently gotten a bad case of Afghanistanism. She is asking people who are not in a position to do anything very effective to do the work which she could and should have done effectively. This is not to say that Hopper could do anything effective in all the standards areas – but she certainly could have been a lot more effective than she has been in what is the key user arena – Cobol standardization.

Hopper may well be the only person in the world who can be effective in the Cobol area. But the public record shows that to date, despite this opportunity, she has not been able to stop Cobol standardization from being abused. Moreover, this has occurred not merely without her opposition, but under the mantle of her great technical reputation.

Because of this I think it is up to Hopper to do something effective in improving Cobol standardization before she has the right to ask the users to demonstrate against the manufacturers.

Codasyl Membership Rights

These are strong words and ones I never expected to write for I have great admiration for the work Hopper did in the 1950s. But she sits on a body that calls itself the Conference on Data Systems Languages Executive Committee. The conference describes itself as being a set of individuals; membership is by membership on one of the committees.

Factually Codasyl is not a set of individuals. In the essential committee, the Programming Languages Committee, individuals are not even *allowed* to serve! But Hopper's employer, Univac, sits as a member, together with the other manufacturers.

> *Hopper may well be the only person in the world who can be effective in the Cobol area. But the public record shows that to date despite this opportunity she has not been able to stop Cobol standardization from being abused.*

Yet Hopper continues on the Executive Committee. She does not protest this misleading of the users, of Ansi and everyone else. She continues to give silent approval when she could be effective, by stopping both public misrepresentation, and corporate usurpation.

Constitutionally, the conference is supposed to operate in public. But it does not. Users are refused access to the proposals to change the language, or to the justification of these proposals. However, manufacturers routinely obtain access to them whether or not they are members of the conference.

Again Hopper's mantle is helping conceal the misrepresentation of public operation.

The conference is supposed to be representative of users. Yet its officers form a self-electing clique. They may be users themselves, but they are certainly not organized to be influenced by the common user. Therefore, they have no right to be called user "representatives" in any meaningful sense.

Again Hopper's mantle is helping conceal the factual powerlessness of Cobol users in the Codasyl set-up.

So much for the old problem and now for the new problem.

Codasyl has been under attack publicly for over a year. It has failed to publicly answer its critics, or to allow its records to be examined so that the charges against it can be either refuted or confirmed.

As a direct result of this passivity, in conjunction with the executive committee, its refusal to insist on the planning committee's operations being properly monitored, and its permission for the publication of an unauthorized newsletter, the level of escalation of Codasyl's problems has now hit human tragedy proportions. This has inevitably led to the intolerable situation where one man at least considers that he has been "crucified."

Yet Hopper has made no move to open lines of communication from her side. She has preferred to let the matter slide until a Greek tragedy is now unfolding.

Hopper's comments about user demonstration may be perfectly valid, but she has neither resigned from that body nor convinced the executive committee of Codasyl that users have a right to have full and correct information about Codasyl and that charges should be responded to before a level of human tragedy is hit. I believe therefore that this conduct forfeits any right she has to put any work on the user.

One final word. Hopper is a great person. One time I remember her telling me that being a woman, she has many advantages in the game of computer pioneering. One such advantage is that as a woman she has a right to change her mind.

I hope she realizes that my denunciation – for it is no less – is written to prod her into using her feminine perogative at this point. I value the work of all the people who used to gather at 19th and Allegheny, and whom she referred to as "her boys." We do not want that work or those people to be destroyed in the future. Yet this is the danger which now directly confronts us.

I hope that with the help of Hopper, it can still be averted. It is with this hope in mind, and in my belief that she still values both her boys and their work over her position on Codasyl that I address this appeal to her.

Let us offer Cobol – and Codasyl – to the people.

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The Professional's Viewpoint

PLC Must Start Educating Users

By Ron Stewart

Special to Computerworld

Re Fred R. Forman's "Viewpoint" [CW, April 11]; Christopher Coddington's "Viewpoint" [CW, May 2]; and Forman's response in the May 23 "Viewpoint":

The original problem addressed by Alan Taylor, and which Forman refuses to recognize, is secrecy. It's official, as stated in a letter from Ronald Ham to Taylor refusing to release proposals received by the Programming Language Committee.

Forman refutes this by saying, in effect, 'Let them eat cake. In the magniloquence of PLC, we shall bestow upon the users the *Journal of Development* and the minutes of PLC meetings. Be thankful. After the fact is after all better than no facts at all."

Neither Taylor nor Coddington suggests that the Cobol Coordinating Committee should stand between the user and PLC, and this is pointed out by Coddington in his "Viewpoint."

Rather, as has been suggested several times, Cobol Coordinating Committee would provide a mechanism for making proposals public. This would enable the Cobol community to forward comments to PLC so that PLC could consider the needs and desires of the user along with the proposal.

Forman points to industry, government and union committees where the concept of representation does indeed work well. This is not due to informing concerned persons of "decisions that have been made on their behalf" as Forman claims, but is due instead to not attempting to conduct business that should be public with the secrecy imposed arbitrarily by Ron Ham.

The Data Base Language Task Group proposal is the first time in the history of PLC that a proposal has been put in the public domain.

I think it quite unfortunate that the user community was unable to make known its needs and desires concerning the collating sequence proposal which was put together in haste, passed by pressure brought to bear after the end of the PLC meeting at which the proposal was defeated, and then adopted as "standard" by Ansi's X3J4.

I therefore call on Codasyl and, in particular, PLC. It is time to educate the users.

The users of Cobol are entitled, as in any other association based on representation, to full knowledge of all proposed actions contemplated by PLC in sufficient time to allow for reaction by these users.

Ron Stewart is a data processing manager in the Chicago area, and a leader of the Society of Professional Data Processors.

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Upgrade? Switch? Scope? Kronos?

User Tests Ease CDC System Choice

By Don Leavitt
Of the CW Staff

BLOOMINGTON, Ind. – Sometimes benchmarks show that advantages to be gained by shifting from one operating system to another outweigh any problems that may be caused by the conversion. At Indiana University preparations are underway to shift a large-scale CDC 6600 from Scope 3.3 to Kronos 2.1, even though the latter won't be released by CDC until next month.

Late last year, personnel in the university's Wrubel Computing Center (WCC) realized the batch and interactive load would soon be too large for Scope 3.3 on the 96K 6600. They saw three alternatives: move up to Scope 3.4, which had recently been released; switch to Kronos 2.1 when it became available; or upgrade Scope 3.3 as an in-house project.

The local remake of Scope 3.3 was felt to be impractical; the changeover to Kronos, possible but potentially troublesome; and the transition to Scope 3.4, likely to be the "most sensible" approach. But the WCC staff decided to do some testing first.

A Day in the Life

Study groups headed by WCC systems programmers Ann Bardin and James Haskett analyzed batch jobs from a typical busy day in terms of system resources utilized. A spectrum of 100 jobs was put on tape, to be used to make a miniature population similar in requirements to the whole day's work.

Three test patterns were followed operating under Scope 3.3 (for control comparisons), and under Scope 3.4 and Kronos 2.1 which CDC had provided for the occasion. As each test began, a request to unload the batch job tape put all 100 jobs into the input queue within a few minutes. This operation was repeated, when possible, three times in each test environment so that a total of 300 batch jobs were to be processed.

Concurrent with the batch work being run, Bardin explained, interactive terminals were simulated using CDC's Simulator package.

Run with eight active terminals, the average number of users on the day chosen, were made on all three systems, she said, and additional runs with 32 active terminals were made using Scope 3.4 and Kronos 2.1 since WCC expects to reach 30 concurrent users (the system's physical limit) next year.

Kronos Showed Well

The results under Scope 3.3 and 3.4 were very similar, Bardin continued, with "really no significant differences in performance." But Kronos showed up very well, indeed, she said.

With eight active terminals, all 300 batch jobs were completed in 14% less time under Kronos than Scope 3.3, and in 2% less time under Scope 3.4 than Scope 3.3. With 32 active terminals, Bardin reported, Kronos completed the batch jobs in 35% less time than Scope 3.4.

Turnaround time for a given batch job varied by job size and interactive terminal load as well as by operating system environment, she added.

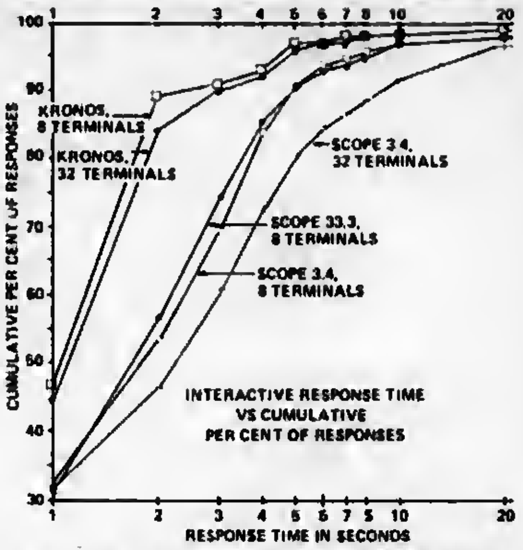

Chart plotted by WCC staff shows distinct difference between Kronos and Scope performances for terminal users.

For the terminal users, response times were consistently better under Kronos than under Scope. At the same time, she noted, the Scope terminal handling software, Intercom, dominated the machine "to such an extent the batch jobs could not get through."

"Kronos is not a panacea," Haskett concluded, "but because of the gains in performance, the conversion will be worth the effort."

Random Notes

Interactive Cobol Support Added to Tymshare Service

CUPERTINO, Calif. – Interactive Cobol development and support routines have been installed on Tymshare Inc.'s international computer service network, Tymnet. Capabilities include a fast compiler, interactive debugging, support for indexed sequential files and a "shorthand" or abbreviation translator.

The language implementation also provides a report writer/generator, an interactive editor for data entry, subroutine capability, internal and external sorts, and a decision table processor. Tymshare's Cobol follows Ansi standards and is compatible with international standards as well, the company said from 10340 Bubb Road, 95014.

Personnel Accounting Package Gains Forecasting Feature

KING OF PRUSSIA, Pa. – A staffing control feature recently added to the Personnel Accounting and Skills Search (Pass) package from International Systems Inc. enables users to anticipate future needs. Based on exponential smoothing techniques, the forecasting feature allows weighting factors to be adjusted for seasonal trends or extreme movements of the economy.

Pass operates under DOS or OS/360 in 40K bytes of storage. ANS Cobol source code is included in the $9,400 package from 150 Allendale Road, 19406.

RCC Accesses Datapoint 2200s

PALO ALTO, Calif. – Remote Computing Corp. has expanded its 120 char./sec support capabilities to include the Datapoint 2200 intelligent terminal.

RCC's support for the Datapoint equipment includes programming and software for Computer Aided Data Entry (Cade) applications. This off-line editing and preprocessing includes CRT displays; full program control of entries; verification and correction by field; and the ability to check batch totals, all on the user's terminal.

Past, Present, Future Checked By Financial Modeling System

GREAT NECK, N.Y. – The Financial Modeling System (FMS) service, now available from Time Sharing Resources Inc. (TSR) enables managers to look back at what they have done, and look ahead at what they hope to do in the future. With the one service, they are able to generate financial reports, analyze historical data, forecast future performance and test alternative plans of action.

FMS provides a means of studying both the impact of divisional or department decisions on the whole corporation, and the impact of corporate-level decisions on the individual operating division.

The system requires development of the user's own file of experience but it is not completely "self-centered" in the data available. FMS includes access to the data base developed by the National Bureau of Economic Research. The time series information in this data bank dates back to 1946.

To aid in looking ahead, FMS gives the financially attuned user several routines for developing depreciation computations, rate of return, loan analysis, time value of money and similar calculations, using conventional alternative techniques.

The models available under FMS are all parameterized so the user can change items on a highly selective basis, without disturbing the rest of the factors. A single parameter, for example, defines the depreciation method used, at the corporate or subdivision level, so that a manager can see what effect changing that accounting technique might have.

While various features of FMS have been available through other analysis routines, TSR spokesmen claimed their service is the first to integrate so many facilities into a single unified system.

TSR is at 777 Northern Blvd., 11022.

$100 'Bypass' Speeds Debugging

CANOGA PARK, Calif. – Program testing under either DOS or OS/360 can be more effective and less time-consuming if the application program being tested includes access to the Data Exception Bypass Routine now available from Joseph Sider & Associates Inc.

As its name implies, the Bypass routine is designed to get program tests past minor problems caused by clerical errors – such as a failure to properly initialize a data field – so that more serious logic problems can be quickly recognized and hopefully solved.

Without a routine such as Bypass, Sider noted, a test would "abort" as soon as the first data exception occurred and serious debugging would be delayed until the user could clear that probably-minor problem and wait in line for another shot on the computer.

The concept behind Bypass is not new, the developer admitted, but it is one that too few users have put to good use in their own installations. The $100 Sider charges is probably less, he said, than it would cost the user to develop his own comparable routine.

Bypass comes into play whenever a program check interrupts the execution of the program being tested. Instead of allowing the test to be dumped, the Sider routine checks the reason for the check. If the problem is anything but a data exception or decimal divide overflow the "abort" continues as usual.

If a packed decimal field is at fault, however, Bypass logs the details of the program check – the location of the failed instruction and the contents of the data fields – then zeroes the bad data and returns to the program to reexecute the interrupted instruction.

Sider & Associates is at 6701 Variel St., 91303.

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Since January, 20 companies have ordered the MMS General Ledger System. Each one of these corporations is worth more than $20 million (one is in the billion dollar class). They all have the programming staffs and resources necessary to develop their own corporate financial systems. But even the big companies don't have unlimited EDP budgets.

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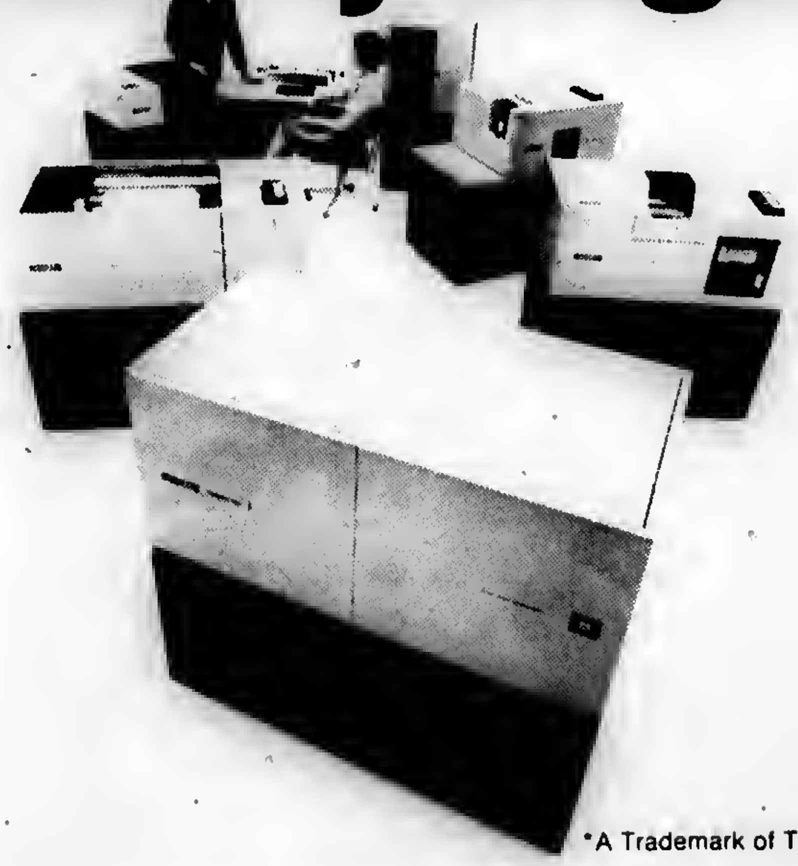
Here's the best-kept secret in the data processing industry:

There is an intelligent terminal system that can stand alone without technical personnel, and handle up to 20 workstations simultaneously. It's remarkably effective for the price. System Ten* computer, by Singer.



*A Trademark of The Singer Company

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Mfg—Printing & Publishing
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'Minimal' Effort Moves Minis

SYDNEY, Australia – Data General Nova minicomputer users with configurations as small as 8K can have modifiable operating commands, reentrant machine code for applications, mnemonics for writing applications programs and multiple concurrent jobs for interactive work, with the Minimal Interpretive machine language system developed by Interactive Systems Pty. Ltd.

Minimal is independent of all Data General software and includes a real-time operating system, data entry routines to handle key-to-tape and key-to-disk operations, and data transmission software.

The system also supports use of Calcomp plotters, and the Minimal "package" includes various hardware diagnostic and demonstration programs, the company added.

Since it was developed to handle interactive program development and maintenance, the system does not include assembly, loading and patching cycles. It is a load-and-go interpretive system and the interpretation speeds are fast enough, according to Interactive, for use at the I/O interrupt level.

Since the operating system itself is written in Minimal, users can work directly with its logic.

Interactive Systems Pty. Ltd. is at 114 Toronto Ave., Dee Why West 2099.

'Adapt' Controls Programmer Actions, Libraries of JCL, Source Code, Data

OMAHA, Neb. – Managers of 360/370 OS shops, including those run in a virtual storage environment, can control JCL jobstream procedure libraries, source program libraries and data files with the Adapt software package from Consolidated Business Systems.

JCL procedure library support allows users to store whole jobstreams and withdraw them for use through the submission of a single control card. This facility relieves both the programmer and the computer operator of considerable card handling with its potential for error, Consolidated remarked.

Adapt includes an inventory of programmers and their skills, and a file showing primary and secondary programmer responsibility for each program. Before a proposed change to stored JCL, programs or data is posted, the Consolidated software verifies that the submitting programmer is in fact authorized to perform the function.

This provides protection, the company explained, against accidental and deliberate but unauthorized modification or destruction of the programs, JCL or data controlled by Adapt. Once a change is made, all information concerning the activity is posted to a history file so management can later audit who made changes, when the changes were made and why.

The material stored by Adapt can also be used to generate, through a self-contained report selection option, cross-referenced listings of the programmer responsibilities, or a compilation of all activity performed by a specific programmer.

Other possibilities include providing management with a daily "snapshot" of programming activity for the entire staff, a Consolidated spokesman suggested.

By the nature of their uses, the JCL procedure library and other data controlled by Adapt is normally stored on disk, the company added, so that storage medium should be considered part of the configuration needed to support Adapt.

The software does not involve any changes to IBM's OS or VS coding. The Adapt package is currently available for a one-time charge of $3,900. Maintenance and new releases are available for $600/yr.

Alternatively, the system can be rented for $150/mo from P.O. Box 6173 Elmwood Park Station, 68106.

'LSC' Entries Build RPG Logic Skeleton

VALLEY STREAM, N.Y. – Programmers who like the non-procedural approach of RPG and RPG II, but who dislike the multiplicity of specification sheets needed to get programs organized, can now use the List/Source Compiler (LSC) package from Computer Procedures Corp. to generate skeleton RPG source code.

LSC creates basic file description, input and printer output specifications, with minor accumulation capabilities, based on three card types punched from a single coding sheet.

No Test

LSC does not provide, however, any tests for selection of valid input data records or rejection of invalid ones.

As generated, the RPG skeleton may include logic to list and/or accumulate totals from whatever records are presented as input, as long as they meet the basic file definition tests.

Before running the LSC output against an RPG processor, users may "flesh out" the skeleton with RPG source code of their own, to define acceptable records and to extend the calculations.

LSC is currently available for use on the 360/20 and on larger CPUs of the 360 Series under DOS. As part of the RPG source program skeleton, the package also creates a complete JCL deck, the company said.

LSC requires 8K bytes of core and costs $199.

Computer Procedures Corp. is at 181 S. Franklin Ave., 11581.

Tapes Transmitted

NEW YORK – Subscribers on the SDL International time-sharing network can have tape files available on a 360/85 in Ottawa minutes after they are transmitted from a mag tape-equipped terminal in the company's branch office here. Once added to the library in Ottawa, they are available "on demand" for processing with a maximum 20-minute turnaround, a spokesman noted.

While tapes are usually delivered to the local SDLI office, at 437 Madison Ave., to be sent to the 360/85, users with their own tape-oriented Data 100 terminals can transmit their tapes directly to the data center in Canada, the spokesman added.

Don't gamble with computer leasing

Planning to order a System 370? Have you found that when you choose the flexibility of monthly rentals, you risk breaking your budget with hardware costs? Or, when you try to save on hardware costs, are you asked to accept a long-term arrangement you might regret in the future?

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Data Briefs

TTY-Compatible Printers Offered by Kleinschmidt

DEERFIELD, Ill. – SCM's Kleinschmidt Division has unveiled its 7300 Series TTY-compatible character printers which the firm said are up to 50% less costly than its earlier models. The RO, KSR and ASR models operate at 30- to 40 char./sec and use standard teletypewriter paper.

Switch selectable rates of 50-, 75-, 100-, 110-, 150-, 200- and 300 bit/sec are standard and columnizing and tabulating options are available.

Purchase price of the RO unit is $1,975. The KSR model costs $2,275 and the ASR $3,950. Lease plans are available. Delivery is 90 days from Lake-Cook Road, 60015.

Trendata Has Cassette Unit

SUNNYVALE, Calif. – Trendata is offering a tape cassette conversational terminal with correction, formatting and editing capabilities.

The Model 1500 is compatible with systems using IBM 2741 terminals.

The terminal consists of a heavy-duty Selectric typewriter, a Trendata printer actuation mechanism, and the tape cassette.

The Model 1500 costs $6,450 or $178/mo including maintenance. Delivery is 30 days from 610 Palomar, 94086.

GTE Adds to Data Set Line

SAN CARLOS, Calif. – GTE Lenkurt is adding the type 26U-1200 data set to its line of data communications systems.

The 26U transmits data asynchronously at up to 1,200 bit/sec over a voice-grade telephone circuit. The unit is particularly suited for point-to-point, multipoint and polling data applications, the firm said.

The type 26U-1200 is compatible with the Western Electric-type 202C data sets for dial-up service, and with the Western Electric-type 202D data set for private line applications.

The 26U costs $499. Delivery is 30 days from Dept. C720, 1105 County Road, 94070.

Multiplexer Allows 22 Channels

ANAHEIM, Calif. – Data Products, Lear Siegler's Electronic Instrumentation Division, has come up with a frequency division multiplexer that permits up to 22 multiple data channels on a single phone line.

Available in 1- and 4-channel subset versions, the multiplexer will accept up to 600 bit/sec rates.

Price for the single channel version is $585. The 4-channel, fully loaded version costs $2,165. Delivery is 30 days from 714 N. Brookhurst St, 92803. s,

Clarification

The GTE Lenkurt 26D data set [CW, June 6] costs $2,700 for the basic unit. Options can increase the price to $3,625, the firm said.

Why Is IBM NCP Software Delayed?

By Ronald A. Frank
Of the CW Staff

Analysis

WHITE PLAINS, N.Y. – IBM has confirmed that its promised software support for 3705 users is at least six months behind schedule. And industry sources believe a communications-oriented minicomputer may soon be announced by the company.

The software that was not delivered was the level five release of IBM's Telecommunications Access Method (Tcam). Rather than being merely a refinement over earlier versions of Tcam, level five would have given 3705 users the first implementation of the Network Control Program (NCP).

Level five was scheduled for March 1973, but an IBM spokesman said the new delivery date was "the end of the third quarter" of this year. Further software delay may arise since there are no Beta test sites yet for the promised software.

The NCP capability will mean that the 3705 can finally do more than emulate the earlier IBM 270X line controllers. The NCP software will allow users to move much of the communications control functions out of their mainframes and into the front end. Many independent suppliers of 3705-type systems are waiting for IBM's NCP so they can offer similar software.

Some observers believe there will never be NCP software for the 3705. These sources cite IBM's announcement of its Virtual Telecommunications Access Method (Vtam) as the logical alternative. The apparent reasoning for favoring Vtam is that it is more specifically oriented toward virtual systems.

But delay in the Tcam software could have other implications for data users. IBM has never totally committed itself to moving teleprocessing software out of the mainframe and into the front-end 3705-type device.

The biggest internal IBM hesitancy would stem from the avowed IBM goal of concentrating as much power as possible within the mainframe. By definition the sophisticated data communications users are orienting their networks away from this concentration of DP resources and toward a more distributed processing approach.

New Product?

The IBM answer to meet the needs of these users may lie in a new type of product – the communications-oriented minicomputer.

For some months now IBM salesmen have been proposing the System/7 in teleprocessing situations that would seem to be foreign to the S/7.

It was originally introduced as a factory-floor, control-type processor and is usually very expensive when proposed in competition with independent communications processors.

A communications-oriented mini would relieve the pressure on the 3705, and its smaller companion, the 3704, to get more free-standing teleprocessing power. It would allow these units to develop primarily as successors to the 270X series of line controllers, in support of large 370s.

IBM has traditionally moved slowly in the area of telecommunications. But it is being pressured to enter the free-standing communications processor area before the independents attract the data user with their lower-cost equipment which in several cases includes teleprocessing software far superior to IBM's efforts so far.

Only time will tell what IBM plans to do.

First Data Service

User Connects to N-Triple-C Network

By a CW Staff Writer

OMAHA, Neb. – When Gate City Steel Co. receives order-entry data at 2,400 bit/sec from its Chicago office the information is transmitted over unique common carrier facilities.

They are unique because the 4 kHz voice-grade channel at Gate City is the first to be supplied by Nebraska Consolidated Communications Corp., (N-Triple-C).

The data link from Gate City's Chicago office to the firm's corporate headquarters here went into service on May 25. It includes 16 towers that span the route, a terminal at the Kemper Building in Chicago and a terminal on the Woodman Tower Building which is described as Omaha's tallest building.

"We wanted to open this data network for some time," explained Bill Isgrig, DP manager for Gate City, "but we couldn't afford it with Ma Bell." Isgrig estimated that the N-Triple-C facilities are saving him about 40% compared with phone company rates.

A Bell 3002 line with C-2 conditioning would have cost about $700/mo while his bill from the existing carrier will probably be about $400/mo, Isgrig predicted. And the specialized carrier service can operate without line conditioning.

But cost savings were not the only motivation. The specialized carrier has provided "superior service" and the technical people have been "very knowledgeable," Isgrig said.

The most serious line outage that has occurred on the Gate City channel was a disruption of service caused by a lightning strike, Isgrig said. The link went down about 4:45 p.m. and N-Triple-C engineers said they would restore service between 6:20 p.m., and 6:30 p.m. The line came back up at exactly 6:25 p.m., he said.

The data transmitted from Chicago is entered onto an IBM 3270 CRT. From the terminal, it is sent through an International Communications Corp. 2,400 bit/sec data set supplied and maintained by N-Triple-C.

The lines between the specialized carrier's terminals and the Gate City sites are supplied by the local Bell company.

But from Gate City's standpoint there is only one bill to pay. The modem adds about $55/mo for each unit to the monthly N-Triple-C charge but that includes maintenance. The carrier charges a flat fee of $30/mo for each end of a local loop and this cost applies within base rate areas from the N-Triple-C terminals that usually range from five to 10 miles. The fixed local loop rates are different from the Bell rates which are variable from company to company, according to an N-Triple-C spokesman.

One of the factors which made Isgrig decide on the new carrier is the flexibility available in the service. Gate City intends to add warehouse locations such as Davenport, Iowa, to its net and all expansions will be covered by the specialized carrier's flat rate of 80 cent/mi. compared with the sliding scale distance-dependent rates charged by Bell for private line facilities

Gate City has a 370/135 at its Omaha headquarters. The system replaced a 360/25 early this year and the 370 is currently running under DOS with IBM's CICS software. The communications application runs under Btam and the transmissions from Chicago go directly into the CPU through the integrated communications attachment, Isgrig said. The ICA on the 135 allows Gate City to run communications without a separate line controller.

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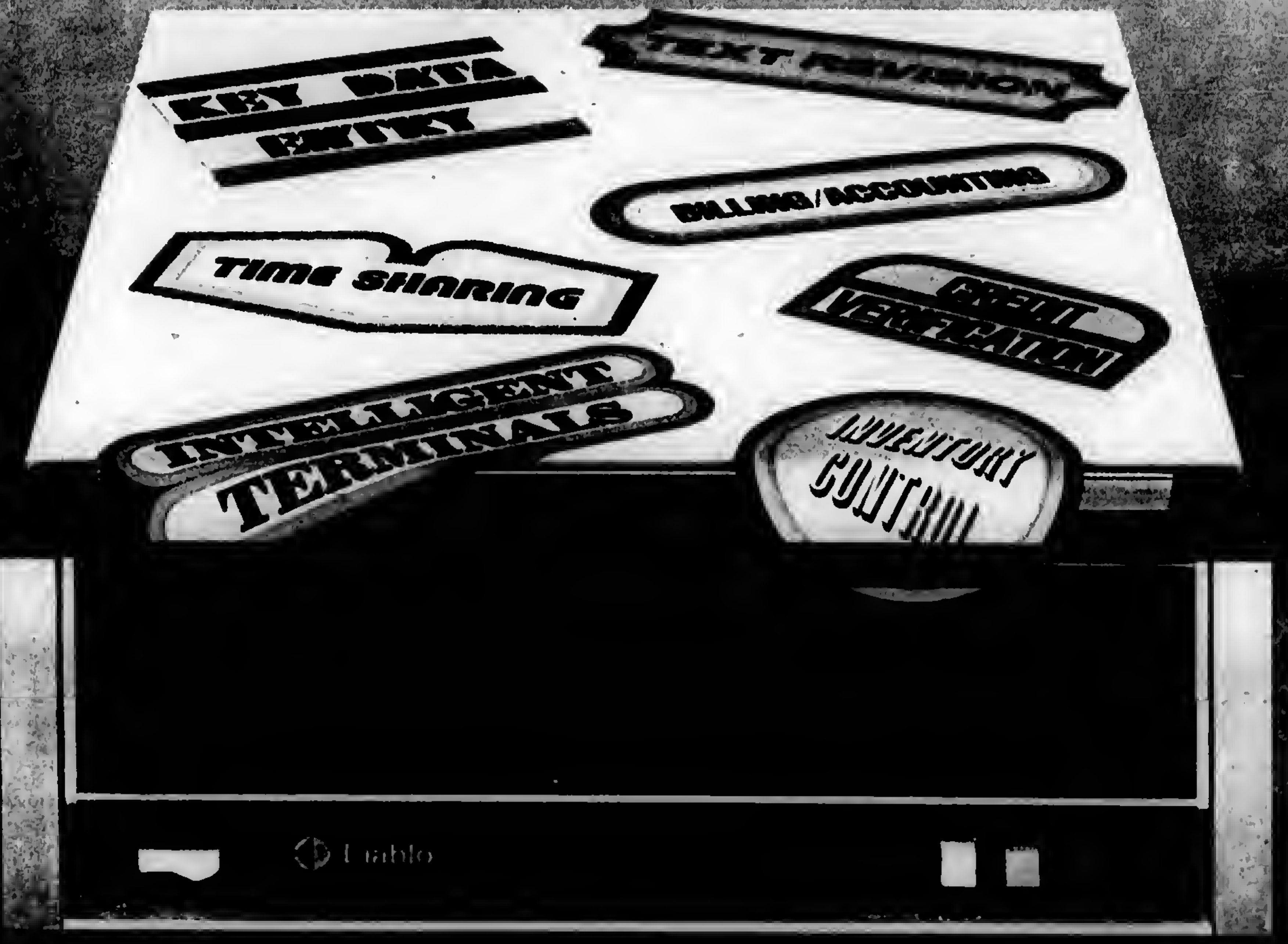

COMPUTERWORLD

CW SPECIAL REPORT

★ Big Look at Small Systems ★

He May Be Small but He Has Unique Needs, Problems

New equipment and decreasing prices have made DP feasible for many smaller businesses. But small business have unique needs, small budgets and often no technical in-house staff.

This special report will examine some of the problems involved in selecting and installing the right equipment and implementing it and how some users have managed to implement small DP systems

Buying Turnkey Mini System Not Panacea

By John J. Morris
Special to Computerworld

The low cost of the minicomputer and associated peripherals has enabled many companies to consider minicomputer systems for business applications. The acquisition and implementation of these systems has, however, consistently remained a major problem for the user who does not have the required technical expertise on his staff to implement the system.

At the outset the user is faced with several alternatives, ranging from the purchase of the hardware alone to the purchase of a full turnkey system (a total solution to the problem on a guaranteed performance basis).

The turnkey approach is the most viable alternative for the majority of potential users. It is not, however, a complete panacea, and there are several pitfalls inherent in the acquisition of this type of system.

If the acquisition process is correctly followed, it will provide for a legitimate bottom line comparison of all vendor proposals; result in the most cost-effective system; and quite likely avoid that still quite common occurence called the "agonizing reappraisal."

Idea and System Concept

The first important step is for the idea and subsequent system concept to evolve. While this might appear self-evident and elementary to those who have arrived at this point through an evolutionary process, there are several users, due to the ever increasing variety of systems becoming available, who are presented with not the question of computerization in the broad sense, but basically "what type?"

Is there a real on-line requirement, will a batch-type system do, do I need a disk or ledger-card system, what is economical to implement, what are the cost factors involved, are all questions that must be resolved due to their significant impact on the cost-effectiveness of the overall system.

Vendor discussions initiated prior to some definition of system requirements will generally result in an inordinate amount of wasted time, confusion and possibly a life-time study. The situation might be likened to looking for a Mercedes in a VW showroom. Through a process of planned self-education or the use of accounting or consulting firms, this step can be minimized.

A brief general description of system requirements should be prepared for all potential vendors. This should include the following elements.

- The objective of the system
- Functions to be automated along with a brief description
- Parameters of the business (number of customers, orders, inventory items, etc.)
- General information such as present mode of implementation, relation to corporate activity, schedule constraints, etc.

Compiling the Bidder List

When searching for a vendor, there is a tendency to include everyone rather than go through a preliminary elimination process. This could lead to mass confusion or a great deal of unnecessary effort in dealing with the vendor representatives. It is suggested that the final compilation include no more than 10 to 12 vendors.

Send the selected vendors the system description, requesting additional data that will completely validate the vendor as one you will eventually do business with. Each specific situation will dictate the nature of this additional information. For example, a user considering a multiple unit purchase for installation in different sections of the country will, of necessity, consider maintenance a major factor in the decision-making process.

In general, this additional data should include a request for financial data, number of similar systems installed, length of time installed, person to contact, maintenance capability, warranties and terms of purchase or lease.

This process should enable the user to narrow down the field to three to five qualified bidders to which the request for quote (RFQ) is sent for formal quotation.

The request for quote is the most important step in the process and is generally the most difficult for the small user to accomplish. Assistance is generally required from an accounting or consulting firm.

The document may be looked at as the functional specification for the system and therefore should completely define all the functional requirements of the system and exhibit all the transaction data to be handled by the system.

In defining the functional requirements, the greatest problem faced by the user is where to make the trade-offs to obtain the most cost-effective system. It is common and easy to incorporate all possible functions and to have the system do "everything."

In many cases a well-defined system (all tradeoffs made) will accomplish 90% or more of the intended objectives at less than 50% of the total system cost. Secondly, it must be realized that the RFQ is the vehicle for the vendor to provide a

(Continued on Page 23)

S/3 Limitation Is Functional Not Physical

By Stanley J. Cloward
Special to Computerworld

Where and in what way does one begin to encounter the shortcomings of the IBM System 3. The S/3/10 has by now proven itself a reliable little workhorse. Initially released as an 8K, card-oriented system which leased for about $1,200/mo, users soon found that for a relatively small increase in rental, they could enjoy the inherent advantages of disk operations.

Additional hardware enhancements followed in rather dramatic fashion as market penetration exceeded IBM's fondest dreams. (The present installed base of S/3 is around the 15,000 mark).

The specially tailored RPG-II language, released simultaneously with the hardware – and in fully functional condition – has also been enhanced to the point where most user needs can be met with relative ease, especially in a small shop. The System Control Program (IBM's name for the small Operating System, or Monitor), now in its eighth release, has been brought along a surprisingly consistent path of functional modifications with very few "glitches"

(Continued on Page 20)

Part of an Insurance Program

Big-Time Security Analysis Needed

By Robert V. Jacobson
Special to Computerworld

The small businessman who has just installed a minicomputer system may begin to wonder if he should concern himself with DP security. After all why should anyone plant a bomb in his office?

If that were the only worry, he probably would be right to dismiss security as a concern. But, in fact, he is exposed to many of the same problems as the large bank or insurance company and has a special problem the giants don't have.

The big installation makes use of its large staff to support a number of key security measures. Separation of duties, a standard internal controls technique, is used to help detect and correct errors and to deter fraud.

Cross training and depth of staffing at a large site reduce dependence on the knowhow of individuals. Ample personnel are available for assignment to emergency duties; fire fighting, loss control, evacuation and the like.

The small installation with perhaps only four or five people operating the DP function will be hard-pressed to duplicate these measures.

No matter how small the DP operation, it should undergo exactly the same kind of security analysis as a multimillion dollar computer center. Some basic guidelines are:

- Examine each computer application to see if it is a potential target for fraud or theft of assets, or if a delay in performing the application would be damaging. Estimate the potential dollar exposure from losses or delays.
- Think of all the things that could go wrong; fire, flood, riot, labor disputes, power failure, theft, air conditioning failure, sabotage (perhaps by a disgruntled employee), and estimate the probability of occurence of each.
- Combine the two estimates to find out which are the most significant threats – the one most likely to cause a large dollar loss and which applications particulary need protection.

This risk analysis is not easy to do. It requires substantial effort but the output is invaluable for two reasons. It pinpoints what needs protection and helps the manager decide what is a reasonable amount to spend on protection. Without a risk analysis, one can only guess at what to do and the chances are that the security program will be less than optimum.

A wide range of remedial measures have been adopted by prudent DP managers, and the businessman with a small computer system will probably find many of them helpful.

These include internal controls, a workable contingency plan to include backup, fire detectors and a burglar alarm, and hand extinguishers (train several employees to use them effectively.)

Be sure others in the organization receive continuing training in operating the hardware.

Most important, keep yourself involved. Make the effort to understand what's going on in data processing.

In the vast majority of cases, the DP manager will be doing his job to the best of his ability. But unfortunately a number of businesses have been defrauded by trusted DP staff members.

Every businessman should keep two points in mind:

- Most frauds are discovered by chance or through a foolish blunder by the embezzler.
- We have no idea how many frauds have never been discovered.

While secure and reliable DP operations will require some effort by management, it need not be a huge or costly burden. Rather, a well-balanced security program can be thought of as part of an insurance program to protect company assets and the viability of the business.

Jacobson is vice-president of the Sentor Security Group, Inc., New York, N.Y.

Decentralized Minis Are Option To On-Line Terminal Systems

Non-technical operators enter data into DEC business-oriented minicomputer system, which AVM Corp. placed in each of its autonomous factories.

JAMESTOWN, N.Y. – "Any factory that can afford hiring one more part-time clerk," said Roger Horsfield, DP manager for AVM Corp., "can afford to computerize its inventory and production control system.

"We are doing just that with a number of our smaller factories. We are providing them with the systems they need for their own operations. This includes the hardware that can operate those systems completely independent from our DP operation.

"And it is being done without any technical personnel. The whole package is costing each installation about as much as it would cost to hire another clerk-typist."

The program, Horsfield said, is one of decentralizing the computer operations by providing each of the company's autonomous divisions with its own minicomputer, along with the systems required to operate independently of the headquarter's DP department.

AVM, is comprised of a group of 14 divisions and small companies operating independently of the others. Although they are nearly all involved in some type of assembly and fabrication processing, most of their end products – ranging from automatic voting machines manufactured by the parent company to such other products as office furniture, hospital cabinetry and retail store fixtures – are unrelated.

Each of these divisions operates a small-to-medium-sized plant, typically with between 200 and 300 employees. Average sales range from $4 to $10 million.

Each division is also fairly autonomous.

DP History

The company's DP department, under Horsfield's direction, began operating late in 1970 with the installation of an NCR Century 100 computer, upgraded later to a medium-size NCR Century 200 with a 32K-byte memory. Operating primarily in accounting functions, this installation provided little or no direct support to the company's widespread divisions.

"Still, there was an obvious need for automation on the division level," Horsfield said. "In a typical small factory, the production scheduling and management of materials and inventory are under the direction of one man. He has the problem of scheduling the subassembly and assembly of several hundred parts and components through various production centers with widely varied capacities. It is the type of job that benefits from automation."

Two courses of action were open, Horsfield decided: centralize the operation with the distant factories going directly on-line with the Jamestown office, or completely decentralize, with each plant using its own computer operation if an economical means of doing it could be found.

To centralize the operation would have required major expenditures. First, Horsfield said, the company would have had to upgrade the present central computer by at least $4,000/mo. Then it would have had to install terminals at about $700/mo for each plant. In addition, there was the added communications expense of long distance tolls or Wats line service.

The decision was made to decnetralize, installing Digital Equipment Corp. Datasystem 330 business-oriented minicomputers in each of the plants.

The decision to decentralize was also based upon the ability to operate the small units without adding technical personnel to the factories' staffs.

"We wanted to destroy the DP mystique," Horsfield said. "We wanted to make the computer a working tool, and put it where the man using it is working, and where he can operate it himself, rather than making him come to some distant operation that he can neither see nor understand."

In the DEC Datasystem 330 minis being used, the central processor is concealed in the desk-size cabinetry that holds the operator's console and tape drives. "The fact that the processor is concealed," says Horsfield, "helps us in our efforts to have nontechnical people operating the machines; it helps eliminate some of the awesome qualities of a computer that tend to frighten away the lay user."

The operator's console is equipped with standard alphanumeric keyboard by which the operator may relay program instructions, ask questions of the computer or input data. A CRT provides a visual check of keyboard input as well as display of computer output. Disks, tapes and a line printer round out the equipment.

"In terms of price/performance," he said, "this [decentralization] is, without a doubt, the most economical way we could go."

S/3 Limitation Functional, Not Physical

(Continued from Page 19)

along the way.

Most users I know say the "uptime" performance of the S/3 has also exceeded IBM's expectations.

The S/3 is physically enhanceable to a remarkable degree for a small machine; core storage can be brought to 64K under special arrangements; disk storage can be enhanced to a total of roughly 40 bytes; a maximum of four tape drives in 20, 40 and 80k bit/sec transfer rates may be attached; printer speeds of 100-, 200-, 300-, 600- and 1100 line/min are available.

The real limitation appears to be, therefore, functional rather than physical. With the existing machines, there exists no true multiprogramming capability. As a tradcoff, IBM offers what is known as the Dual Programming Feature (DPF) under which core is dividied into a maximum of two partitions, each with a unique set of hardware registers.

Using the DPF and a special software package known as Communications Control Program (CCP), it is possible to assign to each partition a teleprocessing program and a batch program or, more simply, two batch program streams.

A further limitation of the S/3 is the lack of an interactive language which can support multiple remote access arrangements for teletypewriters or other devices.

The above limitations pose a rather severe dilemma for the user contemplating substantial growth and the development of a data-base management capability.

One's initial reaction is, of course, to look within the IBM stable for the next logical successor machine.

The drawback, however, is the dramatic cost differential between the S/3 and IBM's "paper machine," the 370/115, which rents for roughly twice the price, and an "actual machine," the 370/125, which again rents for twice the price of a 115. In short, a user who finds himself with a loaded-down S/3 is in a real bind.

What are the alternatives if a user is so bold as to consider crawling out from under the large grey umbrella (IBM's)? We have reviewed the stables of other vendors and found them to be somewhat lacking.

Our decision, at least for the immediate future, is to stay with our S/3, move to more shifts of operation and wait until "big daddy" announces the next round of enhancements to the S/3 (such as interactive computing which is rumored to be available soon with a maximum of 32 remote devices). During the interim, our costs will steadily mount to the point where it will be much easier to cost-justify the 370/115.

Then again, it just might be possible that within a relatively short time, IBM or some other vendor will decide to make its medium-scale machines more cost-competitive – and thus reap a fortune – while easing the transitional pains of those of us with large and growing processing requirements who are at present left to stand first on one foot and then the other.

Stanley J. Cloward is director of computing services at Baldwin-Wallace College, Berea, Ohio.

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Establish Choice of Operation

Vendors Rated on Points

Objectivity Must Rule Any Vendor Evaluation Method

By Alvin Alosi
Special to Computerworld

When the potential new user has progressed through the decision-making process to the point where he is ready to select a computer vendor, he needs to carefully establish the criteria on which he will base his judgment.

He needs a sound set of ground rules to help guide him through all the claims and counterclaims that will be presented to him through the various sales representatives.

To go through the selection process properly, he needs to prepare himself to be as objective as he can and to eliminate as much as possible any prejudices he might have regarding brand-name popularity.

The new user faced with this decision may find the following methodology helpful.

As a prospective new user, our company had already established certain parameters. First, we compiled an accurate fix on not only our current volumes but expected future volumes as well. In this way, such things as storage requirements and peripheral capacities could be more accurately determined.

Second, we had established a preference as to our method of operation. In our case, we had decided on using CRTs in a conversational order entry process with multiple task capability instead of single batch operation.

Thirdly, we had established an equipment cost range we wanted to stay within.

With these beginning parameters, we set about the job of interviewing vendors. A worksheet was set up showing in the left-hand column the list of factors we wanted to use in our comparison; a column to the right was set up for each vendor interviewed.

The factors listed were:

- Core requirements – to handle all jobs in a multijob environment (expandability, size increments).
- Multiprogramming capabilities. Is multitask operation possible? How many jobs? How much will background jobs degrade the system?
- Disk capacity. Was pack removable or combination of fixed and removable? How many drives can the system support without a major upgrade? What are access times? Convenience in changing packs.
- Printer speeds. How fast is printer recommended by the vendor? Are faster printers available? Number of columns; special characters; ease of loading paper or forms. Can it produce the number of copies required with clarity?
- Input device. (We were looking for paper tape input for batch work because of its compatibility with flexowriters, add punches, etc.) How fast can it read (in both roll and fanfold modes)? Does it have an automatic take-up reel for long tapes?
- Are CRTs available from vendor as input devices? What are screen capacities? Transfer rate? Does it have a 10-key numeric cluster convenience?
- Software. What programming languages are available? What type of utility routines are available, i.e. sorts, copies, backup procedures, file displays and file maintenance? Programming diagnostic and debugging aids? Applications packages, i.e., payroll, accounts receivable, general ledger? What are charges for same? Will software revisions be necessary as a result of any future upgrading of equipment?
- Software training and support.
- Delivery schedules. Get firm delivery dates on all pieces in configuration. What kind of track record does vendor have in meeting delivery promises (contact existing users)?
- Physical requirements for site preparation. Special air conditioning? Electrical wiring? Special flooring?
- Expandability.. How much can core be expanded? How many disk drives and what storage capacity can the system support? If a multitask operation, what is maximum number of concurrent operations? What additional peripheral devices will the system support? What is involved in adding peripherals, i.e., is major downtime necessary to upgrade the system?
- Does the system have telecommunications capability? What data transmission devices are available? Can this system be linked to a system of a different manufacturer?
- What are internal processing speeds?
- What are various types of financing arrangements available? One-year, three-year, five-year rental plans? When does billing begin? Options for changing from one plan to another in subsequent periods? Penalties involved in changing financial arrangements or in an outright cancellation of agreement? Policies regarding substitution or upgrading of equipment?
- Total cost of the system proposed. This can be the total purchase price of all equipment quoted in addition to some selected financing plan such as one-year, three-year and five-year monthly rental cost.

Each of the vendors interviewed was given the same basic parameters. They were given the volumes, the type of operations we wanted to perform, the method we wanted to use (CRT input media) and the same general monthly cost range we wanted to stay within.

They were asked to come up with the best combination of equipment to handle the volumes and systems required within the cost framework provided. They were also required to furnish information regarding each of the factors outlined.

A total of 10 different computer vendors was interviewed in this manner, and, as a result, the evaluation worksheet provided an excellent basis for comparing each vendor feature for feature.

For example, one vendor might have to list a 200 line/min printers to stay within the cost limitations whereas another vendor could list a faster printer and still meet the cost requirements.

This evaluation method could be further refined by assigning a scale of values for each factor involved giving higher values for the more important factors and then grading each of the vendors on that scale.

It would then be possible to add up the total "points" scored by each vendor and this score used in combination with the total cost could produce a cost/performance factor for each vendor.

By studying the completed worksheet, the field could be narrowed down to the one or two vendors offering the most for the least price, and direct communication with current users could be used to aid in the final analysis.

Alosi is comptrollor at Food Enterprises, Inc., Canton, Mass.

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Turnkey Systems Not Panacea

(Continued from Page 19)

fixed price quote for the total system. If there is an understatement of the problem, there will have to cost adjustments in the price of the system or deletions of requirements.

Either type of adjustment is not easy to face when the system development is well down the road, and almost always results in a higher overall system cost. The result of an overstatement of the problem, while not quite so common, is obvious: a higher cost with no functional value.

The development of the RFQ is further complicated by the increasing availability of packaged systems. Experience has shown that for certain functional areas such as accounts receivable, the utilization of a package would prove satisfactory.

On the other hand, the utilization of a functional order entry or inventory control package will rarely fulfill all the requirements of a specific business. Package systems that have a specific industry orientation have a much better chance of meeting the requirements but even here caution is the byword.

Reference Checking

While it is possible to use a vendor reference list to call users of previously installed systems and obtain a good feel for the vendors' capabilities, it is advisable to visit at least one installation to see the system in operation. In calling references or visiting sites, the following check list will prove helpful in assessing the vendors' capabilities.

- Determine general level of satisfaction.
- Was the installation on time?
- How long installed?
- Any major difficulties during installation?
- Reliability of the system to date.
- Has the service level been adequate?
- Was the system a full turnkey system?
- Determine scope and/or complexity of the installed system.

A note of caution: vendor referrals do not include unhappy clients if there are any and there generally are. Further, the users do not wish to admit to problems with the system. If you can find clients that are not on the vendor referral list, by all means give them a call.

Best Man for the Job

The first and most important criteria in vendor selection is the evaluation of the overall capability to do the best job. In this part of the evaluation the salesman's claims should be forgotten and one must rely on the concrete data gathered, past performance of the vendor and the evaluation of the people who you will be working with in the development of the system.

The acquisition of a turnkey system is quite different than the acquisition of hardware alone and the evaluation process must be based primarily on a systems and people evaluation as opposed to a hardware evaluation. Most vendors will in many cases be using basically the same hardware elements.

In general, the process, being a competitive one, will cause the vendors to come in with their best prices. Do not be surprised, however, to find wide variations in the total system price. This will be due to the vendor's proposed implementation, experience factor, skill of his programmers and to a great extent the capability of the vendor's operating system, which can significantly effect the hardware configuration.

In any analysis evaluating the worth of the system, the measure of the system should be on *total* cost vs. benefits. Quite frequently, the cost of the system alone is used in this analysis and such items as programming budget (there will always be changes and/or additions), cost of supplies and allocation for dedicated personnel are overlooked in the analysis.

John Morris is an independent consultant specializing in minicomputers for business applications.

Computer Voting. . . Almost

CENTRALIA, Wash. – Centralia High School students gained valuable experience in computer voting procedures recently when they voted by punch cards for student body officers.

The new method will be used in all Lewis County elections from now on.

But the ballots, which in a normal election would be tabulated by a computer, were hand-counted by school officials.

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Should Small Businesses Consider Minis? Yes, but...

By Michael Weinstein
Of the CW Staff

Should small businesses add the names of minicomputer manufacturers to the list of potential computer suppliers?

The answer appears to be a slightly qualified "yes" with the qualification being the internal computer competence of the user.

The combination of a small budget and lack of knowledge of computer operations (typical of small businesses) has promoted the concept of "turnkey systems." These require little user knowledge as they come with all hardware and software required to perform the user's recognizable business tasks.

The turnkey approach is historically opposed to the mini builders, who are typified as the usually technical hardware experts concerned with building faster and less expensive processors, according to George Shapiro, manager of applied systems marketing at Hewlett-Packard.

The stance of the builders through the 1960s was to build better hardware and operating software and sell these either to engineers or turnkey builders who added the ingredients needed to perform a specific task, he said.

Ed Marinaro, manager of business data products at Digital Equipment Corp., said the arguments used to dissuade the small user from considering the minimakers were:

- They don't understand the problems of the small business.
- They are loath to write individual application software.
- They are unable to provide sufficient local software or hardware service personnel.

But as minicomputers have grown they have naturally incorporated new techniques to make the systems more adaptable to small user applications.

One such trend is the higher level languages, such as Fortran, Basic and Algol. This move away from machine language means that the user is not faced with the option of machine language or packed software, according to Steve Goal, manager of marketing support at Data General.

The inclusion of the higher level languages means the user has tools to write his own programs. Even in the most popular small business systems – IBM's System/3 – users write most of their programs in a higher level language (RPG).

A second improvement was the addition of diverse peripherals and the system upgrade potential.

The minimakers have never been enamoured with cards and have worked to eliminate this form of entry. The expanded use of disks, tapes and microcoding has led to more efficient machine use.

These and other system capabilities have brought the minicomputer to the point where it provides all the tools by which the user can directly build his own capability. But for the most part it is still left to the user to build the actual system he will operate.

So a user effectively trades low entry cost and system expandability against support and canned packages by turning to the mini.

The lower cost entry cost is self evident: a central processor and specified peripherals costs less from the minicomputer company than from the large mainframe makers.

The ability to expand the system is not so evident.

A user can obtain a simplified starting system with 8K bytes of main memory, for example, from the minimakers and expand both the memory and peripherals far beyond standard systems options without having to upgrade to another system as his System/3 cousin would.

If users can get started for less money, expand to greater capabilities with minicomputers, then why aren't minis causing a greater impact on the IBM System/3, NCR 50-type customer base?

The answer may be fear of inadequate service and commitment if the small user leaves a large user-oriented vendor.

Part of this fear is understandable as a System/3 user has access to a large library of programs and various organizations that will help him solve problems. Further, IBM for example, has a large field support staff that is usually near at hand and responsive.

The minicomputer makers on the other hand, have a more technically-oriented – as opposed to general applications-oriented – staff that is spread more thinly across the country.

The mini builders also have an internal problem. If they decide to go after the business of providing systems directly to the small business user they go around one of their best customer bases – the OEM buyers who build turnkey systems.

Will the minimakers decide to build end-user forces and end-user support organizations?

If we judge activity over the past few years the answer is a qualified yes. There are four million small businesses in the U.S., and the amenities aside, that represents too large a market to ignore, according to George Vosatka, president of Varian Data Machines.

For the user, right now, if he has an internal computer expertise and can take a major responsibility for generating his own application systems, the minimaker provides these same ingredients at costs markedly less than the traditional sources.

Bakers Take a Fresh Approach

LOS ANGELES – An overabundance of day-old bakery goods may be a bargain for some people, but to the baker they mean trouble. Van de Kamp's Holland Dutch Bakers has solved this "stale" problem with some "fresh" ideas from the computer.

Van de Kamp's, a division of General Host Corp., produces more than 100 varieties of bakery products, ice cream and candies for sale through 825 retail outlets in the Western U.S. And keeping the shelves stocked with fresh products is a critical job for the company, according to Thomas R. Sheehan, director of management systems.

"We process thousands of daily orders from each store to notify the bakery of production needs and also keep track of accounts and billings," Sheehan explained. "Prior to 1972 we recorded this information with punched cards, but it was too slow and costly. We looked to the newer computer technologies for a better method."

Now, each Van de Kamp's order is entered into a Computer Machinery Corp. CMC 5 key-to-disk system. Order information from the field, including various types and sizes of bread, rolls, coffee-cakes, pies, cookies, doughnuts, candy and ice cream, two sales prices (regular and day-old) and returns for unsold products, is keyed into the CMC 5's minicomputer which prepares data for processing by Van de Kamp's central IBM 360/30.

Sheehan claimed the key-to-disk system has resulted in faster response time, more rapid data turnaround, reduced operating costs, improved personnel management and an order trend analysis system.

Who can sell computers in Japan?

Shukan.

In Japanese it's called *Shukan Computer*, and in English, it means "Computer Weekly." Whatever you call it, *Computerworld*'s new sister publication is an excellent vehicle for selling EDP products and services in the large and expanding Japanese EDP market. Here are some of the reasons why:

- **Shukan Computer** is a joint venture of *Computerworld* and Dempa Publications, the leading Japanese publisher of electronics information services. With the combined resources of the two companies, Shukan has the largest news gathering organization of its kind in the world.
- **Shukan Computer** is the only newsweekly for the fast-growing Japanese computer community.
- Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.
- **Shukan** lets you in on the action in the world's fastest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 11,237 in 1971; 11,000 minicomputers installed, up from 1,670 in 1971; and 3,000 industrial systems installed, up from 1,086 in 1971.
- Is this growth likely? The latest census of general-purpose systems revealed that there were 14,806 systems installed as of September 1972, a one-year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 23.1% respectively. And more than 50% of these new systems were American made.
- It is true that there are import restrictions. But Japanese vendors and users can get permission to import almost anything they want and need. As a result, 1972 imports were over $360 million.
- Advertising in Shukan is easy. With *Computerworld* representatives across the U.S. to assist you, it's easy to place space in Shukan. For a small fee, we can translate and type-set your ad from English to Japanese. To get more facts, just send in the coupon.

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Bits & Pieces

System 10 Disk Replacement Costs Less Than DEC RP03

MARINA DEL REY – The Ampex DM-323 is a double-density disk drive which can save DEC System 10 users up to 40% over the DEC RP03 drive, according to a spokesman for Ampex Corp.

Each DM-323 drive stores 10M 36-bit words on a standard RP02 pack with 400 usable cylinders.

The Ampex drives are available tentatively on a two-year lease plan for $555/mo including maintenance from 13031 W. Jefferson Blvd., 90291.

SCM Builds Its First Printer

DEERFIELD, Ill. – SCM Corp. has introduced a line printer as the first in a series of commercial products directed at the computer user, according to a spokesman for the firm's Kleinschmidt Division.

The 7360 prints 136 character lines at a 600 line/min rate. Single unit price is $9,500 with maintenance provided by SCM service centers throughout the U.S. Volume discounts are also available from Lake Cook Road, 60015.

Telex Gets IBM OK for 145 Add-On

TULSA, Okla. – Telex has announced approval by IBM for the attachment of the Telex 6345 semiconductor memory system on the 370/145.

Nova Users Offered Floppy Disks

BEDFORD, Mass. – Nova Series users can obtain an interface that permits direct attachment of a floppy disk system to their minicomputer.

The Innovex Corp. interface is mounted in the diskette formatter cabinet and costs $200. A single card and single formatter will handle up to eight diskette drives.

A complete diskette memory system – including interface, drive, seek card, formatter and power supply – costs $2,740 from Four Alfred Circle, 01730.

Controllers Made for X-Y Tables

SMITHTOWN, N.Y. – The Anorad auto-controllers are integrated systems for automatic control of X-Y tables.

The accuracy range is .00005 in. up to .0010 in., according to a spokesman for Anorad. Speeds reach 100,000 increment/sec, he added.

Controllers for two axes are priced from $5,000 to $7,000. Complete systems including X-Y tables – for 5 in. by 5 in. travel – are priced from $12,000 to $18,000 from 225 Engineers Road, 11787.

Correction

The Centronics Model 308 matrix printer with keyboard [CW, June 13] is a 120 char./sec device leasing for $161.40/mo on a one-year lease.

Prudential Is Pleased

'COM Beats Line Printer by 20 to 1'

By Michael Weinstein
Of the CW Staff

BOSTON – "When we first started using computer output microfilm (COM), our user departments were constantly hassling us to justify putting their output on mcirofiche. But as time passed, COM has been so successful that users now demand justification for any application that does not use COM as the output media," related Henry Creutz, systems analyst at Prudential Insurance Co. here.

Prudential first used COM in limited applications such as payroll history registers, dividend information and other general business applications.

These applications involved producing magnetic tapes between 12 midnight and 4 a.m. which were given to an outside service bureau which then returned the finished fiche before the start of the same working day at 8 a.m.

Even in these early applications the benefits of COM were marked, Creutz said, as it was 20 times faster to produce the tapes than print the output on a 1,000 line/min printer.

More Advantages

Another advantage cited was that with the printer multiple copies required reprinting the specified document. "Using COM all we needed was a duplicator; and as this duplication was done totally offline it did not impact our 370/155 in any way," Creutz said.

Microfiche also saved "incalculable storage area" and made data more accessible.

Prudential wrote its own software package that provided for a title image on each fiche. Thus, Creutz said, a user could view this image to find the contents of any of the 207 data pages contained on each fiche.

The Prudential software also labeled each fiche with title information such as name of report, date produced and fiche number.

This labeling allowed the numerous departments getting their output from the computer department to easily determine what the specified report was and where it was located, he added.

The ease of use coupled with a 95% reduction in computer time needed to produce standard reports led to an increased demand from the user departments to have their reports in COM.

This increased demand meant that Prudential either had to start using additional service bureaus or develop an in-house capability.

The decision to move in-house was made because it was considered important to have immediate communications between the computer department and the COM producer.

Using a service bureau just added another level of administration to the mix and made it harder to handle the exceptions such as a last minute change or request for duplicates, Creutz said.

On the other side, using a service bureau in the beginning was a good idea since it made the individuals familiar with the operation and confident that they could incorporate the practice into the internal operations, he added.

The decision was made to continue to use fiche instead of roll film since over three years the only repairs needed to the 47 3M Consort viewers at Prudential had been the replacement of three light bulbs.

"We were concerned that with roll film we would introduce electric motors and more complex reading equipment which might increase the maintenance load," Creutz noted. It is hard to beat a system that had only required a few dollars' maintenance over its entire life, he explained.

The actual COM unit obtained is a Quantor 105 which, Creutz said, was producing output only one hour after it had been wheeled in the door and the power turned on.

The Quantor system is used off-line and Creutz intends to keep it that way as he feels to interface directly would degrade computer operations by stealing excessive time. The tapes are still faster than any other medium for getting the information out of the system.

Using the new internal COM unit "we are producing between 300,000 and 400,000 frame/mo. The production of these fiche requires about 1-1/2 hr/day. If the same job were performed using conventional line printers it would take about 30 hr/day on one printer," he continued.

Combining the added potential of the COM unit with the increased demand among other user departments within Prudential, Creutz estimated production should be up to about one million frames a month by the end of the year.

This will be accomplished at the base cost of about $3,000/mo which includes maintenance from NCR and a duplicator, he said.

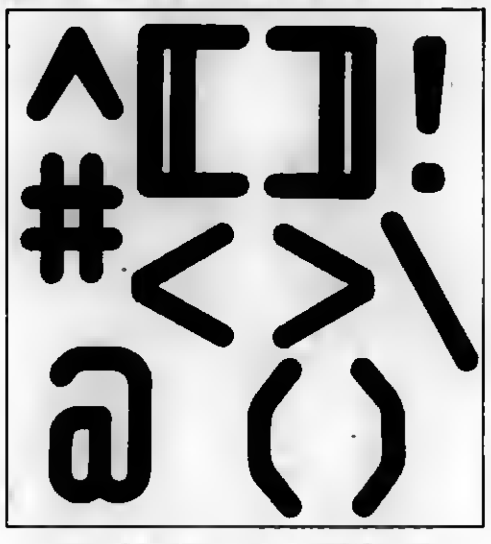
"I can not even estimate what a million pages per month of printer-generated output would cost in computer time alone, much less the savings in terms of turnaround time, the ability to duplicate faster, the freeing of storage space," Creutz concluded.

Equivalent to Ascii

OCR-A Standard Adds 11 Symbols

Special to Computerworld

WASHINGTON, D.C. – The OCR-A standard, recently improved to include lower-case letters, will have 11 symbols added bringing it up to the Ascii code. The new characters include three different sets of paired characters (braces, brackets and greater-than and less-than), a reverse slant, exclamation point, number sign, ampersand character and a new "upward arrowhead."



These are the 11 new characters.

The upward arrowhead replaces an equivalent sign previously called the circumflex. Discussions in the ANS X3A1 Committee recently rejected the use of the circumflex in favor of the alternative upward arrowhead sign, which, it was pointed out, can be used for the language-dependent circumflex where appropriate and also for other symbols in other positions.

Some changes in nomenclature are also included in the current suggestions. These involve dropping the phrases "left and right parenthesis" in favor of "opening and closing brace." Also, the assignment of the graphic shapes, fork, chair and hook, to represent the non-OCR-A/Ascii code table symbols – underline, grave accent and tilde.

Filling in of some of the new characters, such as the number sign, the ampersand and the opening or closing brackets, was recognized as ambiguous, but the suggested standard states that such filling which can occur on various types of printing equipment would not be regarded as making the characters concerned non-conforming.

1403 Printer Interface For B3500 Users

SANTA MONICA, Calif. – Burroughs B3500 users can attach an IBM 1403 printer to their systems using the Spur 1403 controller with a B3500 interface. Both controller and interface are available from Spur Products Corp.

The controller with interface sells for $12,686 from 2928 Santa Monica Blvd. 90404.

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HAL's Great-Grandfather?

Computer Speaks in 12 Languages

By Michael Weinstein
Of the CW Staff

NEW YORK – Viewers of Stanley Kubrick's movie "A Space Odyssey – 2001 A.D." may remember the talking computer "HAL."

In choosing 2001 as a time when HAL would reach maturity Kubrick might have been overly conservative, if one considers a demonstration recently conducted here by Univac.

The Univac demonstration, which has no immediate consumer applications, illustrated computer-voice applications via a Touch-Tone telephone hookup to a Univac 1616 computer at the firm's Interactive Speech Research Facility in St. Paul, Minn.

UN Approach

Individuals were allowed to call the computer for computer-generated messages in 12 languages, including Mandarin Chinese, classical and modern Greek, Hebrew, and Urdu, the language of West Pakistan.

"Our present system is capable of up to 24 minutes of non-repetitive English speech," Dr. Carl Hammer, director of computer sciences, noted.

Looking Ahead

"It uses an average of 120 word/min. The system can also speak 400 words in each of six foreign languages," he added.

The Univac system can recognize both multisyllabic words, spoken individually, or short sentences, commands and mathematical expressions. It can then generate words in the proper sequence for output communications with a human listener.

The system recognizes words by such factors as number of syllables and initial and final sounds. Speech waveforms, containing all sounds, are digitized and stored in the 1616's mass memory. They can be reconverted to analog form, played back or displayed on a graphic terminal.

In the voice response system demonstrated, the computer assembles complete prerecorded words in the right sequence for playback.

Future computers are expected to actually assemble and speak words from individual sounds stored in main memory.

"Though HAL has actually been here for some time for simple recorded messages, he will become a better conversationalist, providing such information as current stock quotations, credit card verification, guidance for customers or students and up-to-the-minute weather reports," Hammer stated.

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Bits & Pieces

Key-to-Cassette Designed For Off-Line Data Entry

SEATTLE – The Datacumulator is a key-to-cassette, desk-top device with numeric or alphanumeric display and 10-key or typewriter-style keyboard available from Keywrite Corp.

It has a 60-character buffer memory which is displayed 12 digits (or 30 alpha characters) at a time. Information in the buffer can be reviewed and edited before recording on a standard Philips-type cassette. Information is coded in either six- or eight-bit Ascii.

Base price of the numeric Datacumulator is $1,500 from 1200 N. 107th St., 98133.

Winders for Paper, Mylar Users

HUNTINGTON, N.Y. – The 205P motorized winders from Computer Accessories Corp. are designed for unattended processing of paper or mylar control tapes.

The series performs winding or unwinding operations at 30 char./sec.

Prices range from $169 to $200 depending on options from 211 New York Ave., 11743.

Tapewinder Hand-Held

HANOVER, N.H. – Paper tape users can obtain a hand-held electric tape winder from Logic Associates, Inc.

The unit winds a 4-in. roll of paper tape in 5 sec. The winding reel plus electric motor costs $42.50 from 3 Lebanon St., 03755.

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For $2.75 each, paper tape users can obtain plastic reels for winding and storing tapes from Dataperf, Inc., P.O. Box 574A, Stony Brook, N.Y., 11790.

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Staff Training Options Grow; End-User Support Lags

By Frances D. Smyth

Special to Computerworld

With every major technological advance comes an immediate need for education. This need is all too often filled partially and haphazardly until adequate materials and classes can be developed. When the technology refuses to wait for the education to catch up, the problems of technical training are persistent, even chronic.

Continued change in data processing has left both DP personnel and user department personnel in need of better, more convenient education. Manufacturers, universities, private computer schools, professional societies, education technology companies – all have attempted to provide needed services and materials.

Yet, today user personnel education has barely begun and DP personnel are often untrained for the challenges of their positions. Given the recent economic crunch, DP departments can no longer accept the current environment as workable and must critically examine available education with a view to revising and improving it.

Marketing Extension

Computer manufacturers were among the first groups to get involved in education, and it was and still is an extension of the marketing effort. That doesn't mean that the education is poor – it can be excellent. But, especially in introductory classes, a real effort must be made to separate salesmanship from teaching.

Another problem has arisen from IBM's unbundling. DP managers have been reluctant to pay for programmer training courses. Therefore, an even heavier reliance than previously existed has been placed on programmed instruction material.

In my opinion, this represents a fair approach to education, but students using it do not generally retain information as well as those taught in a conversational manner via a mixed-media approach.

For the intermediate or advanced person, computer manufacturers do a much better job. In fact, they are the best source for in-depth technical training on their particular hardware or software offerings.

Universities, on the other hand, do a fine job in the theoretical aspects of computer science and are vital to the growth of new technology in this area. Historically, they have served as sources of scientific or systems programmers.

However, they have recently developed a new strength in the areas of beginner and intermediate training for commercial DP. This is primarily a part-time, continuing education effort with working DP professionals as instructors.

Education

Incidentally, the presence of large computer facilities (developed initially for the computer science area) gives the commercial classes access to modern hardware and software.

Lack of that access is the biggest single problem with the DP schools which arose to fill a real need for entry-level training at a time of enormous DP expansion.

Attempts to certify these schools have been under way for a while and, hopefully, the reputable ones will be encouraged to expand.

It is up to the DP community to certify curricula, computer availability, counselling and vocational guidance at such schools to protect the novice and insure the quality of the graduates it may wish to hire.

Updating Vital

Once hired, the personnel need frequent technological updating, and this is an area where professional societies have done an excellent job. Most run seminar programs or conferences of a high level of sophistication which provide very realistic and up-to-date information. An occasional poor presentation mars the picture, but sponsor policing seminars has kept that to a minimum.

Seminars offered by private concerns fall short of this record. Although there are some excellent firms with high quality programs, there is enough variation in quality to make the average DP person wary.

Again, as with the DP schools, we have an area which is amenable to certification or, at the very minimum, an approved list of those firms whose offerings were deemed of good quality. This is an area where users within an industry or of a product group might well consider an informal exchange of program reviews.

Faced with the variety of education sources, some firms have added their own training as a better way to achieve educational goals. Fortunate, indeed, is the employee whose firm gives him valuable education via an in-house department.

But for those of us who actively seek education outside our companies – and we probably are the majority – the marketplace is full – although not always with the exact price/quality mix we might want. But some cautious shopping can produce excellent results.

Smyth is in the management controls and information technology group at Kennecott Copper Corp. and an instructor at New York University.

Structured Program Ideas to Be Taught

CW West Coast Bureau

SANTA CRUZ, Calif. – A series of intensive short courses in computer sciences has been scheduled at the University of California here from June 25 to Aug. 24.

On the schedule is a two-week course entitled "Advanced Programming," in which students will have the chance to apply the concepts of structured programming.

The course will be run from July 23 to Aug. 3 and will be taught by Dr. C.A.R. Hoare.

A one-week course on "Computer Statistics Packages" will be taught from Aug. 6-10 by Dennie L. Van Tassel for scientists, researchers and analysts in social, biological and medical sciences who need a detailed knowledge of the use of SPSS and BMD statisitical packages.

Other courses for persons working in technical fields who can use computers in their work include:

"Using Minicomputers," Dr. Udo W. Pooch; "Beginning PL/1," Dr. James E. George; and "Beginning Fortran," Dr. James N. Haag.

Courses for computer professionals include:

"Compiler Construction," Dr. Franklin L. DeRemer; "Operating Systems," Dr. Dennis Tsichritzis; "Computer Architecture," Dr. William M. McKeeman; and "Discrete Systems Simulation Using GPSS," Dr. Thomas J. Schriber.

More information can be obtained from Don Humel, University of California Extension, UCSC, 95060.

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COMPUTER INDUSTRY

CI Notes

GSA Switches to Four-Phase

WASHINGTON, D.C. – The General Services Administration said it has awarded a $4 million contract for key-to-disk systems to the second lowest bidder, Four-Phase System, Inc.

Inforex, the original recipient of the award, has appealed the GSA's ruling that its equipment failed to pass a benchmark test, a spokesman said.

The equipment will be used by the Social Security Administration.

Memorex Suits Class Actions

CW West Coast Bureau

SAN FRANCISCO – Memorex stockholders who filed eight different suits against the company can sue as a class, a federal district judge here has ruled.

The suits, filed in 1971, charged Memorex with "alleged manipulation of the securities markets" and violations of security laws, according to David B. Gold, attorney for the stockholders.

Memorex declined comment on the ruling.

The suits were filed following litigation against Memorex in June 1971 by the Securities and Exchange Commission regarding alleged misleading earnings reports.

AF Awards Burroughs

DETROIT – Burroughs Federal and Special Systems Group has received a $16 million contract from the Air Force Systems Command's Electronic Systems Division to furnish and install automatic data processing equipment at the AF Military Personnel Center, Randolph AFB, Texas.

Under the contract, a three-processor Burroughs B 6700 System will support the Advanced Personnel Data System (APDS). The new system will replace two Burroughs B 5500 systems and a Honeywell 1250 system.

Supershorts

Computer Automation, Inc., has reported shipment of more than $10 million worth of computers during the first 11 months of fiscal 1973, more than doubling total shipments for fiscal 1972.

– – –

Nixdorf Computer, Inc. plans to open seven new branch offices before the end of the year. The new offices are scheduled for Cincinnati, Dallas, Miami, Minneapolis, New Haven, St. Louis and San Diego.

For California DP Center

Univac Claims IBM Bias in State Bids

By Marvin Smalheiser
CW West Coast Bureau

SACRAMENTO, Calif. – Univac has filed a protest accusing this state of favoring IBM in seeking bids for a $40 million consolidated computer center.

The protest has launched an investigation of the charges which could eventually end up in the courts.

The complaints were contained in a letter from R. Malcolm Hill, manager of Univac's Sacramento office, to G. Lee Smith, the state DP officer.

In the meantime, the state is going ahead with procedures with the three companies which have indicated they will submit bids – Control Data (CDC), Honeywell and IBM.

Univac's protest listed nine major points of complaint. Six alleged that the project specifications were written to favor IBM.

IBM Involved

The first major allegation charged that much of the new bid prospectus – composed of 11,000 pages – was prepared by IBM.

Kent H. Gould, chief of EDP control and development for the state, denied the charges, saying over 80 state employees worked over a year on the procurement proposal for the Stephen P. Teale Center.

"We are beginning to process the protest. There is nothing in there we did not anticipate. We feel we can handle it. There doesn't seem to be any real legal basis for their protest," Gould said.

The protest followed the state's renewed efforts to get bids after having thrown out bids earlier this year when the two remaining bidders – IBM and Univac – were disqualified.

Hill told *Computerworld* the most serious complaint involved the arbitrary requirement of a decimal system, which was waived in previous invitations for bids (IFB).

He said the IFB asked that all data be stored in decimal format and not in binary, which he said was a direct violation of the state's administrative manual.

"It is our contention," Hill said, "the internal characters of the computer don't make any difference. So long as the input or output are equally useful, it makes no difference which computer system or architecture is used to reach a desired result."

Gould told CW the proposal does not require a decimal system.

Hill, in his protest letter, said:

"The restrictive nature of the invitation for bid prevents truly competitive bidding as required by the budget act by narrowly circumscribing the method of obtaining the ultimate goals of consolidation."

U.S. DP Firms Trading Abroad Face Mixed Prospects: Commerce

By a CW Staff Writer

NEW YORK – There is both good news and bad news for U.S. computer industry companies which wish to do business abroad in the coming decade, according to Forest Abbuhl, director of the Office of International Trade Policy in the Department of Commerce.

U.S. firms presently hold 90% of the world computer market and between now and 1980 there should be an 11% increase in shipments from U.S. companies to the world markets, he said at a recent meeting.

But at the same time, U.S. firms are going to be facing more and more competition from the computer industries of other countries over the next few years, he observed.

Abbuhl noted that in Europe there will be more work done on a joint line of computer equipment, and he warned the new line might be incompatible with the equipment produced here.

The U.S. manufacturers can expect to see more consolidation in Europe over the next few years, he indicated, and in addition can expect to see increased governmental support for native computer companies and for the native industry as a whole.

The situation for U.S. firms trading in Japan is bad now, he said, but the outlook is even worse for the future.

The Japanese Government will apparently continue to follow its policy of protecting its native computer industry through a combined program of restricting imports and direct monetary subsidies to the firms in the business, he said.

He noted the Japanese apparently don't lower the import restrictions in a marketplace until they are sure their native industry will be able to meet the competition from the foreigners – and that by then it is almost too late for any foreign company to compete successfully.

The Eastern European market could be a good one for U.S. firms, he said, but he noted the countries in this area also do not want their computer industry and computer use dominated by U.S. firms so that the industry would die down after some initial success.

CIA Outlines Successes, Goals

NEW YORK – The Computer Industry Association has been successful in meeting most of its early goals, including preventing a "soft" pretrial settlement of the government's antitrust suit to break up IBM, according to Jack Biddle, executive director.

The group's six-point program for the coming year will stress continued discussion with members of Congress, the Justice Department and industry leaders about the best solutions for "overconcentration" in the DP industry, he added.

"We obtained public disclosure of IBM internal documents filed in the Telex antitrust suit against IBM. And by ensuring there was no soft pretrial settlement of the government's suit, we have made it much more likely that underlying, persistent problems of the data processing industry will be solved."

Biddle said the association's program for the current year will include:

- "Public discussion of solutions to overconcentration, including a conference on industrial concentration in today's economy.
- "Continued meetings with the government including participation in the second round of hearings being conducted by U.S. Sen. Philip A. Hart (D-Mich.) on overconcentration.
- "Increasing the public's awareness of the importance to the consumer of free competition in business.
- "Involvement of users of computer systems in discussions of the problems and in pressing for a solution.
- "Maintaining a close relationship with the Justice Department to ensure a speedy, sound and long-range solution to the industry's problems.
- "Discussion with the financial community to demonstrate that an end to the 'overconcentration problem' of the data processing industry will allow all participants to grow and prosper."

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These are some of the products we'll be looking at in our July 25th Software Supplement, edited by *Computerworld's* software specialist, Don Leavitt. Much of the information will be based on the experiences of companies who have used these products. And our research has shown that they can be quite effective. For example, one user we've talked to reported a 33% decrease in running time on a package of 13 programs after they implemented a computerized efficiency analysis.

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Distributorship Eases Move

Inforex Penetrates Japanese Market With Aplomb

By Ken Shonk

of the CW Staff

BURLINGTON, Mass. – Inforex has penetrated the Japanese market for data entry equipment through a Japanese distributor, the trading company of C. Itoh & Co., Ltd., rather than follow a licensing or joint subsidiary arrangement.

A spokesman for the New York offices of C. Itoh, Sadao Iida, said his personal estimate of Inforex's share of the Japanese market is over 50%.

The success of distributorships in Europe, the possibility of a small company getting lost because of the nature of the Japanese market, the ability of the trading company selected as the distributor to handle export/import and shipping, and the lack of resources to go into the Japanese market – except on someone else's coattails – all led Inforex to the distributorship arrangement, according to company officials.

From Inforex's viewpoint, the distributorship arrangement simiplifies the problems of entering and dealing with the Japanese market. Inforex simply ships orders directly to C. Itoh & Co., New York, and the distributor handles everything from that point on, from market evaluation and strategy to sales and service.

Complicated Area

"Additionally, since all computer business in Japan is regulated by the Ministry of Trade and Industry (Miti)," noted John Mahoney, marketing services manager, "you just don't form joint ventures or create licensing agreements without the government becoming involved. You can, however, go into distributorship arrangements very easily."

Inforex's agreement covers the 1300 Series data entry equipment and specifies minimum takes, commitments to dollar value of sales, and commitments to a dedicated sales and service force. Inforex in turn provides total support for training, software and system modifications for the Japanese market, and service. The terms of the agreement also allow renegotiations.

"You have to play along with the rules of the Japanese marketplace," Mahoney said, explaining why Inforex turned to a distributorship arrangement with one of the large trading companies.

"Trading companies are just characteristic of Japan. They represent all Japanese manufacturers overseas and nearly all overseas manufacturers in Japan and the larger companies own their own banks, steel mills and shipyards.

The primary consideration in Inforex's selection of a distributor, stated Stephen Wallis, financial planning manager, was "our desire for a company that would set up their own dedicated sales and service force for our products. We didn't want the Japanese distributor to put our products in electronics group number 8 together with equipment from other manufacturers," he said, noting that arrangement would also be an easy way to get lost.

"For any potential distributor to make the commitment for a dedicated sales and service force and make the market evaluation necessary, good financing is an absolute must," Konrad Kristensen, international desk manager, noted. "We don't ship a system anywhere in the world until service engineers are in the field, and we have shipped all the spare parts necessary.

"We also did our homework before we shipped any systems," Wallis related. "Since Japan uses the Katakana alphabet, we started from day one to ship systems with Katakana keyboards. No one else though of that, so we had a Katakana available for the Japanese market a year before anyone else marketing shared-processor key stations."

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Mira-Pak Files Antitrust Suit Against IBM

HOUSTON – IBM has been named in an antitrust suit by Mira-Pak, Inc., a maker of computer systems used by the food processing industry.

The suit, filed in the U.S. District Court for the Southern District of Texas, charged that IBM "through combinations and conspiracies with certain of Mira-Pak's competitors which manufacture manual processing machines," is seeking to "extend its monopoly to the package processing needs of certain segments of the food processing industry."

The suit also alleges that IBM is "misleading food processors to believe that its computer can control packaging machines to eliminate or greatly reduce product giveaway . . . "

Mira-Pak contends that sales of its Sigmatrol unit have been drastically decreased as the result of IBM's "anticompetitive and unfair practices which commenced in 1971."

An IBM spokesman said: "We believe the suit to be entirely without merit and we plan to defend ourselves vigorously in the courts."

Mira-Pak's Sigmatrol unit is an automatic weighing system with a built-in computer, and is marketed as a replacement for manual units.

IBM is marketing its System/7 as an interface to existing manual units, for about 15% under the cost of the Sigmatrol, Mira-Pak said.

In addition, Mira-Pak charged that IBM's intent was to gain a toehold in a customer's plant . . . as a means of eventually selling the customer on purchasing larger and more sophisticated IBM computers for interfacing with the System/7, with the eventual goal of providing a closed-loop computerized information and process control system."

IBM and Mira-Pak worked together between November 1971 and February 1972, as IBM had reportedly approached Mira-Pak about the possibility of a joint venture. During this time, Mira-Pak "furnished a large amount of marketing and technical data regarding Sigmatrol," Mira-Pak said.

Vendors Confident

No Major Market Slump Predicted

By Molly Upton
Of the CW Staff

NEW YORK – Projections about the economy are generally optimistic, and although many data product vendors interviewed here recently were not anticipating a slowdown in the general economy before the end of the year, they all felt that with such a slowdown the effects on the DP industry would be delayed.

Mel Posin, assistant general manager for marketing, DP Division of Lockheed Electronics, described his view of the economy as "generally optimistic . . . There may be a little softness coming, but not a major downturn as in 1970 and 1971," he said.

He noted there is some softness in consumer markets, and there generally is a six-month lag before affecting the industrial marketplace, he said. "Things are going too well" to have a recession on the scale of '70-'71.

Although Mike Buoncristiano, New Jersey account representative for Inforex, does not see any softening coming, he said if there were a slump, it would hit the DP industry later than the general economy. "I don't know of a slump that would hurt." He noted the data entry field is new enough to continue to attract business.

"Business is excellent," observed Ron Huch, vice-president of marketing for Centronics. Based on orders, he said he doesn't foresee a slump and he thought the DP industry would not feel the effect immediately.

George Abbott, eastern regional sales manager for Iomec, said he doesn't expect to see any sort of slump for the year. As a matter of fact, the industry is "still pulling out from under component supply problems caused by the last recession."

Buoncristiano

Posin

Abbott

Huch

CW Photos by M Upton

Sorbus Diversifies

KING OF PRUSSIA, Pa. – Sorbus, a maintenance company with approximately 85% of its refurbishing business going to leasing companies and 15% to end users (not including work for Federal Government agencies, which is unpredictable), plans to accelerate its marketing programs into more various subscriber type markets while maintaining its present marketplace, according to Bob Leonard, director of marketing.

The three major categories Sorbus will cultivate include memory manufacturers, key-to-disk equipment manufacturers and the OEM market in general for minicomputers.

Orders & Installations

Read's, Inc., a Baltimore drug store chain, has ordered 401 Model 902 electronic cash register terminals and 101 mini-cassette collection systems from the Singer Co. to provide up-to-date merchandising and inventory data.

Alpha/Beta Acme Supermarkets, Calif., is installing National Semiconductor Datachecker electronic checkout systems in 60 of its stores.

The Maryland State Colleges Information Center (MSCIC) has ordered a Univac 1106 system to serve seven colleges in the state. The central computer will handle a full range of business and administrative applications for each of the colleges.

Norwegian Caribbean Lines has ordered an NCR Century 101 computer and 10 NCR 795 CRTs as part of an on-line reservation system.

Delta Air Lines has ordered 48 PTS-100 programmable display terminals and two supporting controllers from Raytheon, to be used in conjunction with the airline's primary business computer.

The University of Nevada has installed a Control Data Corp. Cyber 70 Model 72 computer system to support the computing requirements of students, faculty and administration at campuses in Reno and Las Vegas, and the Desert Research Institute.

St. Petersburg Bank and Trust Co., Florida, has ordered an NCR Century 200 to serve as the nucleus of a Central Information File system.

Avco Computer Services (ACS), Wilmington, Mass., has installed an Informatics Mark IV File Management System.

Nasa/Lewis Research Center, Cleveland, has purchased a Univac 1106 system, to handle business and scientific applications.

Naval Air Development Center, Warminster, Pa., has installed an AED-CDC 6000. The system, manufactured by Softech, Inc., will be used for support software for developmental programs.

Merrill-Lynch, New York, has ordered a Project Control/70 project management system from Atlantic Software Inc.

Base, Inc., a service bureau for General Motors dealerships, has ordered a Univac 9700 system, for use in inventory control, accounting and computerized storage planning.

IBM Backing Employees With Cash for Projects

ARMONK, N.Y. – "The initiative, creativity and business skills that corporation people develop in their jobs are a major community asset that should be tapped," IBM President and Board Chairman Frank Cary observed.

To encourage employees to participate in community affairs, IBM has set up a Fund for Community Service to help finance volunteer service in local communities.

The money can only be used by community service organizations in which IBM employees are personally involved.

Since its initiation last fall, the fund has been used for 650 projects in 260 communities in 44 states and the District of Columbia.

Funds have been granted for equipment for projects such as a group that helps motorists in trouble, and camping gear for a Boy Scout troop comprised of mentally handicapped children.

Another project that received funding was a summer program for severely handicapped children.

Most of the grants range from $100 to $1,000, although there is no limit. IBM wants its money to go where it can make a real difference, not where it will merely displace regular contributions from other sources, the firm said.

To tap the fund, an employee submits a written request describing the community project and the sponsoring organization.

CSC Merges Operations

CW West Coast Bureau

LOS ANGELES – Computer Sciences Corp. is moving its corporate headquarters from Century City to its El Segundo facilities to establish a closer working relationship with the company's Infonet and Commercial Divisions housed there.

...CDC Gives Jobs to City Dwellers

MINNEAPOLIS – Control Data Corp. plans to construct a new 15,000-sq-ft plant for its operations which provide part-time jobs for inner-city people in St. Paul.

"We plan to gradually hire 50 additional part-time employees from the surrounding area to add to our current part-time work force of 105 persons at our present Selby Avenue plant," said Norbert R. Berg, Control Data senior vice-president.

The plant is designed to meet the company's requirements for binding, mailing, stitching and collating technical literature.

The operation receives printed materials from various Control Data locations throughout the country, then assembles, covers and binds the materials to produce completed manuals and documents for shipment to customers.

The morning shift is made up mostly of female heads of households with children of elementary school age. In the afternoon, high school and college students from the Summit-University area work three hours each day, earning extra money for their schooling.

Trendata Elects R. Pappas Chief

SUNNYVALE, Calif. – Robert Pappas, an Ampex executive for 17 years, is the new president of Trendata, a subsidiary of Applied Magnetics Corp. Pappas was most recently a group vice-president of Ampex and earlier had been vice-president and general manager of the Military Products, Magnetic Tape and Instrumentation Divisions.

Other Changes

Executive Corner

- Douglas K. Baker has been named chairman of the board and chief executive officer of Qantel Corp. Baker was formerly president of Basic/Four Corp. of Anaheim, Calif.
- Raymond M. Alden has been named president and chief operating officer of United Telecommunications, Inc. Alden has served as executive vice-president, operations, for the firm since 1964.
- Neil G. Weisbeck has been appointed executive vice-president and general manager of Syncom Business Systems, Inc. of Cleveland. He will have total responsibility for the day-to-day operations of the firm.
- Francis J. Gaudette has been named vice-president, finance, of Informatics, Inc. Systems and Services Co. Gaudette formerly served as vice-president, finance, of Computer Network Corp. of Washington, D.C.
- William Valliant has been named vice-president, engineering, of PSC Technology, Inc.
- Bert I. Helfinstein has been appointed president of International Reservations Corp., a Planning Research Co. Helfinstein will continue as president of Realtronics Computer Systems, Inc., also a Planning Research Co.
- Mitchell E. Morris, formerly executive vice-president of Advanced Systems, Inc., has been named president of the firm.
- Robert D. Kuster has been elected a vice-president of California Computer Products, Inc. He previously served as vice-president, finance, of Systems Associates, Inc.
- J.C. Matlock has been named vice-president, marketing, for Data Processing Security, Inc. He has served as the head of DP operations for the Coca Cola Co. in Atlanta for the past eight years.
- Gerald Sprayregen has assumed the titles and responsibilities left open by the resignation of John Gavin as president and chief operating officer of Technical Tape, Inc. Sprayregen is already chairman and chief executive officer.

ICL May Receive Increase in Loan

LONDON – International Computers Ltd. may receive a larger loan from the government this year than last, according to recent reports.

Although the Department of Trade and Industry has not divulged details yet, sources indicate the amount being considered is somewhere around $63.7 million for research and development work on ICL's new range of computers.

Last July, the government said it would lend ICL $36.2 million in an 18-month period that ends this September.

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The liability of Memorex Corporation under this warranty is limited solely to replacing, repairing or issuing credit, at its discretion, for the products that are defective and in no event shall Memorex Corporation be liable for any other damages, including incidental and consequential damages. The warranty expressed herein is in lieu of all other warranties, express or implied, and no other affirmation of fact or promise made by Memorex by word or action shall constitute a warranty.

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Action Finalizing Leasing Agreement

DALLAS – Action Communication Systems, Inc. and Manufacturers Hanover Leasing Corp., New York, are presently finalizing a $5 million lease financing agreement for Action's communications processing systems, particularly the company's Telecontroller and Watsbox systems.

Action chairman T.J. Waggoner III said the leasing affiliate of Manufacturers Hanover Trust will, under the terms of the agreement, purchase the systems from the Dallas firm and lease them to companies recommended by Action.

Action will provide maintenance for customers, and has agreed to act as Manufacturers' remarketing agent for the systems.

DOD Expenditure Estimated At $13 Billion Through 1978

NEW YORK – The Department of Defense is expected to fund about $13 billion through 1978 for military command, control and communications systems, according to a study by Frost & Sullivan.

The spending will peak in 1974, with the Air Force emerging as the largest segment, the report indicated.

The category includes DP, displays, communications sensors and systems engineering.

Reductions in military personnel are expected to stimulate the use of the systems, but "domestic political pressures on the federal budget should cause the market to level off," the study said.

CI Wrapup

Westinghouse Reorganizes Its Computer Division

PITTSBURGH – Westinghouse Electric Corp. has announced an organizational realignment which includes its Computer and Instrumentation Division. The division will concentrate on signal- or information-oriented electronic equipment.

Included are the digital products department at Orlando, Fla., and the instrumentation department at Orrville, Ohio, and Phoenix, Ariz. Division headquarters will be at Orlando under the general management of G. Chris Turner.

Basic Four Weathers Shakeup

IRVINE, Calif. – Basic Four, a unit of Management Assistance, Inc., has weathered a recent management shuffle which left it minus five executives.

Douglas K. Baker, president of Basic Four since the company was founded in June 1971, recently resigned. Quantel Corp., which competes with Basic Four in several market areas, has since announced the election of Baker as chairman of its board of directors and chief executive officer.

Al Cosentino, an MAI vice-president, has been named chief operations officer and chief executive for Basic Four.

John Keogh, vice-president/marketing; Bing K. O'Brien, top marketer; Glen Wright, controller; and Norman Rothstein, national systems manager have left the company.

Fujitsu to Market in U.S.

Special to Computerworld

HONOLULU – Fujitsu Ltd., Japanese mini and peripheral maker, made its first U.S. appearance at IEEE's Region Six Conference here, demonstrating its Facom-Mate minicomputer system for software training systems.

Isamu Kobayashi, Fujitsu's Hawaii-based sales engineer, told *Computerworld* that the demonstration was in anticipation of marketing efforts in Hawaii.

Fujitsu, he said, already has three of its minis installed in its Honolulu management training center.

Scottish DP $ Estimated

WESTMINSTER, Scotland – The estimated total value of computer facilities installed in goverment departments and other public institutions in Scotland is "about $41 million," according to a government spokesman.

The figures excludes local authorities, he said. About 18% of the $41 million represents computers bought from companies with manufacturing facilities in Scotland.

Accurate figures for the last 10 years were not readily available, and the $41 million was only an estimate, he said.

Aussie Network Planned

Special to Computerworld

SYDNEY, Australia – Computer Sciences of Australia, on behalf of the Australian Mutual Provident Society (AMP), has placed an order with Digital Equipment Australia for a PDP-11/40 computer.

This order represents the initial step towards the installation of a computer network covering Australia and New Zealand. The network is designed to provide an optimum balance between remote and central processing.

Hughes, Aussies Sign Contract

Special To Computerworld

CANBERRA, Australia – Hughes Aircraft Co. of Los Angeles has won a short-term consultant services contract to advise the Australian Post Office on how to establish a satellite communications system.

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Toward the Bottom Line...

Keydata Shows Gain In Earnings, Revenue

WATERTOWN, Mass. – Keydata Corp. reported record earnings and revenues for the third quarter and nine months ended April 30.

Earnings for the quarter rose to $227,000 or 8 cents a share including a $106,000 special credit, compared with $45,000 or 2 cents a share, with a $19,000 special credit, in the year-ago period.

Revenues increased 31% to $2.4 million from $1.9 million in the same 1972 quarter.

For the nine months, earnings totaled $604,000 or 21 cents a share compared with $185,000 or 8 cents a share a year ago. Special costs were $284,000 in the 1973 period and $129,000 in the 1972 period.

Revenues climbed to $6.9 million, up 28% from the $5.4 million in the year-ago period.

The increase in Keydata services by large, multilocation companies contributed significantly to the improved nine-month results, according to President John T. Gilmore Jr.

"New customer contracts were up 52% in dollar value in the three quarters," he added.

Comress Shows Loss

ROCKVILLE, Md. – Comress, Inc. earnings and revenues took a nosedive in the first quarter ended March 31, and President Joseph K. Wineke said it is probable the firm will continue to show a loss through the second quarter.

The loss for the quarter totaled $277,600 or 4 cents a share compared with restated earnings of $52,200 or 1 cents a share in the year ago period.

Revenues also declined, to $1.1 million from $1.5 million in the same 1972 quarter.

Wineke said corrective actions, including stringent cost control measures, were initiated late in the first quarter, and their full effects have not yet been realized.

Graham 6 Month Earnings Up

GRAHAM, Texas – With help from a strong first quarter, Graham Magnetics Corp.'s six-month earnings exceeded those of the corresponding year-ago period despite the lack of tax credits during the current year.

Earnings for the six months ended March 31 rose to $680,091 or 73 cents a share compared with $661,348 or 82 cents a share a year ago, when a tax credit of $190,000 was included.

Revenues rose to $8.3 million from $6.9 million.

Applied Logic Revenues Rise

PRINCETON, N.J. – Applied Logic reported improved earnings and revenues for the six months ended March 31, with earnings reaching $100,683 or 5 cents a share compared with a loss of $320,809 or 19 cents a share a year ago.

Revenues rose 38% to $1.7 million in the same period last year.

Several factors cited as contributing to the improved performance were: an extension to a Navy contract; continued growth in revenues from the financial business segment; new contracts for Basis; and a contract with Nasa for one of the firm's time-sharing systems.

Scan-Data Has Profitable Quarter

NORRISTOWN, Pa. – Scan-Data Corp. showed progress in the first quarter ended March 31, with earnings of $1,849 compared with a restated loss of $315,196 or 27 cents a share for the same period last year.

Revenues during the quarter rose to $1.6 million from $1.2 million a year ago.

The 1972 loss was restated to reflect a change in accounting for previously deferred marketing and installation expenses. The loss as originally stated was $56,196 or 5 cents a share.

Further Down

Computer Transmission Corp. (Tran) of El Segundo, Calif., has secured financing amounting to $1.75 million through a private stock placement arranged by New Court Securities Corp. of New York.

– – –

Mangement Data Corp. has changed its name to MDC Corp.

– – –

Pitney Bowes-Alpex, Inc., the company owned equally by Pitney-Bowes, Inc. and Alpex Computer Corp., has signed an $8 million two-year credit agreement with Chemical Bank and The State National Bank of Connecticut.

– – –

The operations of Computility, a subsidiary of Grumman Data Systems Corp., have produced an interim profit of $57,432 for the first quarter of 1973. This compares with last year's first quarter operating loss of $49,611, the firm said.

– – –

Planning Research Corp. has closed a $13 million loan agreement with a group of banks led by Security Pacific National Bank. Other banks in the group are Morgan Guaranty Trust Co. of New York and First Western Bank and Trust Co.

Computerworld Sales Offices

Vice President–Sales: Neal Wilder.

Sales Administrator: Dottie Travis, Computerworld, 797 Washington St., Newton, Mass. 02160. Tel: (617) 332-5606.

Northern Regional Manager: Robert Ziegel, Computerworld, 797 Washington St., Newton, Mass. 02160. Tel: (617) 332-5606.

Mid. Atlantic Regional Manager: Donald E. Fagan, Computerworld, Suite 1511, 225 W. 34th St., New York, N.Y. 10001. Tel: (212) 594-5644.

Los Angeles Area: Bob Byrne, Robert Byrne & Assoc., 1541 Westwood Blvd., Los Angeles, Calif. 90024. Tel: (213) 477-4208.

San Francisco Area: Bill Healey, Thompson/Healey Assoc. 1111 Hearst Bldg., San Francisco, Calif. 94103. Tel: (415) 362-8547.

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And DLC Revaluates 360s

Rockwood Loses $32.9 Million in Year

ELMSFORD, N.Y. – A $41.7 million revaluation of its IBM 360 leasing portfolio resulted in a loss of $32.9 million by Rockwood Computer Corp. for the year ended March 31.

The portfolio is to be carried at no more than 25% of original cost by Dec. 31, 1975, and is to be fully depreciated by Dec. 31, 1978, according to a policy made in February.

The firm also obtained $25 million from a financial group headed by the Provident Bank of Cincinnati, Ohio, which was used to pay off short-term debts to IBM and other short-term obligations.

Revenues declined slightly during the year to $47.1 million from $47.6 million a year ago.

A tax benefit of $7.6 million helped reduce the $47.6 million charge. In 1972, the firm earned almost $2 million or 57 cents a share.

DCL, Inc., holding company of Diebold Computer Leasing, Inc., also decided to write down its 360 equipment and expects this will result in a "material charge" to 1972 income.

The firm said its 360 equipment originally cost about $167 million and has a book value of about $107 million. DCL Inc. cited several actions by IBM as prompting the "continual erosion" of the rental rates, especially for tape and disk and control units.

The firm blamed IBM's recent announcements of maintenance price hikes on purchased equipment, virtual memory and the 370/125, which it said "threatens ultimately to impact the company's large installed 360/30 and 40 base."

Earnings Reports

ELECTRONIC ASSISTANCE
Three Months Ended April 30

	1973	1972
Revenue	$8,984,000	$9,035,000
Loss	137,000	380,000

DATA PRODUCTS
Year Ended March 31

	1973	1972
Shr Ernd	$.34	$.10
Revenue	59,789,000	50,889,000
Disc Op	.....	(134,000)
aSpec Cred	815,000	405,000
Earnings	2,275,000	703,000

a-In 1973, tax credit; in 1972, tax-loss carryforward plus capital gains.

BOLT BERANEK AND NEWMAN
Three Months Ended March 31

	1973	1972
Shr Ernd	$.30	$.17
Revenue	5,770,400	4,639,400
Spec Item	123,300	.....
Earnings	383,100	206,800
9 Mo Shr	.70	.47
Revenue	16,285,000	13,764,500
Spec Item	142,800	.....
Earnings	885,500	587,600

SYSTEM DEVELOPMENT
Three Months Ended March 23

	1973	1972
Shr Ernd	$.20	$.17
Revenue	17,359,000	12,802,000
Earnings	382,000	283,000
9 Mo Shr	.58	.51
Tax Cred	.....	203,000
Earnings	1,905,000	a1,676,000

a-Restated to reflect one-for-two stock split in October 1972.

TECHNALYSIS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.04	$.03
Revenue	340,912	296,001
Earnings	25,000	15,350

MICROMEX
Year Ended March 31

	1973	1972
Shr Ernd	$.14	$.02
Revenue	454,665	309,685
Earnings	79,635	7,082

COMPUTER COMMUNICATIONS
Three Months Ended March 31

	1973	a1972
Shr Ernd	.....	$.02
Revenue	$1,327,242	1,904,984
Disc Op	.....	(94,864)
Spec Chg	b68,000	.....
Earnings	(133,723)	15,219
9 Mo Shr	.01	.....
Revenue	4,516,355	4,894,924
Disc Op	(29,417)	(498,751)
Spec Item	d4,000	c118,660
Earnings	9,260	(901,479)

a-Restated. b-Reduction of tax-loss carryforward credit. c-Credit; gain on sale of subsidiary. d-Charge; loss on sale of subsidiary less tax-loss carryforward credit.

ULTIMACC SYSTEMS
Three Months Ended March 31

	1973	1972
Shr Ernd	$.04	.....
Revenue	606,667	$170,063
Tax Cred	7,738	.....
Earnings	19,506	(85,516)

KEYDATA
Three Months Ended April 30

	1973	1972
Shr Ernd	$.08	$.02
Revenue	2,423,000	1,850,000
Tax Cred	106,000	19,000
Earnings	227,000	45,000
9 Mo Shr	.21	.08
Revenue	6,866,000	5,362,000
aSpec Cred	284,000	129,000
Earnings	604,000	185,000

a-In 1973, tax credit; in 1972 tax credit plus gain on sale of publications operations.

CORDURA
Three Months Ended April 30

	1973	a1972
Shr Ernd	$.30	$.30
bRevenue	33,084,000	26,924,000
Disc Op	(43,000)	(37,000)
Spec Chg	d90,000	.....
Earnings	1,883,000	1,900,000
6 Mo Shr	.60	.56
bRevenue	59,129,000	49,401,000
Disc Op	(95,000)	(114,000)
Spec Chg	d90,000	.....
Earnings	3,702,000	3,595,000

a-Restated. b-From continuing operations. c-Loss on sale of direct mail operations of a subsidiary.

United Data Centers Has a Record Year

GREENWICH, Conn. – United Data Centers, Inc. reported record revenues and improved earnings for the year ended Dec. 31.

Earnings, after a $207,000 tax credit, totaled $490,974 or 35 cents a share compared with a restated loss of $1.5 million or $1.14 a share last year.

Revenues climbed to $7.8 million from a restated $6.7 million a year ago.

The previous year was restated to reflect operations of Dynafacts, Inc., acquired on a pooling-of-interests basis.

New Registrations

ADVANCED MEMORY SYSTEMS, INC., 1276 Hammerwood Ave., Sunnyvale Calif., has filed to register 124,510 shares of common, in exchange for the transfer of the assets of Computer Microtechnology, Inc. (CMI) to a wholly owned subsidiary of AMS. AMS shares will be distributed to Microtechnology shareholders at the rate of 1/35 AMS share for each CMI share.

FOUR-PHASE SYSTEMS, INC., 10420 North Tantau Ave., Cupertino, Calif., manufacturer of multi-terminal video-display computer systems, has filed to register 600,000 shares of common. Proceeds, at $14 per share maximum, will be used to repay bank loans and to finance the cost of equipment for leasing. The underwriter is Blyth Eastman Dillon & Co., 1 Chase Manhattan Plaza, N.Y., 10005.

MONOLITHIC MEMORIES, INC., 1165 East Arques Ave., Sunnyvale, Calif., has filed to register 630,000 shares of common, of which 520,000 are to be offered for sale by the company and 110,000 by a selling stockholder. Proceeds, at $16 per share maximum, will be used for working capital. The underwriter is Loeb, Rhoades & Co., 42 Wall St., New York, 10005.

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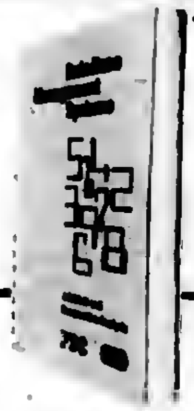

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TRADE QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass 02139

CLOSING PRICES THURSDAY, JUNE 21, 1973

SOFTWARE & EDP SERVICES

EXCH		1973 RANGE (1)	CLOSE JUN 21 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1	0	0.0
A	APPLIED DATA RES.	2- 4	1 7/8	- 1/8	-6.2
O	APPLIED LOGIC	1- 3	1 1/4	- 1/4	-16.6
N	AUTOMATIC DATA PROC	40- 04	40 1/8	-6 1/8	-11.0
O	BRANDON APPLIED SYST	1- 1	1/2	0	0.0
O	COMPUTER DIMENSIONS	2- 5	3 1/4	- 1/4	-7.1
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER NETWORK	1- 5	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	2 1/2	- 1/4	-0.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	1- 3	1	0	0.0
O	COMPUTER USAGE	4- 9	5 1/8	+ 1/8	+2.5
O	COMRESS	1- 2	1/4	0	0.0
O	COMSHARE	4- 9	4 1/2	0	0.0
N	CORDURA CORP	5- 15	5 1/4	- 3/8	-6.6
O	DATATAB	2- 4	2	0	0.0
O	EDP RESOURCES	1- 3	1 1/4	+ 1/4	+25.0
A	ELECT COMP PROG	1- 2	1 1/4	+ 1/8	+11.1
N	ELECTRONIC DATA SYS.	30- 56	30 1/8	-2 5/8	-8.0
O	INFORMATICS	2- 6	3 3/4	0	0.0
O	I.O.A. DATA CORP	1- 1	3/4	+ 1/8	+20.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	7- 12	6 1/4	- 1/4	-3.8
O	LOGICON	4- 7	3 1/2	- 1/8	-3.4
A	MANAGEMENT DATA	2- 5	1 7/8	- 1/8	-6.2
O	NATIONAL CSS INC	8- 41	20 1/2	- 1/4	-1.2
O	NATIONAL INFO SRVCS	1- 2	7/8	- 1/8	-12.5
P	ON LINE SYSTEMS INC	13- 17	12 1/2	- 3/8	-2.0
R	PLANNING RESEARCH	2- 7	2 1/4	- 3/8	-14.2
O	PROGRAMMING METHODS	21- 24	21	0	0.0
O	PROGRAMMING & SYS	1- 1	3/4	0	0.0
O	RAPIDATA INC	6- 24	5 3/4	- 1/2	-8.0
O	SCIENTIFIC COMPUTERS	1- 2	7/8	- 1/8	-12.5
O	SIMPLICITY COMPUTER	2- 4	2 5/8	- 1/4	-8.6
O	TBS COMPUTER CENTERS	3- 4	2 1/2	0	0.0
O	TCC INC	1- 1	1/2	0	0.0
O	TYMSHARE INC	6- 12	7 5/8	+ 1/2	+7.0
O	UNITED DATA CENTER	5- 6	4	0	0.0
N	UNIVERSITY COMPUTING	5- 11	5	- 3/8	-6.0
A	URS SYSTEMS	4- 8	4	- 1/4	-5.8

PERIPHERALS & SUBSYSTEMS

EXCH		1973 RANGE (1)	CLOSE JUN 21 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	12- 34	12 7/8	- 1/8	-0.9
O	ADVANCED MEMORY SYS	5- 23	5 3/4	- 1/4	-4.1
N	AMPEX CORP	4- 7	4 3/4	0	0.0
O	ANDERSON JACOBSON	3- 6	3	- 1/4	-7.6
O	BEEHIVE MEDICAL ELEC	6- 10	6	-1	-14.2
A	BOLT,BERANEK & NEW	6- 12	6 5/8	+ 1/8	+1.9
N	BUNKER-RAMO	6- 18	9 5/8	- 1/2	-4.9
A	CALCOMP	5- 13	7 3/8	+ 1/8	+1.7
O	CAMBRIDGE MEMORIES	10- 15	8 7/8	- 3/8	-4.0
O	CENTRONICS DATA COMP	13- 28	17	-1	-5.5
O	CODEX CORP	9- 19	10 1/2	- 1/2	-4.5
O	COGNITRONICS	1- 3	1 5/8	0	0.0
O	COMPUTER COMMUN.	1- 4	1 3/8	- 1/8	-8.3
A	COMPUTER EQUIPMENT	2- 3	2 1/8	- 1/8	-5.5
O	COMPUTER MACHINERY	5- 13	5 1/4	-1 1/4	-19.2
O	COMPUTER TRANSCEIVER	2- 6	1 1/2	- 3/8	-20.0
N	CONRAC CORP	15- 32	16 3/4	+ 3/4	+4.6
A	DATA PRODUCTS CORP	2- 4	2 3/4	- 1/8	-4.3
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 3/8	- 1/4	-9.5
O	DI/AN CONTROLS	2- 4	2 1/8	0	0.0
N	ELECTRONIC M & M	3- 6	3	- 3/8	-11.1
O	FABRI-TEK	2- 5	2 1/4	- 3/8	-14.2
O	GENERAL COMPUTER SYS	6- 9	6	0	0.0
N	GENERAL ELECTRIC	56- 76	57 1/8	-1 3/4	-2.9
N	HAZELTINE CORP	5- 9	5 3/4	- 1/4	-4.1
O	INFOREX INC	7- 23	7 1/4	- 3/8	-4.9
O	INFORMATION DISPLAYS	1- 2	3/4	0	0.0
O	INFORMATION INTL INC	10- 15	9 1/2	- 1/4	-2.5
A	LUNDY ELECTRONICS	4- 9	4 1/8	- 1/8	-2.9
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
A	MILGO ELECTRONICS	14- 28	14 1/4	- 3/4	-5.0
N	MOHAWK DATA SCI	4- 13	3 7/8	-1 1/8	-22.5
O	ODEC COMPUTER SYST.	2- 6	2 1/4	0	0.0
O	OPTICAL SCANNING	2- 7	3	0	0.0
O	PERTEC CORP	5- 8	5 1/8	- 1/4	-4.6
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	4- 9	3 1/2	- 1/2	-12.5
O	PRECISION INST.	2- 6	2 3/4	- 1/4	-8.3
O	RECOGNITION EQUIP	4- 8	4	- 3/8	-8.5
N	SANDERS ASSOCIATES	7- 18	7 3/8	- 5/8	-7.8
O	SCAN DATA	1- 6	1 3/8	- 1/8	-8.3
O	STORAGE TECHNOLOGY	12- 34	12 1/4	-1	-7.5
O	SYCOR INC	9- 14	10 1/4	-1	-8.8
O	TALLY CORP.	2- 14	3 1/4	- 1/2	-13.3
N	TEKTRONIX INC	30- 53	31 1/8	-2 3/8	-7.0
N	TELEX	3- 6	3 7/8	- 1/8	-3.1
O	WILTEK INC	10- 18	9 1/2	-1	-9.5

SUPPLIES & ACCESSORIES

EXCH		1973 RANGE (1)	CLOSE JUN 21 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	5- 9	6	- 1/4	-4.0
A	BARRY WRIGHT	6- 13	6 5/8	- 3/4	-10.1
A	DATA DOCUMENTS	17- 22	17	0	0.0
O	DUPLEX PRODUCTS INC	7- 10	8	- 1/4	-3.0
N	ENNIS BUS. FORMS	5- 8	5 1/4	+ 1/8	+2.4
O	GRAHAM MAGNETICS	10- 20	10 1/4	0	0.0
O	GRAPHIC CONTROLS	8- 12	8 3/8	- 1/2	-5.6
N	3M COMPANY	78- 89	82	-1 3/4	-2.0
O	MOORE CORP LTD	53- 60	53 1/4	-1 3/4	-3.1
N	NASHUA CORP	42- 58	48	+ 3/4	+1.5
O	REYNOLDS & REYNOLDS	40- 51	40 3/4	- 3/8	-0.9
O	STANDARD REGISTER	14- 20	14 3/4	0	0.0
O	TAB PRODUCTS CO	10- 23	9 1/2	-1	-9.5
N	UARCO	17- 23	17 5/8	- 3/4	-4.0
A	WABASH MAGNETICS	5- 7	5 1/4	+ 1/8	+2.4
R	WALLACE BUS FORMS	16- 26	16 3/8	- 3/4	-4.3

COMPUTER SYSTEMS

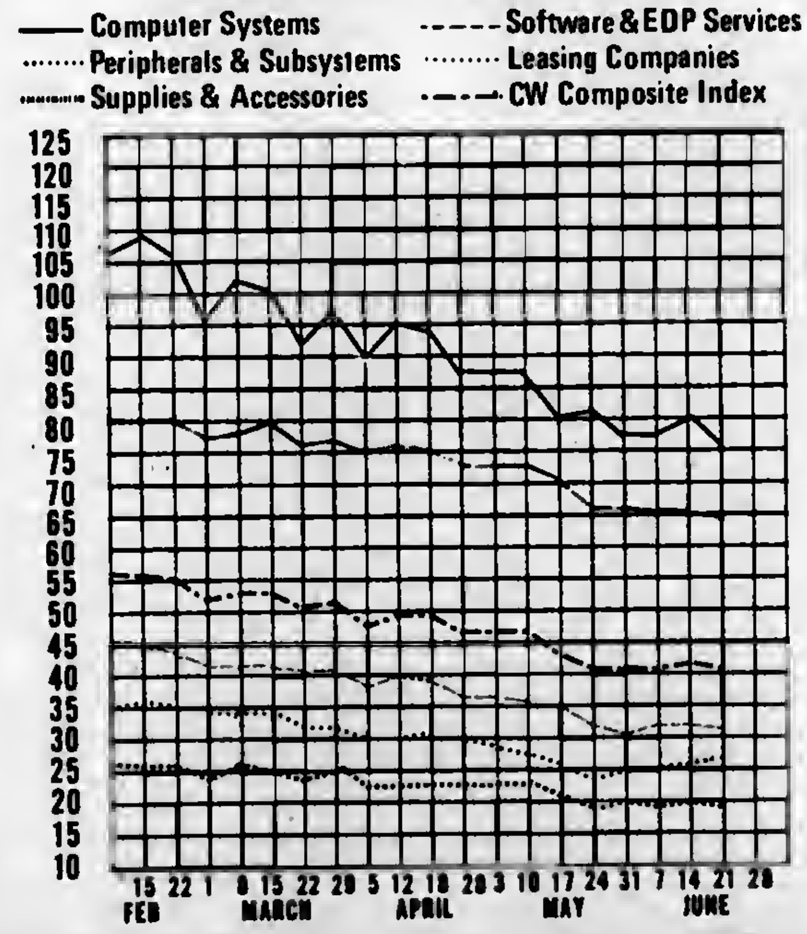
EXCH		1973 RANGE (1)	CLOSE JUN 21 1973	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	211-245	222	-6	-2.6
N	COLLINS RADIO	16- 26	16	-1 1/8	-6.5
N	CONTROL DATA CORP	35- 62	36	+ 3/4	+2.1
O	DATA GENERAL CORP	28- 46	31 1/4	-1	-3.1
O	DIGITAL COMP CONTROL	2- 6	2 3/8	+ 1/4	+11.7
N	DIGITAL EQUIPMENT	73-105	80 1/8	-1 5/8	-1.9
N	ELECTRONIC ASSOC.	4- 9	4 1/8	- 3/8	-8.3
A	ELECTRONIC ENGINEER.	6- 11	7 3/4	- 1/4	-3.1
N	FOXBORO	23- 32	26 1/8	-2 1/2	-8.7
O	GENERAL AUTOMATION	22- 55	21 1/2	-5 1/2	-20.3
O	GRI COMPUTER CORP	1- 3	1	0	0.0
N	HEWLETT-PACKARD CO	74- 05	75 1/8	- 7/8	-1.1
N	HONEYWELL INC	08-139	100 7/8	-2 1/2	-2.4
N	IBM	307-340	315 1/2	-5 1/2	-1.7
O	INTERDATA INC	7- 13	8 1/4	- 3/4	-8.3
N	MEMOREX	2- 19	4 3/4	- 1/8	-2.5
O	MICRODATA CORP	3- 10	2 3/8	- 1/2	-17.3
R	NCR	27- 37	36	+ 5/8	+1.7
N	RAYTHEON CO	24- 34	24	-1 3/8	-5.4
N	SPERRY RAND	36- 50	30 1/4	- 1/4	-0.6
A	SYSTEMS ENG. LABS	3- 8	3 1/4	- 1/2	-13.3
N	VARIAN ASSOCIATES	10- 20	10 1/8	-1 3/8	-11.9
N	WANG LABS.	13- 34	14 5/8	- 7/8	-5.6
N	XEROX CORP	141-160	152 7/8	-2 3/4	-1.7

LEASING COMPANIES

EXCH		1973 RANGE (1)	CLOSE JUN 21 1973	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	1- 5	1 5/8	+ 3/8	+30.0
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	6- 17	6 3/8	- 1/8	-1.0
O	COMMERCE GROUP CORP	3- 4	3 3/4	+ 3/8	+11.1
O	COMPUTER EXCHANGE	1- 1	1/2	0	0.0
A	COMPUTER INVSTRS GRP	2- 8	2 1/2	- 1/2	-16.6
O	COMP. INSTALLATIONS	1- 2	1	0	0.0
N	DPF INC	5- 9	7 1/2	+1 1/8	+17.6
M	DATRONIC RENTAL	2- 3	2 3/8	+ 1/4	+11.7
A	DCL INC	2- 3	1 1/2	0	0.0
A	DEARBORN-STORM	13- 26	12 1/2	-1 3/4	-12.2
A	OPA, INC.	5- 8	4 3/4	- 1/4	-5.0
A	GRANITE MGT	2- 6	3 3/8	- 1/8	-3.5
A	GREYHOUND COMPUTER	3- 6	3 1/2	- 1/4	-6.6
A	ITEL	4- 12	5	- 1/2	-9.0
N	LEASCO CORP	8- 18	8 3/8	-1	-10.6
O	LEASPAC CORP	2- 8	3 1/2	+1 3/8	+64.7
O	LECTRO MGT INC	1- 2	1 1/4	0	0.0
O	NHG INC	6- 15	7 3/8	- 1/8	-1.6
A	ROCKWOOD COMPUTER	1- 3	1 1/8	- 1/8	-10.0
N	U.S. LEASING	16- 36	19	0	0.0

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

COMPUTER DESIGN

Three Months Ended March 31

	1973	1972
Shr Ernd	$.04	$.09
Revenue	5,714,102	4,314,288
Earnings	67,696	124,948

LOGIC

Three Months Ended March 30

	1973	1972
Shr Ernd	.....	$.01
Revenue	$879,322	666,773
Tax Cred	.....	13,200
Earnings	(244,411)	21,293

ITEL

Three Months Ended March 31

	1973	1972
Shr Ernd	$.10	.....
Revenue	33,325,000	$19,444,000
Spec Cred	254,000	.....
Earnings	721,000	(1,527,000)

LUNDY ELECTRONICS & SYSTEMS

Nine Months Ended March 31

	1973	1972
Shr Ernd	$.30	$.33
Revenue	13,303,718	12,601,574
Earnings	260,265	283,687

MSI DATA

Year Ended March 31

	1973	1972
Shr Ernd	$.34	a$.30
Revenue	13,489,746	10,520,525
Spec Item	d31,000	b92,000
Earnings	602,351	472,721

a-Adjusted for three-for-two stock split in May 1972. b-Tax-loss carry-forward credit. d-Debit; writedown of land held for sale.

CALIFORNIA COMPUTER PRODUCTS

Three Months Ended April 1

	1973	1972
Shr Ernd	$.33	.....
Revenue	21,340,000	$11,506,000
Earnings	976,000	(512,000)
9 Mo Rev	54,811,000	36,974,000
Loss	603,000	a5,741,000

a-Restated to reflect accounting changes.

COMPUTER MACHINERY

Three Months Ended March 31

	1973	1972
Shr Ernd	$.08	.....
Revenue	10,685,050	$3,184,822
Tax Cred	276,000	.....
Earnings	386,416	(1,276,776)

DIGITAL EQUIPMENT

Three Months Ended March 31

	1973	1972
Shr Ernd	$.56	$.36
Revenue	67,395,000	47,737,000
Earnings	6,151,000	3,652,000
9 Mo Shr	1.31	1.00
Revenue	179,168,000	131,085,000
Earnings	14,179,000	10,240,000

SPERRY RAND

Year Ended March 31

	1973 (000)	a1972 (000)
Shr Ernd	$2.62	$1.77
Revenue	2,229,253	1,823,937
Earnings	90,057	60,780
3 Mo Shr	.85	.58
Revenue	635,015	549,791
Earnings	29,232	20,047

a-Quarter has been restated to reflect equity method of accounting.

APPLIED DATA RESEARCH

Three Months Ended March 31

	1973	1972
Shr Ernd	$.05	$.01
Revenue	2,402,209	a2,058,693
Earnings	56,287	13,590

a-Restated.

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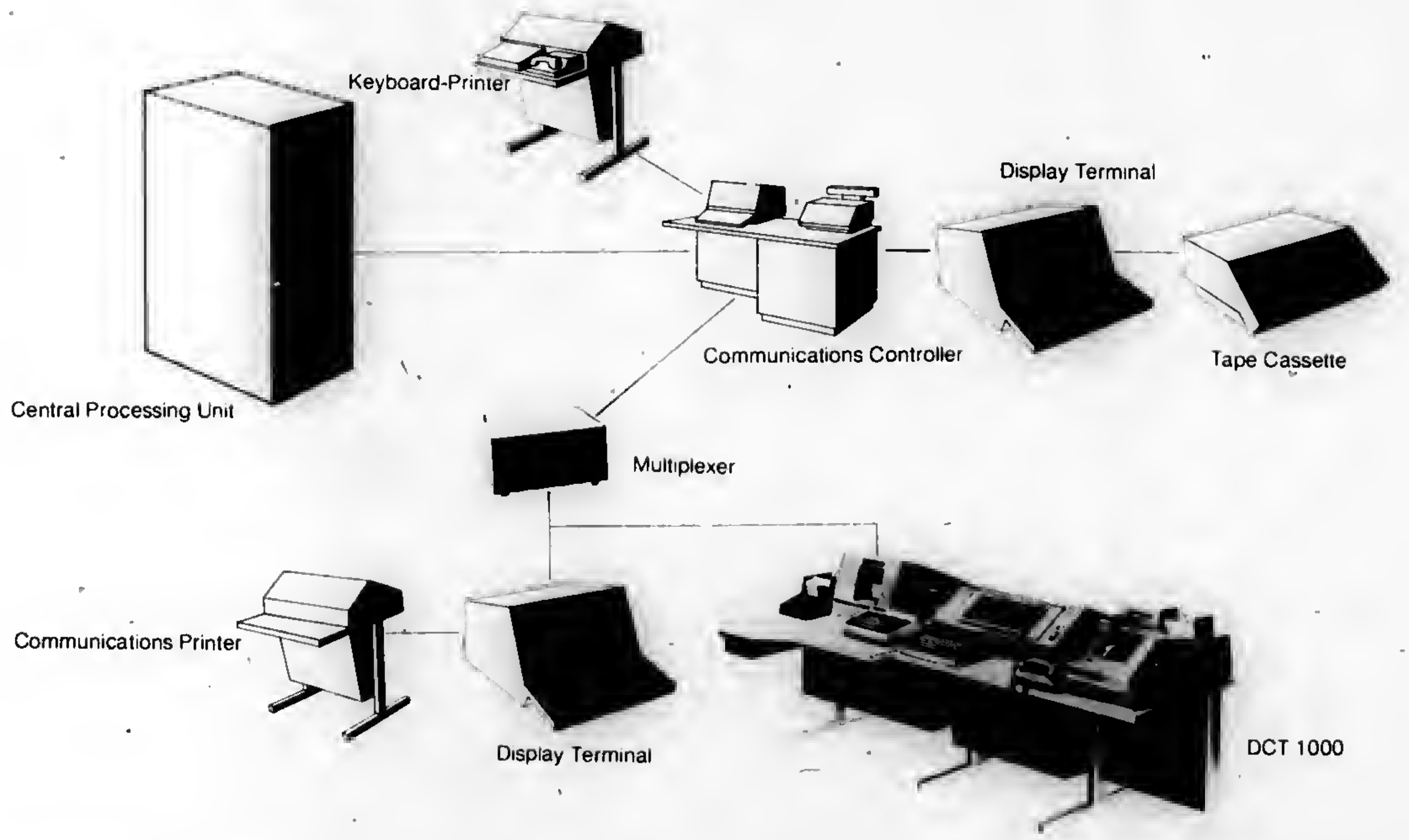

COMMUNICATIONS AND TERMINALS DIVISION

SPERRY✦UNIVAC

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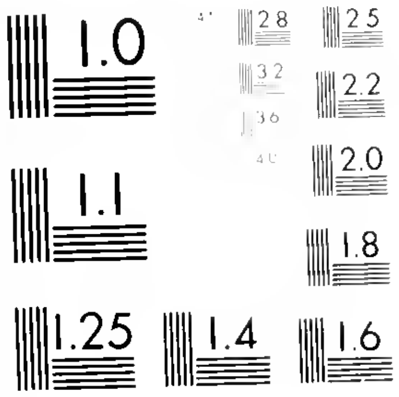
RESOLUTION CHART



MICROCOPY RESOLUTION TEST CHART

[illegible]

100 MILLIMETERS

INSTRUCTIONS Resolution is expressed in terms of the lines per millimeter recorded by a particular film under specified conditions. Numerals in chart indicate the number of lines per millimeter in adjacent "T-shaped" groupings.

In microfilming, it is necessary to determine the reduction ratio and multiply the number of lines in the chart by this value to find the number of lines recorded by the film. As an aid in determining the reduction ratio, the line above is 100 millimeters in length. Measuring this line in the film image and dividing the length into 100 gives the reduction ratio. Example: the line is 20 mm. long in the film image, and 100/20 = 5.

Examine "T shaped" line groupings in the film with microscope, and note the number adjacent to finest lines recorded sharply and distinctly. Multiply this number by the reduction factor to obtain resolving power in lines per millimeter. Example: 7.9 group of lines is clearly recorded while lines in the 10.0 group are not distinctly separated. Reduction ratio is 5, and 7.9 x 5 = 39.5 lines per millimeter recorded satisfactorily. 10.0 x 5 = 50 lines per millimeter which are not recorded satisfactorily. Under the particular conditions, maximum resolution is between 39.5 and 50 lines per millimeter.

Resolution, as measured on the film, is a test of the entire photographic system, including lens, exposure, processing, and other factors. These rarely utilize maximum resolution of the film. Vibrations during exposure, lack of critical focus, and exposures yielding very dense negatives are to be avoided.